What is the relationship between Post-Traumatic Stress Disorder and Medically Unexplained Physical Symptoms?

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Summary

Although post-traumatic stress disorder (PTSD) has been associated with medically unexplained physical symptoms (MUPS) more than any other psychiatric disorder, the co-morbid prevalence of both conditions was unclear from the literature. Furthermore, the impact of co-morbid PTSD and MUPS on health and social care experiences was not evident. To address these gaps in knowledge, this thesis aimed to estimate the co-morbid prevalence of PTSD and MUPS, and to explore the health and social care experiences associated with both conditions. This was achieved through a systematic review and meta-analysis, and qualitative studies of both the patient journey, and the experiences of health and social care professionals who care for people with both conditions. Although there were limitations to all three studies, results indicated a close relationship between the two conditions. Findings suggested considerable co-morbidity and the devastating long-term impact of childhood trauma on adult wellbeing. Both patient/clients and professionals sought greater awareness and understanding of PTSD and MUPS through education and training. The importance of the therapeutic alliance and empathic relationships was identified, with a need for a psychodynamic approach alongside evidence-based care. The potential for conflict between patient/client and practitioner was also evident, with the need to mitigate ruptures of the therapeutic alliance. Both patients/clients and practitioners sought biopsychosocial, personalised care, although lack of service provision and resource constraints were identified. Furthermore, the burden of distress for both patients/clients and professionals was significantly increased by service deficits for PTSD and MUPS. Prevailing mind-body dualism, and fragmentation of service provision were considered as main barriers to providing integrated, holistic care. Although study limitations preclude generalisations, findings suggested further research was needed to help clarify issues identified in this thesis.

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1 Chapter One: Research background on the relationship between post-traumatic stress disorder and medically unexplained physical symptoms

1.1 Introduction

Physical symptoms are highly prevalent in the community (Fink 2015). Approximately 45% of people attending primary care services (Haller et al. 2015) and 50% of people attending secondary care services (Nimnuan et al. 2001) have symptoms that are not explained by disease, although not all people seek medical advice for their physical symptoms (Chew-Graham et al. 2017). Empirical evidence suggests a specific relationship between medically unexplained physical symptoms (MUPS) and traumatic stress (Roelofs 2007), (McFarlane et al. 2008). People with MUPS report higher psychological trauma rates compared to controls, and there is a high co-morbid relationship between post-traumatic stress disorder (PTSD) and MUPS (Andreski et al. 1998). Trauma type can influence PTSD and MUPS co-morbidity, which is increased with interpersonal adult and childhood trauma (Herman 1992) (van der Kolk et al. 2005). PTSD and MUPS symptoms can lead to diagnostic uncertainty and anxiety for patient and clinician alike (Newton et al. 2010), and can increase the risk of iatrogenic harm (Geraghty and Scott 2020). This chapter will provide an overview of the origins and evolution of PTSD and MUPS along with contemporary explanatory models. The burden of both conditions will be further considered in terms of prevalence, disability and cost. Finally, the aims and objectives of this thesis will outline how the association between PTSD and MUPS will be investigated.

1.2 Background to post-traumatic stress disorder and medically unexplained physical symptoms

1.2.1 Terminology

In this thesis, all persisting physical symptoms that are not explained by disease are described as medically unexplained physical symptoms (MUPS). Terminology is heterogeneous and terms can be either formally classified or refer to a wide array of miscellaneous symptoms. MUPS synonyms include medically unexplained symptoms (MUS), unexplained physical symptoms (UPS). Other commonly used terms are persisting physical symptoms (PPS) (BV-Simpleapps), functional symptoms (FS), somatisation and psychosomatic. The American Psychiatric Association (APA) diagnostic and statistical manual (DSM), and World Health Organisation (WHO), International Classification of Disease (ICD) mental disorder categories: somatoform; conversion and dissociative disorders, are described as MUPS. Additionally, somatic symptom disorder (SSD) in DSM-5, and bodily distress disorder (BDD) in ICD-11 are termed MUPS. ICD medical functional somatic syndromes (FSS), which include chronic fatigue syndrome/ myeloencephalitis (CFS/ ME), irritable bowel syndrome (Welsh et al.) and fibromyalgia syndrome (FMS), are also designated as MUPS. For clarity, the term ‘idiopathic’ refers to diseases of uncertain cause and does not refer to MUPS.

Psychological trauma is described as ‘trauma’ in this thesis. PTSD is a response to trauma and the core symptoms are re-experiencing of the trauma(s), hyperarousal and emotional numbing, and avoidance of stimuli that provoke PTSD symptoms. In this thesis, PTSD is defined by DSM versions DSM-III (APA 1980), DSM-III-R (APA 1987), DSM-IV (APA 1994), DSM-IV-TR (APA 2000) and DSM-5 (APA 2013). ICD defined PTSD refers to versions ICD-10 (WHO 1992) and ICD-11 (WHO 2018). The term ‘Complex PTSD’ refers to the Herman (1992) construct and ICD-11’s complex PTSD (CPTSD) construct; ICD categorises two PTSD constructs, PTSD and CPTSD.

1.2.2 Diagnostic uncertainty: post-traumatic stress disorder, medically unexplained physical symptoms, disease, illness and sickness

‘Medicine is a science of uncertainty and an art of probability’ (William Osler)

Although diagnosis is a fundamental part of modern medicine, a systematic review of uncertainty suggested diagnostic ambiguity was an intrinsic feature of clinical practice. In the absence of a clear definition or validated measure, diagnostic uncertainty has been described as: ‘A subjective perception of an inability to provide an accurate explanation of the patient’s health problem’ (Bhise et al. 2018). For individual patients, consequences of diagnostic uncertainty, as indicated in a systematic review by Bhise et al. (2018), were 1:20 outpatient errors, and delayed, missed and incorrect diagnoses. Additionally, over investigation, over referral and over hospitalisation were noted. At a healthcare system level, diagnostic uncertainty was associated with excessive utilisation of services and excessive costs.

A review of evidence-based information in clinical practice suggested that tolerance of uncertainty varied between clinical specialties (Ghosh 2004). General medical practitioners (GPs) and psychiatrists seemed to tolerate diagnostic uncertainty more than urologists and anaesthetists. Anxiety about missed diagnosis of serious disease, however, occurred to some extent in the majority of clinicians.

In contrast to a potential elevated risk of harm, a more beneficial view of diagnostic ambiguity has been proposed. Arguments made from an 'art' rather than a 'science' perspective, considered uncertainty as a liberating rather than a constraining experience for both patient and clinician (Wellbery 2010). Whilst acknowledging the importance of a scientific approach in medicine, it was suggested that longer term gains for clinician and patient were possible through self-reflection, better clinical engagement and a more holistic understanding of presenting health problems: *'In medicine—a field where the physical body registers palpable outcomes—certainty about diagnosis, therapy and prognosis is a logically desirable goal. In the arts, by contrast, uncertainty or ambiguity are often embraced because they create opportunities, moving the perceiver beyond the obvious into a realm where values, meanings, and priorities are weighed and adjudicated'*. Furthermore, tolerance of uncertainty was deemed a necessary skill in clinical care, whereby diagnostic ambiguity could become a source of knowledge deficits to direct meaningful clinical research (Lancet 2010).

The process of clinical diagnosis in modern medicine is traditionally based on information gleaned from symptoms and signs, supported by additional evidence obtained from technical tests. Although both terms are used interchangeably, they differ in meaning. Symptoms are self- reports of an individual's mental, physical and social condition, whereas signs are derived from observation and examination findings. While symptoms vary in their specificity and number, and are subjective, signs can also be subjective and prone to bias (Scott 2009).

Although the predominant focus of modern medicine is on the identification and treatment of disease (morbidity), and prevention of premature death (mortality), the definition and labelling of disease can be vague and inconsistent (Campbell et al. 1979). The concepts of disease, illness and sickness have been considered as distinct and separate (Boyd 2000). Utilising definitions developed by Marinker, disease was described as an objective and measurable entity, which deviated from the norm such as cancer and heart disease (Marinker 1975). Although used interchangeably with disease, illness referred to the patient's personal inner feelings about their physical condition. Sickness, in contrast to illness, was considered an external expression of poor health and a social predicament and role.

Overall, given that symptoms and signs are subjective and prone to bias, and the definitions of disease, illness and sickness overlap, diagnostic uncertainty is a constant for patient and clinician. A person can feel ill and adopt a sick role without a demonstrable disease explanation, whereas a person can have a disease process without feeling ill or requiring a sick role. Although both PTSD and MUPS can lead to illness and sickness, feeling ill and requiring a sick role without objective disease, could add to diagnostic uncertainty, misinterpretation and mislabelling. Importantly, for both patient and clinician, the risk of missing serious disease, such as cancer, by misinterpretation of MUPS symptoms could lead to anxiety (Warner et al. 2017). Furthermore, for people with undiagnosed PTSD and MUPS, frequent attendance, frequent referrals and frequent testing for unresolved symptoms, could lead to excessive use of services and increased service costs.

1.2.3 Ontology and epistemology of modern healthcare

The focus of modern medicine on the identification and effective treatment of physical disease, has been attributed to philosophical principles of mental- physical dualism, ascribed to Descartes (Wilson 2000), and scientific positivism, credited to Comte and Bacon (Tosam 2014). Rene Descartes' 17th century dualist philosophy, 'Cartesian dualism', asserted the mind and body as separate entities; the mind was immaterial and thinking, the body was material but unthinking: *'A person lives through two collateral histories, one comprising of what happens in and to the body, the other consisting of what happens in and to (his) mind...the events in the first history are events in the physical world, those in the second events in the mental world' (Ryle 1949, pp. 11-12).* Descartes mind-body dualism is credited for facilitating a move away from religious doctrine to scientific methodology, which underpins successful modern biomedicine (Mehta 2011). However, mind-body dualism was also criticised for designating the human body as a machine, reducible to its parts; reductionism, and detached from the patient as a subjective being.

Cartesian dualism was further challenged as a major factor that delayed scientific understanding of the mind. A dualistic focus on physical disease and the expansion of disease knowledge led to medical and surgical specialisation in clinical care, separate from mental and social considerations (Damasio 2006, pp. 254-260): *'the consequences of diseases of the body on the mind are a second thought, or no thought at all...the Cartesian view of humanity in modern medicine disconnecting mind from body... managed separately in philosophy, religion and psychology, resulted in the amputation of humanity in which* *medicine does its job'. As a consequence of negative aspects of Cartesian dualism, arguments were made to 'treat both mind and body together with dignity and compassion, and to include a patient's subjective illness attributes with their disease for a more humanistic, rather than mechanistic medicine' (Switankowsky 2000).*

The biomechanical model of healthcare is supported by scientific positivism, a philosophy of reality that comprises discrete objects; disease entities, which are ordered and subject to fundamental external laws (Tosam 2014). Epistemically, the scientific method is numeric, quantifiable and empirical (observed and measurable), seeking causality and predictability. Quantitative research methodologies test objective theories by measuring and statistically analysing the relationship between variables (Sutton 2014). Quantitative methodology has considerable utility in healthcare from clinical audit to randomised controlled trials (RCT's). Sutton and Austin (2014) caution, however, that participant data such as personal thoughts and feelings about care, can be missed by quantitative methodologies alone. For more complete data sets, both qualitative and quantitative research methods can explore the relationship between variables. Subjective participant experience is captured by qualitative research (Mohajan 2018), and a number of qualitative research methodologies are available to investigate different aspects of human thought, feelings and behaviour. Qualitative research methods include ethnography (Goodson and Vassar 2011), narrative analysis (Edwards 2016) and thematic analysis (Braun and Clarke 2006), all of which can inform service developments and patient care.

Contemporary healthcare research has been predicated on linearity and predictability (Greenhalgh and Papoutsi 2018), however, complex systems with multiple interacting variables are frequently encountered in clinical practice, and are marked by uncertainty and generative causality. Greenhalgh and Papoutsi (2018) suggested that, in addition to quantitative and qualitative research methods, research designs were required to investigate interconnectedness, dynamic interactions between variables and emergent outcomes. In clinical practice, service provision is challenged by numerous complex demands, which include integrated care, multimorbidity and multicomponent interventions (O'Cathain et al. 2019). Guidance on developing, testing and evaluating complex interventions has been produced by the Medical Research Council (Craig 2019).

1.2.4 Medical nosology: disease

In addition to the influences of scientific positivism and Cartesian dualism, it has been proposed that the predominant focus on physical disease in modern medicine and medical classification systems, resulted from historic attempts to systematically report the cause of death (Moriyama 2011). At the end of the 18th century, clinical practice became orientated towards the identification of lesions in the body and included findings from clinical examination and post-mortems (Armstrong 2011). In the mid-nineteenth century, a formal change from symptom-based categorisation to statistical classification was initiated by the International Statistical Congress (ISC). ICD-6, established in 1948, was the first legally formalised medical classification system with international rules and revisions guided by the World Health Organisation (WHO). The ICD system was amended periodically to the latest edition, ICD-11 (2018). Although a 'physical' disease terminology supported universal classification of mortality and morbidity, a new category of 'mental, psychoneurotic and personality disorder' was developed in ICD-6. Dualistic separation of physical disease from mental disease categorisation, however, has continued.

In a separate development to ICD, a new statistical classification system for mental illness was introduced in the USA, DSM-I (1952). In a review of psychiatric nosology in the USA (Grob 1991), it has been suggested that a predominant psychodynamic and psychoanalytic psychiatry had led to a diminished role for biological psychiatry. Furthermore, prior to the formal collection of hospital data in World War I, no formal psychiatric classification system had been developed. The DSM taxonomy replaced several previous symptom-based mental illness taxonomies (Blashfield et al. 2014), and DSM-III has been considered a *'paradigm shift in how we think about, and use, the classification system for mental illness.'* (Suris et al. 2016). Although DSM-III heralded a categorical, agnostic and atheoretical taxonomy, arguments have been made for a continuous/dimensional, causal and explanatory classification system for mental disorders. Additionally, the coding process for ICD and DSM extended from classification of disease to include healthcare finance, administration, policy and research (O'Malley et al. 2005).

Primary care-based clinicians, GP's, challenged ICD's secondary care orientation, and low primary care utility to propose a taxonomy that included undifferentiated symptoms: *'For the GP in the mid 20th century, many diagnoses seemed to be closer to the older 18th century symptomatic classification than to the rubrics of ICD in that the clinical encounter was frequently dominated by symptoms often without identifiable underlying pathology'* (Armstrong 2011). As such, several classification systems for general medical practice/primary care were proposed. In 1974, the World Organisation of National Colleges and Academies of General and Family Practice (WONCA), developed the international classification of health problems in primary care (ICHPPC), which approximated to ICD-8 and ICD-9. In 1978, the World Health Organisation (WHO) supported the development of a classification system for primary care to complement ICD-10, which was based on ICHPPC-2 (1979), and two other primary care classification proposals. The international classification of primary care (ICPC, 1987) was published and revised alongside ICD-10 as ICPC-2 (1998). The ICPC organising principles were based on observations that patients formulated health problems as symptoms and complaints and included codes for ill- defined symptoms and approximate diagnosis. Categories included social problems, preventative medicine and family problems. Although brief versions of ICD for primary care were produced both ICPC and ICD-PHC have not been widely utilised.

1.2.5 Clinical coding: disease, post-traumatic stress disorder and medically unexplained physical symptoms

With the introduction of the electronic patient record and developments in NHS primary care IT systems, a GP orientated coding system based on ICD-9 was introduced (Booth 1994). Read codes provided a four-character code structure in a monoaxial hierarchy that included a parent code and codes for diagnosis, care processes and medication. Provision was made for ill-defined symptoms and provisional diagnoses, and for categorical disease diagnoses. Read codes have been superseded by systemised nomenclature of medicine-clinical terms (SNOMED-CT) (Cornet and de Keizer 2008), which was produced by combining the systemised nomenclature of pathology (SNOP) with clinical terms version-3 (Read codes). SNOMED-CT is an international, multilingual clinical coding system that maps to ICD, and codes for symptoms and disease across primary and secondary care.

The utility of SNOMED-CT to code for PTSD and MUPS in electronic clinical systems has been tested. Mapping of 153 PTSD symptoms found 68% (104/153) of PTSD related terms were covered, although further work to improve the recording of PTSD stressor events, PTSD symptoms and PTSD related disability has been acknowledged (Trusko et al. 2010). SNOMED-CT was evaluated in a convenience sample of 100 patients records at a treatment centre for FSS conditions, which included FMS, CFS/ME and multiple chemical sensitivity (MCS). A retrospective audit of patient records and multidisciplinary clinician feedback indicated that approximately 82% of FSS concepts were captured by SNOMED-CT (Sampalli et al. 2010).

1.2.6 Medical Nosology: post-traumatic stress disorder and medically unexplained physical symptoms

Trauma and MUPS type presentations date back to recordings in ancient Egypt and Greece, and to biblical scriptures. Historic terminology is heterogeneous and complex, although some terms such as ‘soldiers’ heart’, ‘railway spine’ and shellshock are suggestive of some overlap between mental and physical experiences resulting from trauma (traumadissociation.com 2020), (Appendix A). In the late nineteenth century, the historic term, ‘hysteria’, was re-introduced by Freud to describe a new ‘hysterical neurosis’ (Dayan and Olliac 2010). Hysterical neurosis was causally linked to childhood abuse and comprised mental memory and identity disturbances (traumadissociation.com), physical neurological complaints such as paralysis and seizures (conversion), and non-neurological body symptoms including chronic pain and fatigue (somatoform) (North 2015).

In contrast to hysterical neurosis, a new category of PTSD in DSM-III (1980) was developed from a specific adult stress response; ‘gross stress reaction’ in DSM-I (1952). A similar PTSD construct was included in ICD-10 (1994), and PTSD criteria evolved through subsequent DSM and ICD revisions to DSM-5 (2013) and ICD-11 (2018). The validity of PTSD as a psychiatric disorder, however, has been challenged since its introduction. PTSD has been eschewed by some as a politically motivated socio-political construct, rather than a mental illness (Summerfield 2001), (Brewin 2003). Conversely, although PTSD is largely accepted as a valid construct, protagonists debate PTSD as either a categorical entity with a latent structure, or a ‘dimensional’ phenomenon, positioned at the severe end of a spectrum of stress responses (Ruscio et al. 2002). Furthermore, a more recent view argues PTSD as an emergent phenomenon from a complex causal system, which comprises interacting PTSD symptoms (McNally 2014).

In comparison to PTSD, MUPS were classified as psychoneurotic reactions in DSM-I (1952) and hysterical neurosis in DSM-II (1968). Importantly, the DSM-III PTSD construct was introduced at the same time as the DSM-II ‘hysterical neurosis’ category was disassembled into dissociative, conversion and somatoform categories (Dayan and Olliac 2010). Although hysteria was classified in ICD-9 (1975), PTSD was not included until ICD-10 (1994). Furthermore, hysteria was re-classified in ICD-10 into two main categories; somatoform disorders, and dissociative/ conversion disorders. ICD had separated MUPS dualistically into either ‘mental’ somatoform, conversion and dissociative disorders, and medical FSS such as IBS, fibromyalgia and CFS. FSS are associated with specific medical specialties, such as FMS in rheumatology, and IBS in gastroenterology (JCPMH 2017) (Table 1.1).

Table 1.1 Functional somatic syndromes by specialty (adapted from Joint Commissioning Panel for Mental Health 2017)

Functional Somatic Syndrome	Specialty
Irritable Bowel Syndrome	Gastroenterology
Chronic Fatigue Syndrome/ Myalgic Encephalitis	Infectious Disease
Post-Concussion Syndrome	Neurology
Chronic Pelvic Pain	Gynaecology
Fibromyalgia/ Chronic Widespread Pain	Rheumatology
Non-cardiac Chest Pain	Cardiology
Hyperventilation	Respiratory Medicine
Temporo-mandibular Joint Dysfunction	Maxillofacial Surgery
Multiple Chemical Sensitivity	Allergy Clinic

For some health conditions, a dualistic mental or physical designation is unclear. Historically, the inception of conversion disorder by Freud led to functional neurological disorders (FND) such as non-epileptic seizures, to be categorised as 'conversion' disorders in ICD and DSM psychiatric categories (Feinstein 2011). Notwithstanding historic inconsistencies, FND's are categorised as neurological disorders in ICD-11, although FND's are categorised as conversion disorders in DSM-5.

A literature review of symptom overlap between different FSS's such as FMS and chronic CFS, concluded that similarities between all FSS categories outweighed their differences (Wessely et al. 1999). Conversely, the proposition of a single overarching functional condition was challenged (Wessley 2004). Arguments against a unitary FSS included a poor overlap between some FSS, such as IBS and FMS, and a five times increased risk of CFS in people who had a history of glandular fever. Nonetheless, MUPS and synonyms have variable acceptability to patients, with many terms deemed as judgemental (Stone et al. 2002). In a neurology outpatient study, 59 out of 86 (68.6%) consecutive patients were interviewed to gauge the level of offence perceived by diagnostic labels for hypothetical leg weakness and normal test results. Although findings suggested that multiple sclerosis and stroke were the least offensive terms, any psychological or psychiatric label could potentially cause offence due to allusions of malingering, delusion or madness.

Exploring whether there were better terms than MUPS (Creed et al. 2010), barriers to improved care due to MUPS terminology were identified. Consensus by the European Association of Consultation Liaison Psychiatry and Psychosomatics (EACLPP), suggested that a symptom-based terminology that encompassed both the physical and psychological would be required for acceptance by patient and clinician alike. In another study exploring MUPS terminology in a lay sample, ‘persisting physical symptoms’ and ‘functional symptoms’ were deemed preferable terms than medically unexplained symptoms (Marks and Hunter 2015).

In clinical practice, the challenge posed by explaining MUPS to patients and recording MUPS diagnosis in clinical systems, was explored from a primary care perspective (Rask et al. 2014), (den Boeft et al. 2014), (Burton 2014). Findings suggested that without a positive MUPS explanatory construct, and clinical concerns about missing serious disease diagnoses, general medical practitioners (GP’s) tended to avoid MUPS labels for as long as possible, and did not usually record MUPS in an identifiable way. In a study examining MUPS diagnoses in hospital settings, physicians were found more likely to overdiagnose presentations as medically ‘explained’ rather than medically ‘unexplained’ (56% compared to 17%) (Nimnuan et al. 2001). Results suggested physicians were concerned to minimise diagnostic error and therefore tended to over-investigate MUPS.

To improved care for patients and reduce risk for clinicians, a valid taxonomy for MUPS was proposed (Fink et al. 2005). A literature review of MUPS classification suggested a dimensional latent structure of MUPS, which represented a spectrum of stress responses. Review findings suggested a descriptive MUPS classification system that accommodated the range of symptom severity across primary and secondary care. ICD classification of MUPS as functional and somatoform was deemed inappropriate for primary care due to potential exclusion of numerous milder, unclassified MUPS symptoms from appropriate treatment (Rosendal 2007). Following a review of ICPC-10 classification, which is utilised in Europe, a dimensional and prognostic categorisation of MUPS in primary care was suggested.

1.2.7 Evolution of post-traumatic stress disorder and medically unexplained physical symptoms

DSM-III induced changes from psychodynamic theory and causality to an atheoretical and agnostic approach to diagnosis of mental disorders (North 2015), has been described as a *‘philosophical rift between two psychiatric views: psychoanalytical Kraepelins and medical Neo-Kraeplins; a shift from psychoanalysis to pharmaceutical biomedicine’.* Although the concept of causality ended for psychiatric disorders in DSM-III, PTSD and adjustment disorder remained as the only two psychiatric conditions defined by cause. Through subsequent revisions, PTSD, allocated as an anxiety disorder in DSM-IV, was re-classified in a new trauma and stressor category in DSM-5. Although a new criterion ‘D; altered cognition and mood’, and a ‘dissociative’ subtype of PTSD was added, MUPS were not included in DSM-5 criteria. ICD-11 evolved to define two PTSD constructs: PTSD, with three core criteria and Complex PTSD (CPTSD). In addition to core PTSD criteria, CPTSD comprised three additional criteria defined as disorders of self-organisation (DSO). In contrast to Herman’s (1992) complex PTSD construct, MUPS were not included in ICD-11 CPTSD criteria.

Concurrently with DSM-5 PTSD, a new MUPS category, somatic symptom disorder (SSD) replaced the majority of somatoform disorders in DSM-IV (Henningsen 2018). The SSD construct is agnostic and makes no assumptions about aetiology, that is, SSD does not distinguish between somatic symptoms being either medically explained or medically unexplained. Although general medical diagnoses are not excluded, SDD is defined as a psychiatric disorder that can imply MUPS as mental illness. However, SSD moved the focus from symptom origin to symptom impact. SSD’s enhanced utility was intended to better recognise and help patients with excessive, disproportionate or maladaptive responses to their somatic symptoms, irrespective of cause. Bodily distress disorder (BDD) in ICD-11, replaced most somatoform disorders, including neurasthenia, categorised in ICD-10 (Gureje and Reed 2016). Similarly to SSD, the BDD construct is agnostic, includes both medically explained and unexplained symptoms and attends to symptom impact on patients rather than cause. BDD is classified as a mental disorder, and retains anxiety and depression in diagnostic criteria. As such, BDD diagnosis, like SSD, can imply mental illness for physical symptoms. Bodily distress syndrome (BDS) in ICD PHC-11 (Budtz-Lilly et al. 2015), was developed for use in a wide range of primary care settings worldwide, particularly in low- and middle-income countries. BSS replaced unexplained somatic complaints, medically unexplained symptoms and neurasthenia in ICDPHC-10. Although BSS is defined as a mental disorder and excludes some psychiatric and general medical conditions, some FSS including IBS and fibromyalgia are included in the construct.

1.2.8 Trauma exposure and post-traumatic stress disorder prevalence

PTSD prevalence rates are defined according to timeframes: lifetime prevalence is the percentage of a population meeting PTSD criteria at some stage in their lives; one-year PTSD prevalence is the percentage of a population meeting PTSD criteria within a 12 month time period, and point prevalence is the percentage of a population with PTSD at any one time. Conditional PTSD prevalence is defined as the percentage of people exposed to trauma who develop PTSD.

Although the majority of the population experience exposure to trauma in their lifetime (Benjet et al. 2016), a minority of people develop PTSD (Atwoli et al. 2015). Causality errors between trauma exposure and development of PTSD, has been considered a bias. In some PTSD prevalence estimates use lifetime PTSD, not current PTSD, and are based on only one self-selected, ‘worst experienced trauma’, by participants. The conditional probability of PTSD for 29 types of traumatic events was estimated from analysis of surveys in community-based samples across 24 countries (Kessler et al. 2014). Results from the epidemiological surveys indicated interpersonal violence had the highest PTSD risk and persistence. Furthermore, future trauma exposure and PTSD risk was influenced by previous trauma history (Kessler et al. 2017).

The point prevalence of PTSD is estimated at approximately 3% of the adult population (McManus 2007), and lifetime prevalence estimates range from approximately 1.9% (Alonso et al. 2004) and 8.8% (Ferry et al. 2015). Prevalence rates double in populations exposed to mass conflict and displacement (Steel et al. 2009). Rape, both male and female, is associated with the highest incidence of PTSD, affecting over 50% of survivors. PTSD prevalence was higher in women exposed to rape trauma (10.4%) than men (5%) (Kessler et al. 1995). Lower life-time PTSD prevalence rates are associated with natural disasters, accidents and witnessing death or injury (Bromet et al. 2017).

1.2.9 Culture, post-traumatic stress disorder and medically unexplained physical symptoms prevalence

A literature review that examined cross-cultural applicability of DSM-IV-TR PTSD diagnostic criteria, supported cross-cultural validity of the PTSD construct in diverse cultures. However, significant variation of PTSD presentations across cultures was indicated, and for some cultures, disorders of extreme stress not otherwise specified (DESNOS) described trauma related presentations more accurately than the DSM-IV-TR PTSD (Hinton and Lewis-Fernandez 2011), (Hinton et al. 2013). In a study investigating MUPS in different cultures, approximately 26,000 primary care patients, screened at 15 centres in 14 countries, indicated MUPS as a common problem across cultures in primary care, and which were associated with high level of co-morbidity and disability. The different prevalence rates of MUPS could reflect the diversity of factors in different cultures, and problem of defining MUPS in research (Gureje et al. 1997). Higher rates of somatic symptoms associated with PTSD were attributed to cultural syndromes which could pattern PTSD to particular somatic co-morbidities. An example of a cultural idiom of distress is PTSD-triggered, hyperarousal physical symptoms in Cambodian refugees, which are interpreted as ‘Khyal’ attacks. Khyal is culturally perceived to be a wind-like phenomenon flowing through the body with the blood, that can cause catastrophic physical harm such as stopping the heart or bursting blood vessels in the neck. (Hinton 2016).

1.2.10 Medically unexplained physical symptoms prevalence

General population studies have found that most people experience somatic symptoms of varying severity (Chew-Graham et al. 2017). Results from a Danish study found up 84% of women and 75% of men reported physical symptoms over a two-week period (Fink 2015). Prevalence of at least one MUPS ranged from 40.2% to 49% (Haller et al. 2015). The prevalence of MUPS can be considered in three main groups: 1]: non-specific MUPS; 2]: ICD/DSM mental disorder category MUPS: somatoform; conversion and dissociative disorders.3]: ICD disease category FSS: IBS and FMS. Non-specific MUPS prevalence estimates varied considerably (Fink et al. 2005). In a study of 550 participants in hospital outpatients, the proportion of people with MUPS varied by specialty (Nimnuan et al. 2001). Up to two thirds of people who attended general medicine clinics did not receive a medical diagnosis for their symptoms after 3 months. MUPS were found to be more common in females and in younger age groups. In a MUPS commissioning review,(JCPMH 2017), prevalence rates were estimated as 15-30% of all new healthcare consultations and up to 45% of general medical practitioner (GP) appointments. Furthermore, in hospital care MUPS accounted for 50% of new patients, 20-25% of frequent attenders at outpatient clinics and a 30% increase in hospital admissions. The highest number attended gynaecology clinics followed by neurology clinics (Table 1.2).

Table 1.2 Proportion of people with medically unexplained symptoms attending outpatient specialty clinic based on a study with 550 patients (adapted from Joint Commissioning Panel for Mental Health 2017).

Outpatient Clinic	% People with medically unexplained symptoms
Gynaecology	66
Neurology	62
Gastroenterology	58
Cardiology	53
Rheumatology	45
Respiratory	41
Dental	37
Total	**52 (of which 42% men, 57% women)**

Uncertainty of diagnosis through inconsistent definitions and absence of a classification system for all MUPS could, however, affect the validity of MUPS prevalence estimates in healthcare. In two studies, considerable variation in MUPS coding was found between GPs ranging between 3% and 33% (Fink, Rosendal, 2005). In another study, GP estimates of significant MUPS in clinical practice ranged from 10% to 20% (Rosendal 2007). Prevalence rates have varied considerably between studies for somatoform disorders and FSS. A systematic review and meta-analysis of somatoform disorders and MUPS in primary care (Haller et al. 2015) indicated prevalence rates of 0.8% to 5.9% for somatising disorder and 26.2% to 34.8% for at least one somatoform disorder. Somatisation disorder represents the extreme experience of MUPS with consequent low prevalence in primary care. Lack of clinical utility for somatisation disorder, led to the development of abridged somatisation (Escobar et al. 1998); abridged somatisation forms the basis of the PHQ-15 somatic symptom measure (Kroenke et al. 2002). Globally, fibromyalgia mean prevalence estimates vary between 0.4% and 9.3% (Queiroz 2013), and IBS prevalence rates vary between 1.1% and 45% (Lovell and Ford 2012). In a systematic review, global CFS/ME prevalence rates between 0.2% and 6.41%. The USA prevalence of IC/BPS ranged between 3% and 6% in women, and from 2 to 4% men (Warren 2014).

1.2.11 Co-morbid post-traumatic stress disorder and medically unexplained physical symptoms prevalence

Although research has indicated a comorbid relationship between PTSD and MUPS, epidemiological studies have tended to examine the relationship between anxiety, depression and MUPS. As a consequence, the prevalence of trauma, PTSD and MUPS could be underestimated, which suggested a greater research focus on the role of trauma in MUPS was required (McFarlane et al. 2008). In a systematic review that explored the potential relationship between trauma and MUPS, patients with MUPS reported higher trauma rates compared to controls (Roelofs 2007). In a prospective study examining the risk of people with PTSD developing MUPS, people with lifetime PTSD reported more MUPS than controls, and lifetime PTSD was associated with MUPS more than any other psychiatric disorder (Andreski et al. 1998). A field trial DSM-IV suggested chronic interpersonal trauma, including childhood abuse, was strongly associated with ‘complex’ PTSD and DESNOS, both constructs included MUPS in the diagnostic criteria (Herman 1992), (Roth et al. 1997), (Luxenberg 2001) (Table 1.3).

Table 1.3 Summary Diagnostic Criteria for Disorders of Extreme Stress (DESNOS) (Luxenburg et al. 2001).

I Alteration in Regulation of Affect and Impulses
II Alterations in Attention or Consciousness
III Alterations in Self Perception
IV Alterations in Relation with Others
V Somatisation (two of A-E required)
A Digestive system
B. Chronic Pain
C. Cardiovascular Symptoms
D. Conversion Symptoms
E. Sexual Symptoms
VI Alterations in Systems of Meaning

Three studies investigating the co-morbid relationship between PTSD and MUPS were identified from the literature, which will be discussed in more detail in Chapter Two: (Andreski et al. 1998), (Gupta 2013), (Gupta 2013)

1.2.12 Comorbidity: post-traumatic stress disorder, medically unexplained symptoms, mental disorders and disease

MUPS are associated with twice the standardised mortality ratio for cancer, accidents and suicide (IAPT 2008). Although PTSD increases the risk of co-morbid disease, a reciprocal relationship can occur whereby medical conditions can increase the risk of developing PTSD. In a general population sample of approximately 3000 community based-participants, PTSD was associated with an increased risk of angina, heart failure and bronchitis, after adjusting for sociodemographic factors, alcohol and depression (Spitzer et al. 2009). A matched cohort analysis of retrospective data in veterans found PTSD increased the risk of developing multiple autoimmune disease (O'Donovan et al. 2015). A literature review described a range of MUPS, and diseases associated with PTSD including cardiovascular disease and immunological disorders (Gupta 2013). Conversely, a national epidemiological study indicated a 6.5% 12-month PTSD prevalence associated with medical disorders (Sommer et al. 2018). A meta-analysis of 24 observational studies of patients with a history of myocardial infarction or angina indicated a 12% prevalence of PTSD (Edmondson et al. 2012).

A cross-sectional study of veterans in a hospital setting indicated 90.2% comorbidity of psychiatric disorders with PTSD (Klaric 2017). Across diverse epidemiological samples, approximately 50% of people with PTSD also had major depressive disorder (Flory and Yehuda 2015).The co-morbid relationship between MUPS and psychiatric conditions was investigated in a cross-sectional survey of a community-based registry of 4000 twins (Schur et al. 2007). Nine conditions, CFS, IBS, FMS, low back pain, TMJ syndrome, chronic headache, major depression, panic attacks and PTSD were evaluated. Results indicated a high degree of comorbidity between conditions and a possible common biological pathway. Given the high degree of overlap between MUPS conditions, screening for MUPS co-morbidity could lead to improved clinical care when examining individual MUPS conditions. MUPS co-morbidity was also suggested by two community health surveys that estimated the prevalence of MUPS in people aged over 25 years (Park and Gilmour 2017). The majority of people met criteria for more than one MUPS condition: 30% of people with CFS also had FMS and 15% had MCS. Among people with FMS, 23% also had CFS, and 13% had MCS. Finally, in people with MCS, 9% had CFS and 10% had FMS. Over 50% of people with MUPS also reported chronic disease and 35% of people reported anxiety and depression.

1.3 Disability

People with PTSD and MUPS report a high level of disability (Rask et al. 2014). In a community sample of participants aged 55 years and older, persisting PTSD was a major indicator of significant disability in later life compared to people without PTSD. Disability was high in all domains defined by the WHO disability assessment schedule (WHODAS)(Tarvonen-Schroder et al. 2019): cognition, mobility, self-care, getting along with others and participation. In a 10-year follow up study in primary care, early onset and chronic MUPS were associated with work related disability, with a substantial proportion of patients with somatoform disorder receiving pension benefits and reporting significant psychiatric and medical co-morbidity. A cross-sectional study in medical outpatients found young adult patients with MUPS registered significant difficulty with household and occupational tasks (Rao et al. 2019). In a community review of healthcare utilisation and employment history (Park and Gilmour 2017), approximately 55% of people with MUPS experienced long-term unemployment.

1.4 Costs

The overall costs of MUPS to the UK economy due to impaired quality of life and sickness absence, has been estimated at £14 Billion per annum in the working age population (Bermingham et al. 2010). National Health Service (NHS) spending on MUPS has been estimated at £3 Billion which is equivalent to 10% of total NHS Expenditure on services for working aged people in England. In a London- based MUPS primary care pilot, the prevalence of severe MUPS was approximately 1% of 3 GP Practice populations, with an estimated cost of £100 million per annum for 227 patients over a 24 month period (NHS 2011). In the USA, an estimated 16% of health expenditure was for managing physical symptoms co- morbid with mental health conditions (Barsky et al. 2005).

Literature exploring costs associated with PTSD were restricted to populations exposed to conflict, both civilian and active military. The combined direct and indirect costs of PTSD to the Northern Ireland economy has been estimated at £201 million (Ferry et al. 2015). A systematic approach to detecting false PTSD was undertaken due to the high and escalating benefit costs associated with PTSD (Matto 2019). National veteran PTSD disability payments in the USA were estimated at $4.3 billion, accounting for 42% of all disability payments. Findings from the evaluation estimated that malingering occurred in 20-30% of PTSD related personal injury claims.

1.5 Explanatory models: co-morbid post-traumatic stress disorder, medically unexplained physical symptoms and disease

Theoretical models have been proposed to help explain the relationship between PTSD, MUPS and disease, which should be regarded as working hypothesises rather than evidence-based facts (Damasio 2006). Explanatory models that connect trauma to mind, brain and body challenge Cartesian dualism and the concept of ‘medically unexplained’; many persisting physical symptoms have pathophysiological hypotheses: *‘We have moved beyond the concept that somatic sensations ...are... imagined symptoms in the PTSD victim...sensations represent actual physiological changes in the body region encompassing messages of the old threat’* (Scaer 2007).

Cognitive models of PTSD suggest symptoms can be due to excessive negative appraisal of trauma. Persistence of PTSD symptoms is proposed to occur when processing of trauma leads to a continuing sense of threat in the present (Ehlers and Clark 2000). Cognitive behavioural models of persisting MUPS, suggests an autopoietic process of symptom generation and maintenance through interaction of predisposing, precipitating and perpetuating factors (Deary et al. 2007). The perpetuation of PTSD and MUPS symptoms can lead to chronic activation of the stress response with consequential neurological, endocrinological and immunological dysregulation.

PTSD has been considered to cause enduring neurohormonal and autonomic nervous system dysregulation comparable with a chronic stress response (Yehuda 2001). Dysregulation of the hypothalamus-pituitary-adrenal (HPA) axis, which is fundamental to fight or flight survival responses, can lead to low levels of the stress hormone, cortisol. Postulated consequences of HPA dysregulation and inappropriate cortisol secretion include reduced immunity to infection, autoimmune disease and metabolic syndrome (Silverman and Sternberg 2012). Childhood trauma is associated with long-term HPA axis stress dysregulation into adulthood (Kuhlman et al. 2015).

Advances in neuroimaging and neural network theory have provided further insights into brain-body interactions in trauma, PTSD, MUPS and social implications: *‘It is tempting and encouraging to believe ...that neurobiology cannot only assist us with the comprehension and compassion of the human condition...it can help us understand human conflict and contribute to its alleviation’* (Damasio 2006). Neuroimaging has demonstrated functional and structural brain changes associated with PTSD in the hippocampus and amygdala (Klaming et al. 2019). Neuroimaging has been utilised to investigate somatoform and conversion disorders (Boeckle et al. 2016), and dissociation (van Huijstee and Vermetten 2018).

Trauma has been proposed to induce dissociative ‘freeze’ responses (Scaer 2007, p. 110). Under this model, trauma induced freeze/ dissociative suppression of normal perception may lead to retention of traumatic memory in physically damaged parts of the body. As such, previously injured parts of the body can trigger PTSD and MUPS symptoms, which includes dissociative and conversion disorders. Postulated mechanisms that can help explain symptoms and signs, such as intermittent limb swelling, and skin discolouration are through dysregulation of blood flow mediated by the autonomic nervous system. Childhood abuse has been associated with a wide range of mental and physical disorders (Springer et al. 2003) , which includes PTSD, chronic pain, fibromyalgia and CFS/ME. Compared to controls, adults with a history of childhood abuse report more genitourinary and gastrointestinal symptoms, IC and migraine (Scaer 2007, pp. 122-124). Postulated common biological mechanisms include autonomic oscillations and visceral smooth muscle contractions, which cannot be measured using contemporary laboratory techniques. An explanatory model for the association between dissociative freeze responses, PTSD and MUPS have been described by the polyvagal theory (Porges 2009). This model proposes a system for social engagement and disengagement through fight, flight and freeze responses. Two immobilisation responses are described: safe and relaxed social immobilisation, and traumatic, dissociative-freeze immobilisation. Between both states, fight and flight responses mediate adaptation. States of fight, flight and freeze can be PTSD triggered and can lead to physical symptoms.

Historically, Freud, who had initially trained as a neurologist and originated the modern concept of hysteria, abandoned attempts to develop a neural network theory of mind, and a brain-based explanation of hysteria, due to scientific and technological restrictions of his day (Dayan and Olliac 2010):*'It strikes me myself as a little strange that the case histories I write...lack the serious stamp of science. I must console myself with the reflection that the nature of the subject is evidently responsible for this, rather than any preference of my own'. Freud 1895.* Developments in statistical physics, neuroscience and computational psychiatry suggest new perspectives on the vital role to health of dynamic, iterative, and interconnected interactions between brain, body and the environment. The 'free energy principle' (FEP), a Bayesian statistical model of adaptation (Friston et al. 2006), is a purported fundamental principle of biological systems described as: *"a framework within which to explain the constitutive coupling of the brain to the body and the environment".* (Allen 2018) . Furthermore, the FEP theoretical framework suggests the form and function of the brain is iteratively shaped by interaction with the body and external environment. The Bayesian statistical FEP account of hysteria provides a mathematical explanatory model for the extensive and heterogeneous range of sensory and motor symptoms (Edwards et al. 2012).

1.6 Thesis aims and objectives

The literature indicates a significant relationship between PTSD and MUPS, and both conditions are associated with considerable morbidity, disability and costs. The co-morbid relationship between PTSD and MUPS has been described in a literature review (Gupta 2013). The odds of experiencing somatic symptoms has been shown to be higher in individuals with a history of PTSD compared to those without (Andreski et al. 1998), (Afari et al. 2014). However, no studies were identified from the literature that determined the prevalence of co-morbid PTSD. Additionally, no studies were identified that examined the effects of PTSD and MUPS on patients. Therefore, this thesis aims to explore the strength of the co-morbid relationship between PTSD and MUPS, and the impact of both conditions on patient healthcare experiences. This will be achieved by two main objectives:

- To conduct a systematic review and meta-analysis to estimate the prevalence of co-morbid PTSD and MUPS

- To examine the patient journey of people with PTSD and MUPS through a qualitative study.

2 Chapter Two: A systematic review and meta-analysis investigating the prevalence of co-morbid post-traumatic stress disorder and medically unexplained physical symptoms

2.1 Introduction

Medically Unexplained Physical Symptoms (MUPS) have been said to be associated with Post -Traumatic Stress Disorder (PTSD) more than any other mental health condition (Andreski et al. 1998). Although Andreski et al. (1998)'s prospective study investigated the risk of developing somatising symptoms in people with PTSD, lifetime, not current PTSD was examined. Current PTSD provides a point prevalence estimate and a temporal association between PTSD and MUPS. A narrative review provided an overview of the association between PTSD and MUPS but did not provide a systematic literature search or meta-analysis (Gupta 2013). The association between psychological trauma and functional somatic syndromes (FSS) was investigated through as systematic review and meta-analysis (Afari et al. 2014). Although the study definition of psychological trauma included PTSD, it was not clear if a validated diagnostic statistical manual of mental disorders (DSM) or international classification of diseases (ICD) PTSD definition was examined. (Andreski et al. 1998) and (Afari et al. 2014) provided relative risk, and not an absolute prevalence estimate for co-morbid PTSD and MUPS. Furthermore, FSS form only part of a more extensive definition of MUPS (Fink et al. 2005). To the author's knowledge, no study has systematically reviewed the literature examining the relationship between current PTSD, as defined by ICD or DSM, and a comprehensive range of MUPS. This chapter addresses this gap in research and reports a systematic review and meta-analysis of the prevalence of co-morbid PTSD and MUPS. The PRISMA 2009 checklist provided a structured framework for this review (Moher et al. 2009).

2.2 Aims and objectives

This review aimed to identify and analyse prevalence data from existing scientific literature to explore the relationship between PTSD and MUPS.

The objectives were:

1. To systematically review the literature to identify relevant papers on studies that contain prevalence data on PTSD and MUPS.
2. To meta-analyse the data extracted from the relevant studies to estimate the prevalence of PTSD and MUPS.
3. To assess the risk of bias of included studies.
4. To assess heterogeneity and moderator effects on the prevalence of PTSD and MUPS through meta-regression.

2.3 Methods

2.3.1 Protocol

This review, CRD42016028007, was registered on 01 January 2016. The study protocol can be found on the International Register of Prospective Reviews (PROSPERO) (hhtp:www.crd.york.ac.uk/prospero. 2020).

2.3.2 Eligibility Criteria

This review was global in scope, and it was anticipated that an extensive and heterogeneous literature return would follow the search. Inclusion and exclusion criteria were applied, with eligible studies required to contain prevalence data for both PTSD and MUPS. Relevant study designs included observational studies, both analytical and descriptive, cross-sectional studies, case-control studies and cohort studies. Experimental studies, both randomised and non-randomised, were also included if the report held prevalence data for current PTSD, as defined by DSM versions III, III-R, IV, IV-TR and V, or ICD version 10. (Grimes and Schulz 2002, pp. 57-61).

Studies with adult participants aged 18 years and over, and a minimum sample size of 50 were included. The minimum sample size was based on the central limit theorem, which states that the sampling distribution of the mean of any variable, will be normal or nearly normal if the sample size is greater than 30 participants (Islam 2018). As diverse study populations were anticipated in this review, a minimum sample size of 50 participants was set. Non-English language search-terms and studies were excluded due to resource constraints such as the availability of translators and associated costs.

2.3.3 Information sources

This systematic review and meta-analysis used five electronic healthcare databases. The OvidSP Interface databases were searched on 24 June 2015, using the search criteria outlined in section 3.4. The OvidSP interface databases included Ovid Medline (R) 1946 to 24 June 2015, PsychINFO, 1806 to 24 June 2015, AMED in Ovid 1985 to 24 June 2015 and Embase 1947 to 24 June 2014. The CINHAL 1937 to search date (12 July 2015).

2.3.4 Search strategy

The search strategy was developed to provide a comprehensive and reproducible method of identifying studies containing the prevalence rates of both PTSD and MUPS. Terminology relating to PTSD and MUPS was first sought from the author's and supervisors' expert knowledge, and from the existing literature. Gupta (2013), (Afari et al. 2014) and Improved Access for Psychological Therapies (iapt) for MUPS (iapt 2014), were sources of key terms. Additional key terms were identified through synonyms and common root words with truncations. Related Medical Subject Headings (MeSH) were also used. The search strategy was refined through trial to ensure an inclusive result (Appendix C).

2.3.5 Study selection

All papers derived from the search were exported to Endnote reference manager (Analytics 2014) and all duplicate papers were then removed. Two reviewers, author (AJD) and Dr Laurence Astill Wright (LAW), held individual Endnote Databases. Utilising a flow chart that listed inclusion and exclusion criteria the two reviewers independently screened all identified papers for eligibility. Initially, all papers were screened independently by both reviewers by title, which was followed by meetings between reviewers, to evaluate and agree papers to include. Where discrepancy in included papers existed, both reviewers re-examined and critically discussed the titles to reach agreement regarding inclusion. Papers included by title were then independently assessed by both reviewers according to abstract. Meetings between reviewers were similarly held to review papers eligible by abstract to reach agreement regarding inclusion. Finally, both reviewers independently reviewed each paper included by abstract according to full text. Further meetings were similarly held to agree inclusion of full-text papers for study inclusion. Throughout the selection process, third party reviewers were available to adjudicate for any disagreements between the two reviewers (JB and CL).

2.3.6 Data collection process and selected data items

A customised Excel sheet was developed to record data extracted from full text papers. Data collected included information on age, gender, sample size, response rate, study location, study populations, ethnicity, study design, PTSD definition and measures, and MUPS definition and measures. Data was extracted and recorded on to an Excel sheet by both reviewers independently (AJD and LAW). Regular skype meetings between the two reviewers followed independent data extraction to critically appraise individual results and to agree on data for inclusion in the review. For longitudinal study designs that contained PTSD and MUPS prevalence data, baseline data (T1) studies were extracted and if unavailable, follow-up data (T2) were included.

2.3.7 Risk of bias in individual studies

Bias is defined as a systematic error that can undermine data validity and estimates of effect size (Littell 2008, pp. 72-74, 173). For this study, bias could misrepresent the prevalence estimate of co-morbid PTSD and MUPS and the concomitant ability to make valid inferences from the study's observations. Although methods have been developed to minimise bias, it can still occur in studies conducted to the highest standards (Hoy et al. 2012). As such, a consistent and comprehensive risk of bias assessment is required to determine the validity of study findings. Due to the lack of appropriate risk of bias tools for observational studies, Hoy et al.(2012) developed a 10-point risk of bias tool for prevalence studies based on the Leboeuf-Yde and Lauritsen tool (Leboeuf-Yde and Lauritsen 1995). This 10-point tool has four external validity and six internal validity scores, rated as either high or low, and a third rating to assess overall risk of bias as high, medium or low. In their study, Hoy et al. (2012) found an inter-rater overall agreement of 91% and Kappa statistic at 0.82 for this tool.

Using the Hoy et al. (2012) risk of bias tool for prevalence studies, a risk of bias assessment was undertaken for each study in two steps. Firstly, the total of 10 external and internal validity ratings were obtained for each study independently by two raters (AJD and LAW). This process was followed by further assessment by the two raters to reach agreement on validity ratings where discrepancies existed. Secondly, the overall risk of bias rating was subjective, although individual ratings across the 10 domains informed this assessment. The overall risk of bias for each paper was initially assessed by the two raters independently (AJD and LAW), which was followed by joint rater assessment (AJD and LAW) for each paper where there was disagreement. Third party adjudication was available for failure to resolve potential disputes between the two raters (JB and CL).

When 10 or more studies were available for meta-analysis, funnel plots (Sterne et al. 2011) were produced to indicate the potential presence of study bias. Main sources of bias include publication bias, whereby published studies are not representative of all studies undertaken, and small study bias, whereby smaller samples can be subject to less rigorous methodology. Both publication bias and small study bias can produce larger effect size estimates (Littell 2008, pp. 112-116). Other possible sources of funnel plot asymmetry are true heterogeneity, selection bias and chance (Higgins 2010, pp. 313-319). When funnel plot inspection revealed asymmetry, no further statistical testing such as 'trim and fill' (Mavridis and Salanti 2014) was undertaken due to low statistical power inherent in these methods.

2.3.8 Summary measures and synthesis of results

For this review, hypothesis-led categorisation generated four subgroups according to whether participants met the diagnostic criteria for PTSD and MUPS, had been exposed to trauma or participated in studies in the general population. These four subgroups included prevalence rates of PTSD in studies of participants with MUPS; prevalence rates of MUPS in studies of participants with PTSD; and prevalence of PTSD, MUPS and co-morbid PTSD and MUPS, in studies of trauma- exposed participants and the general population. The proportion of PTSD, MUPS or co-morbid PTSD and MUPS was estimated as n with PTSD or MUPS or PTSD and MUPS / sample n.

It was hypothesised that the prevalence of comorbid PTSD and MUPS would be higher in veterans and refugees than the general population due to likelihood of severe and more complex presentations of PTSD; that rates would vary across countries due to different rates of both PTSD and MUPS in different populations; and that rates would be higher if participants were recruited from tertiary or secondary care than other healthcare settings or the general population due to a greater likelihood of severe of illness.

Study characteristics were summarised within the four subgroups outlined above. descriptive statistics were calculated for each study. Characteristics included age, gender, sample size, response rate, study location, study populations, ethnicity, study design, PTSD definition and measures, MUPS definition and measures. For study characteristics with continuous data, the mean of the data from individual studies was calculated where the distribution was normal. The standard deviation (SD) was calculated at the subgroup level from the mean of individual studies. In cases of non-normally distributed data from individual studies, the median and interquartile range (IQR) were calculated. For nominal data, the raw number and percentage were calculated. SPSS version 25 (IBM 2017) was used to calculate descriptive study characteristics. The summary study characteristics were not weighted for study sample size. PTSD and MUPS prevalence rates may have been subject to aggregation bias, an error of assumption that the statistical relationship between variables for a group, also applies to the individuals in a group. The average prevalence rates for PTSD and MUPS in each subgroup were calculated using samples of people from heterogenous cohorts. The group statistic may therefore not be representative of individual experiences.

To calculate prevalence estimates, data were pooled for each of the four sub- groups using meta-analysis, which was conducted using metaprop in Stata version 13.1 (StataCorp 1985) by Dr Catrin Lewis and Professor Stanley Zammit, with involvement from AJD. Forest plots (Verhagen and Ferreira 2014),(Sedgwick 2015) were used to summarise results from meta-analyses. These included a mean and 95% confidence interval (CI) for each study as well as an overall prevalence estimate.

2.3.9 Heterogeneity

Heterogeneity, also termed diversity, defines differences between studies in a systematic review (Higgins 2010, pp. 276-284). The three main categories of heterogeneity are methodological, clinical and statistical. Methodological heterogeneity describes variability in study design, clinical heterogeneity in participants and outcomes, and statistical heterogeneity describes variability in how data is analysed. Heterogeneity in the four pre-specified subgroups was explored through meta-regression using the metareg function in Stata when data was available from 10 or more studies (StataCorp 1985). Heterogeneity was assessed using both the I^2 statistic and visual inspection of forest plots. The I^2 test statistic is a measure of the proportion of variation across studies that is not due to chance. The result is interpreted in relation to potential clinical and methodological factors underlying heterogeneity. An interpretive scale for the I^2 statistic is provided in **Table** 2.1 (Higgins 2010, p. 278).

Table 2.1 Guide to interpretation of I^2 Statistic (adapted from Higgins and Green 2010).

I2 (%)	Heterogeneity
0 – 40	Might not be important
30-60	May be moderate
50-90	May be substantial
75-100	Considerable

2.4 Results

2.4.1 Study selection

The literature search yielded 9,654 references and following the removal of 2,293 duplicate titles, there were 7,361 individual papers. 6,804 references were excluded by title and abstract resulting in 557 papers for full text review. 482 full text papers were subsequently excluded for not meeting eligibility criteria. This resulted in 75 papers eligible for data extraction and risk of bias assessment. Following data extraction, 28 of these papers were excluded from meta-analysis due to insufficient data. A total of 47 studies with co-morbid PTSD and MUPS, were divided into four subgroups for meta-analysis: 18 studies for PTSD in MUPS, 2 studies for MUPS in PTSD, 5 studies for PTSD and MUPS in general population

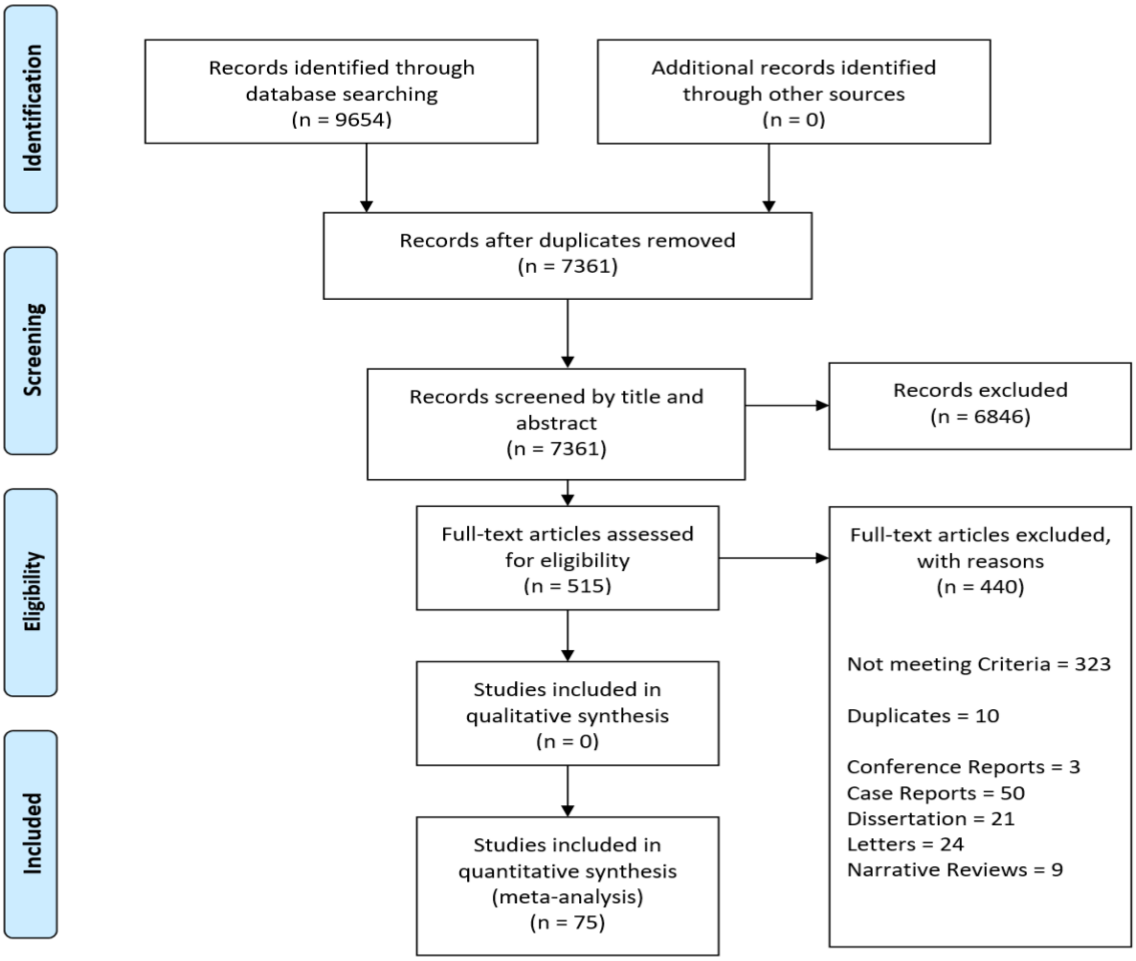


Figure 2.1 Summary of studies identified through systematic literature search for inclusion in meta-analysis; flow-diagram adapted from Moher et al. (2009).

samples and 22 studies for PTSD and MUPS in trauma- exposed population samples. A summary of the study selection process is presented in a PRISMA Flowchart **Figure 2.1**.

2.4.2 Study characteristics

A summary of the main findings, including study characteristics and demographic data, for the 47 eligible studies included in meta-analyses, is provided in **Table** 2.2 to **Table** 2.8 according to the four subgroups. A wide-ranging selection of instruments were used to measure PTSD and MUPS (Appendix D).

All identified studies with participants who had co-morbid PTSD and MUPS

A total of 47 studies, which spanned 19 years between 1996 and 2015, with a total sample size of 30,845 were identified. Studies ranged in size from 50 to 6,510 participants and were divided into four subgroups for a more detailed examination of study characteristics through meta- analysis and random effects meta-regression. 91.5% (k=43) of the studies were cross-sectional in design with 8.5% (k=4) other study designs; one case control study, one descriptive study and two cohort studies. 42.6% of studies (k=20) were undertaken in healthcare settings, 23.4% (k=11) in veterans' healthcare settings and 34% (n=16) in population settings, of which 75% (k=12) were civilian and 25% (k=4) were military populations. The majority of the studies were conducted in North America with 66% (k=31) in the USA and 2.1% (k=1) in Canada. 21.3% (k=10) of studies were conducted in Europe and 8.5% (k=4) in Asia with 2.1% (k=1) in Australia. The majority of study populations were civilian (61.7%, k=29), with 36.2% veteran (k=17) and 2.1% (k=1) refugee. The predominant ethnicity reported by studies in this subgroup were 40.4% (n=19) White,12.8% (n=6) as Black, 8.5% (n=4) other ethnic groups and 38.3% (n=18) of studies did not specify ethnicity. Mean ages for this subgroup ranged from 40.9 (SD=4.0) to 45.1(SD=5.1), percentage female 58.6 (SD=29.6) to 62.4 (SD=21.2) and response rate from 56.2 (SD=22.6) to 71.6 (SD=16.2).

PTSD was defined by DSM-IV (74.5%, n=35), DSM-III=R (19.1%, n=9) and DSM-III (6.4%, N=3). MUPS definitions were varied and comprised three main groups: Somatisation (31.9%, n=15), which included somatoform disorder (6.4% n=3), non-somatoform disorder somatisation (19.1%, n=10), chronic idiopathic urticaria (Valancius et al.), (2.1%, n=1) and tinnitus (2.1%, n=1). Secondly, functional somatic syndromes (FSS), (40.4%, n=19), which included chronic fatigue (10.6%, n=5), fibromyalgia (6.4%, n=3), irritable bowel syndrome (Welsh et al.) (12.8%, n=6), psychogenic non-epileptic seizures (PNES), (2.1%, n=1), post-concussion syndrome (PCS), (4.3%, n=2), gulf war multisymptom Illness (MSI), (4.3%, n=2). Thirdly, chronic pain (27.7%, n=13), which included non-cyclical mastalgia (2.1%, n=1), temporomandibular joint disorders (TMD), (2.1%, n=1) and chronic headache, (2.1%, n=1).

The majority of PTSD measures were validated (97.9%, n=46): self-reports (59.6%, n=28) and validated interviews (38.3%, n=18/47). The majority of MUPS measures were validated, although considerably less compared to PTSD (57.4%, n=27): self-reports (36.2%, n=17), validated interviews (17%, n=8) and validated clinical assessments (4.2%, n=2). There were a higher number of non-validated MUPS measures compared to PTSD measures; non validated self-reports (23.4%, n=11) and non-validated clinical assessments (19.1%, n=9). The majority life event checklist (LEC) trauma- types were exposure to war zones (38.3%, n=18), interpersonal trauma (19.1%, n=9) and sexual trauma (6.4%, n=3).

Co-morbid PTSD/ MUPS subgroup characteristics

PTSD in studies of participants with MUPS: This group comprised 18 studies with total sample size of 2,984 that varied between 50 to 714 participants, with a publishing time range of 19 years from 1996 to 2015. The main PTSD definition used was DSM-IV (83%, n=15) with DSM-III-R comprising 17% (n=3). The response rate was modest at 56.2% (SD=22.6%) and the majority of study designs were cross-sectional 88.9% (k=16) with 11.1% (k=2) other designs; a case control study and a descriptive study. The mean age of participants in this group was 45.1(SD=5.1), with the majority female at 58.6% (SD=29.6) and 81.8% white ethnicity. Studies were mostly conducted in North America: USA (61%, k=11) and Canada (5.6%, k=1). The other studies were conducted in Europe (22.2%, k=4) and West Asia (Israel,11.1%, k=2). 27% of participants were recruited from general populations (k=5), 22.2% from tertiary healthcare (k=4), 22.2% from secondary healthcare (k=4), 11.1% from primary healthcare (k=2) and 16.7% from veterans affairs healthcare (k=3). The majority of participants were civilians (77.8%, k=14) and the other participants were veterans (22.2%, k=4). Chronic pain (33.3%, k=6) and chronic fatigue (22.2%, k=4) were the main MUPS conditions in this subgroup. Fibromyalgia (16.7%, k=3), IBS (11.1%, k=2), PCS (5.6%, k=1), with 5.6% (k=1) Somatisation and 5.6% (k=1) MSI. The majority of PTSD measures were validated: validated self-report (66.7%, n=12) and validated interviews (33.3%, n=6). The majority of MUPS measures were non-validated (61.1%, n=11): non-validated self-reports (27.8%, n=5) and clinical assessments based on non-validated clinical guidelines (33.3%, n=6). The majority of LEC trauma type were inter-personal trauma (43.8%, n=7) and war exposure (22.2%, n=4).

MUPS in Studies of participants with PTSD: This group comprised 2 studies with a total sample size of 229; one study with 129 participants and one with 100 participants with a time range of 6 years from 1997 to 2003. The mean age was 41.5 (SD=9.2), however, majority ethnicity, percentage female and response rates for this subgroup were not recorded in the studies. Both studies were cross-sectional in design located geographically 50% (k=1) in North America (USA) and 50% (k=1) in Europe (Croatia). One study was based in tertiary care (50%, k=1) and one in secondary care (50%, k=1). Both studies comprised DSM-IV defined PTSD and chronic pain MUPS. PTSD measures were validated self-reports (100%, n=2), and MUPS measures were validated self -reports (50%, n=1), and non-validated self-reports (50%, n=1). LEC trauma-type was war exposure in both studies.

Co-morbid PTSD and MUPS in studies of the general population: This group comprised 5 studies with a total sample of 9,141 that varied in size from 248 to 6,510, with a median population of 509, inter-quartile range (IQR) 333.5-3982, and a response rate of 66.6% (SD=18.8). The publication time range for all studies was 16 years from 1998 to 2014, and all studies were cross-sectional design. The mean age was 40.9 (SD=4.0) with a majority female participation 62.4% (SD 21.2) and majority black ethnicity 75% (n=3). The main geographical location was North America (USA, 80%, k=4) with 20% (k=1) in East Asia (South Korea). General population studies comprised 40% (k=2), primary healthcare locations 40% (k=2) and 20% (k=1) was a veteran affairs health care provider. 80% (k=4) of the studies were civilian and 20% (k=1) was a veteran study. 40% (n=2) of MUPS conditions were IBS, 40% (n=2) somatisation/ MUPS and 20% (n=1) was chronic pain. 60% (n=3) PTSD diagnosis was through DSM-IV and 40% (n=2) were DSM-III. 100% of PTSD measures were validated (n=5): 60% validated interview (n=3), and 40% validated self-report (n=2). The majority of MUPS measures were validated (60%, n=3): validated interview 40% (n=2) and validated self-report 20% (n=1). Non- validated self-reports accounted for 40% (n=2) of MUPS measures. No data was available for LEC trauma type in this subgroup.

Co-morbid PTSD and MUPS in studies of participants exposed to trauma: This group comprised 22 studies with a total sample of 18,491 that varied in size from 52 to 4420, with a median population of 303 (IQR), 123.5–1259.5) and a response rate of 71.6% (SD=16.2). The publication time range was 19 years from 1996 to 2015. 95.5% (k=21) were cross sectional design and 4.5% (k=1) was a cohort study. The mean age was 44.1 (SD =5.8) with majority female 55% (SD=39.2) and white ethnicity 69.2% (n=9). The majority geographical location was North America (USA) 68.2% (k=15), Europe 22.7% (k=5), Caucasus 4.5% (k=1) and Australia 4.5% (k=1). Population based studies comprised 40.9%, veteran affairs healthcare providers 31.8% (k=7), secondary health care (k=2) and tertiary healthcare (k=2) each accounted for 9.1%. A primary healthcare setting and prenatal clinic accounted for 4.5% of the subgroup (k=2). 40.9% (k=9) of studies were non-syndrome MUPS ,18.2% (k=4) chronic pain, 13.6% (k=3) somatoform disorder, 9.1% (k=2) IBS and 4.5% (k=1) each for chronic fatigue, PNES, PCS and MSI. 72.7% (n=16). PTSD measures were DSM-IV, 22.7%(n=5) DSM-III-R, 4.5% (n=1) DSM-III. 95.5% (n=21) of PTSD measures were validated: validated interview 40.9%, (n=9), and validated self-report 54.5%, (n=12). The majority of MUPS measures were validated: validated self-report 50%, (n=11), and validated interview 27.3%, (n=6). The majority LEC trauma types was exposure to war zone 57.1%, (n=12).

Table 2.2 Summary of demographic data of studies identified investigating co-morbid post-traumatic stress disorder and medically unexplained physical symptoms.

	Prevalence of PTSD in studies of participants with MUPS; k= 18	**Prevalence of MUPS in studies of participants with PTSD; k=2**	**Prevalence of PTSD and MUPS in studies of the general population; k= 5**	**Prevalence of PTSD and MUPS in studies of participants exposed to trauma; k= 22**
Total sample size	2984	229	9141	18491
Average Sample Size	91.0^c (76.8 - 168.5)^d	114.5^c (100.0 – 129.0)^e	509.0^c (333.5 – 3982.5)^d	303.0^c (123.5 – 1259.5)^d
Age (years)	45.1^a (5.1)^b	41.5^a (35 - 48)^e	40.9^a (4.0)^b	44.1^a (5.8)^b
Percentage Female	58.6^a (29.6)^b	0.0 (0.0)	62.4^a (21.2)^b	55.0^a (39.2)^b
Percentage Response Rate	56.2^a (22.6)^b	§	66.6^a (18.8)^b	71.6^a (16.2)^b

§=no available data; a=mean; b=Standard Deviation; c=Median; d=Interquartile range; e=range; MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder.

Table 2.3 Summary of ethnicity and study location of studies identified investigating co-morbid post-traumatic stress disorder and medically unexplained physical symptoms.

	Prevalence of PTSD in studies of participants with MUPS (k=18): n (%)	**Prevalence of MUPS in studies of participants with PTSD (k=2): n (%)**	**Prevalence of PTSD and MUPS in studies of the general population (k=5): n (%)**	**Prevalence of PTSD and MUPS in studies of participants exposed to trauma (k=22): n (%)**
Majority Ethnicity				
Asian	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Black	1 (9.1)	0 (0.0)	3 (75.0)	2 (15.4)
White	9 (81.8)	1 (100.0)	0 (0.0)	9 (69.2)
Other	1 (9.1)	0 (0.0)	1 (25.0)	2 (15.4)
Study Location				
Australia	0 (0.0)	0 (0.0)	0 (0.0)	1 (4.5)
Caucasus	0 (0.0)	0 (0.0)	0 (0.0)	1 (4.5)
East Asia	0 (0.0)	0 (0.0)	1 (20.0)	0 (0.0)
Europe	4 (22.2)	1 (50.0)	0 (0.0)	5 (22.7)
North America	12 (66.7)	1 (50.0)	4 (80.0)	15 (68.2)
South Asia	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
West Asia	2 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)

MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder.

Table 2.4 Summary of study design and population source for studies investigating co-morbid post-traumatic stress disorder and medically unexplained physical symptoms.

	Prevalence of PTSD in studies of participants with MUPS (k=18): n (%)	Prevalence of MUPS in studies of participants with PTSD (k=2): n (%)	Prevalence of PTSD and MUPS in studies of the general population (k=5): n (%)	Prevalence of PTSD and MUPS in studies of participants exposed to trauma (k=22): n (%)
Study design				
Cross-sectional	16 (88.9)	2 (100.0)	5 (100.0)	21 (95.5)
Cohort	0 (0.0)	0 (0.0)	0 (0.0)	2 (9.1)
Case Control	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)
Descriptive	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)
Study Population				
General Population	5 (27.8)	0 (0.0)	2 (40.0)	9 (40.9)
Primary healthcare	2 (11.1)	0 (0.0)	2 (40.0)	1 (4.5)
Secondary healthcare	4 (22.2)	1 (50.0)	0 (0.0)	2 (9.1)
Tertiary healthcare	4 (22.2)	1 (50.0)	0 (0.0)	2 (9.1)
Veteran affairs healthcare	3 (16.7)	0 (0.0)	1 (20.0)	7 (31.8)
Other	0 (0.0)	0 (0.0)	0 (0.0)	1 (4.5)
Population subtype				
Civilians	14 (77.8)	0 (0.0)	4 (80.0)	11 (50.0)
Veterans/Military	4 (22.2)	2 (100.0)	1 (20.0)	10 (45.5)
Immigrants	0 (0.0)	0 (0.0)	0 (0.0)	1 (4.5)

MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder

Table 2.5 Summary of post-traumatic stress disorder (PTSD) classification systems and investigation instruments used by studies investigating co-morbid PTSD and medically unexplained physical symptoms.

	Prevalence of PTSD in studies of participants with MUPS (k=18): n (%)	**Prevalence of MUPS in studies of participants with PTSD (k=2): n (%)**	**Prevalence of PTSD and MUPS in studies of the general population (k=5): n (%)**	**Prevalence of PTSD and MUPS in studies of participants exposed to trauma (k=22): n (%)**
DSM/ ICD Classification system				
DSM-III	0 (0.0)	0 (0.0)	2 (40.0)	1 (4.5)
DSM-III-R	3 (16.7)	0 (0.0)	0 (0.0)	5 (22.7)
DSM-IV	15 (83.3)	2 (100.0)	3 (60.0)	16 (72.7)
DSM-5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
ICD-10	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
PTSD Measures				
Interview validated	6 (33.3)	0 (0.0)	3 (60.0)	9 (40.9)
Interview non-validated	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Self-Report validated	12 (66.7)	2 (100.0)	2 (40.0)	12 (54.5)
Self-report non-validated	0 (0.0)	0 (0.0)	0 (0.0)	1 (4.5)

DSM=Diagnostic and Statistical Manual of Mental Disorders; ICD=international classification of diseases; MUPS=medically unexplained physical symptoms.

Table 2.6 Summary of medically unexplained physical symptoms (MUPS) and disorders and investigation instruments used by studies investigating co-morbid post-traumatic stress disorder and MUPS.

MUPS Conditions	**Prevalence of PTSD in studies of participants with MUPS (k=18): n (%)**	**Prevalence of MUPS in studies of participants with PTSD (k=2): n (%)**	**Prevalence of PTSD and MUPS in studies of the general population (k=5): n (%)**	**Prevalence of PTSD and MUPS in studies of participants exposed to trauma (k=22): n (%)**
Chronic Fatigue	4 (22.2)	(0.0)	(0.0)	1 (4.5)
Chronic Pain	6 (33.3)	2 (100.0)	1 (20.0)	4 (18.2)
Fibromyalgia	3 (16.7)	(0.0)	(0.0)	(0.0)
Irritable Bowel Syndrome	2 (11.1)	(0.0)	2 (40.0)	2 (9.1)
Non- DSM/ICD Somatoform Somatisation	1 (5.6)	(0.0)	2 (40.0)	9 (40.9)
Psychogenic Non- Epileptic Seizures	(0.0)	0 (0.0)	0 (0.0)	1 (4.5)
Somatoform Disorder	0 (0.0)	0 (0.0)	0 (0.0)	3 (13.6)
Post- Concussion Syndrome	1 (5.6)	0 (0.0)	0 (0.0)	1 (4.5)
Multisymptom Illness	1 (5.6)	0 (0.0)	0 (0.0)	1 (4.5)

Table 2.6 (continued).

MUPS Measures	Prevalence of PTSD in studies of participants with MUPS (k=18): n (%)	Prevalence of MUPS in studies of participants with PTSD (k=2): n (%)	Prevalence of PTSD and MUPS in studies of the general population (k=5): n (%)	Prevalence of PTSD and MUPS in studies of participants exposed to trauma (k=22): n (%)
Interview validated	0 (0.0)	0 (0.0)	2 (40.0)	6 (27.3)
Interview non-validated	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Self-Report validated	5 (27.8)	0 (0.0)	1 (20.0)	11 (50.0)
Self-Report non-validated	5 (27.8)	1 (50.0)	2 (40.0)	3 (13.6)
Clinical Assessment validated	2 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)
Clinical assessment non-validated	6 (33.3)	1 (50.0)	0 (0.0)	2 (9.1)

DSM=Diagnostic and Statistical Manual; ICD=International Classification of Diseases; PTSD=post-traumatic stress disorder.

Table 2.7 Summary of Life Event Checklist (LEC) variables reported in studies investigating co-morbid post-traumatic stress disorder and medically unexplained physical symptoms.

Life Event Checklist (LEC variables)	Prevalence of PTSD in studies of participants with MUPS (k=18): n (%)	Prevalence of MUPS in studies of participants with PTSD (k=2): n (%)	Prevalence of PTSD and MUPS in studies of the general population (k=5): n (%)	Prevalence of PTSD and MUPS in studies of participants exposed to trauma (k=22): n (%)
Natural Disaster	0 (0.0)	0 (0.0)	0 (0.0)	1 (4.8)
Fire or Explosion	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Transportation Accident	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Serious Accident	1 (6.3)	0 (0.0)	0 (0.0)	0 (0.0)
Exposure to Toxic Substance	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Physical Assault	1 (6.3)	0 (0.0)	0 (0.0)	0 (0.0)
Assault with Weapon	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Sexual Assault	2 (12.5)	0 (0.0)	0 (0.0)	1 (4.8)
Other unwanted Sexual Experience	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Combat/ War Exposure	4 (25)	2 (100.0)	0 (0.0)	12 (57.1)
Captivity	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Life Threatening Illness or Injury	0 (0.0)	0 (0.0)	0 (0.0)	2 (9.5)
Severe Human Suffering	0 (0.0)	0 (0.0)	0 (0.0)	2 (9.5)
Sudden Violent Death	5 (31.3)	0 (0.0)	0 (0.0)	0 (0.0)
Sudden unexpected death someone close	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Table 2.7 (continued).

Life Event Checklist (LEC variables)	Prevalence of PTSD in studies of participants with MUPS (k=18): n (%)	Prevalence of MUPS in studies of participants with PTSD (k=2): n (%)	Prevalence of PTSD and MUPS in studies of the general population (k=5): n (%)	Prevalence of PTSD and MUPS in studies of participants exposed to trauma (k=22): n (%)
Serious Harm or death to someone else caused by you	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Any other stressful event	3 (18.8)	0 (0.0)	0 (0.0)	3 (14.3)

MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder. k= number of studies in a subgroup, n= number of LEC variables.

Table 2.8 Categorisation of Lifetime Event Checklist (LEC) variables for studies investigating co-morbid post-traumatic stress disorder and medically unexplained physical symptoms.

Trauma Type (LEC variables)	Prevalence of PTSD in studies of participants with MUPS (k=18): n (%)	Prevalence of MUPS in studies of participants with PTSD (k=2): n (%)	Prevalence of PTSD and MUPS in studies of the general population (k=5): n (%)	Prevalence of PTSD and MUPS in studies of participants exposed to trauma (k=22): n (%)
Non-Interpersonal Trauma	2 (12.5)	0 (0.0)	0 (0.0)	3 (13.6)
Inter-personal Trauma	7 (43.8)	0 (0.0)	0 (0.0)	2 (9.5)
War Exposure Military and Civilian	4 (22.2)	2 (100.0)	0 (0.0)	12 (57.1)
Human Suffering	0 ((0.0)	0 (0.0)	0 (0.0)	2 (9.5)
Childhood Trauma	1 (5.6)	0 (0.0)	0 (0.0)	1 (4.8)
Sexual Trauma	2 (12.5)	0 (0.0)	0 (0.0)	1 (4.8)

MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder.

2.4.3 Risk of bias in individual studies

Risk of bias results are presented according to the four main groups of this analysis. **Table** 2.9 includes the risk of bias assessment for the 18 studies investigating PTSD in participants with MUPS. Inspection of **Table** 2.9, indicates a trend for low risk of bias for domains 1-4 (internal validity measures) compared with high risk of bias in domains 1-5 (external validity measures). This trend is comparable with the other thee subgroups as shown in **Table** 2.10, **Table** 2.11, and **Table** 2.12.

Table 2.9 Risk of bias assessment for studies investigating post-traumatic stress disorder in participants with medically unexplained physical symptoms.

Author(s)	Year	1	2	3	4	5	6	7	8	9	10	Overall Risk of Bias
Asmundson et al.	2000	H	H	H	H	L	L	L	L	L	L	**H**
Chung et al.	2010	H	H	H	L	L	L	L	L	L	L	**M**
Ciccone et al.	2005	H	H	L	H	L	L	L	L	L	L	**M**
Cohen et al.	2006	H	H	H	H	L	L	L	L	L	L	**H**
Cohen et al.	2002	H	H	H	H	L	L	L	L	L	L	**H**
Eglington and Chung	2011	H	H	L	H	L	L	L	L	L	L	**H**
Gerber et al.	2012	H	H	H	H	L	L	L	L	L	L	**H**
Heim et al.	2009	L	L	L	L	H	L	L	L	L	L	**L**
Irwin et al.	1996	H	H	H	H	L	L	L	L	L	L	**H**
Kjedgaard et al.	2014	H	H	H	H	L	L	L	L	L	L	**H**
McCall-Hosenfeld et al.	2014	H	H	H	H	L	L	L	L	L	L	**H**
Natelson et al.	2001	H	H	H	H	L	L	L	L	L	L	**H**
Otis et al.	2010	H	H	H	H	L	L	L	L	L	L	**H**
Outcalt et al.	2015	H	H	H	H	L	L	L	L	L	L	**H**
Ruiz-Parraga and Lopez-Martinez	2014	H	H	H	H	L	L	L	L	L	L	**H**
Sherman et al.	2000	H	H	H	H	L	L	H	L	L	L	**H**
Taylor et al.	2003	H	H	L	H	L	L	L	L	L	L	**M**
Weiner et al.	2011	H	H	H	H	L	L	L	L	L	L	**H**

1=target population; 2=sampling frame; 3=random selection; 4=non-response; 5=data collection; 6=case definition; 7=study instrument; 8=data collection; 9=prevalence period; 10=numerator/ denominator; H=high risk of bias; L=low risk of bias; m=moderate risk of bias.

Table 2.10 Risk of bias assessment for studies investigating medically unexplained physical symptoms in participants with post-traumatic stress disorder.

Author(s)	**Year**	**1**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.Overall Risk of Bias**
Beckham et al.	1997	H	H	H	L	L	L	L	L	L	H	**H**
Uhac et al.	2003	H	H	H	H	L	L	H	L	L	L	**H**

1=target population; 2=sampling frame; 3=random selection; 4=non-response; 5=data collection; 6=case definition; 7=study instrument; 8=data collection; 9=prevalence period; 10=numerator/ denominator; H=high risk of bias; L=low risk of bias; m=moderate risk of bias.

Table 2.11 Risk of bias assessment in studies investigating co-morbid post-traumatic stress disorder and medically unexplained physical symptoms from a general population.

Author(s)	Year	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.Overall Risk of Bias
Escobar et al.	1998	H	H	H	H	L	L	H	L	L	L	**H**
Iorio et al.	2014	H	H	L	H	L	L	L	L	L	L	**M**
Leibschutz et al.	2007	H	H	H	H	L	L	L	L	L	L	**M**
Park et al.	2012	L	L	L	L	L	L	L	L	L	L	**L**
Savas et al.	2009	H	H	H	L	L	L	L	L	L	L	**M**

1=target population; 2=sampling frame; 3=random selection; 4=non-response; 5=data collection; 6=case definition; 7=study instrument; 8=data collection; 9=prevalence period; 10=numerator/ denominator; H=high risk of bias; L=low risk of bias; m=moderate risk of bias.

Table 2.12 Risk of bias assessment in studies investigating co-morbid post-traumatic stress disorder and medically unexplained physical symptoms for participants exposed to trauma.

Author(s)	**Year**	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11. Overall Risk of Bias**
Aragona et al.	2011	H	H	H	L	L	L	L	L	L	L	**H**
Comellas et al.	2015	L	L	L	L	L	L	L	L	L	L	**L**
de Vries et al.	2002	L	L	H	L	L	L	H	L	H	H	**M**
Dobie et al.	2004	H	H	H	H	L	L	L	L	L	L	**M**
Donnell et al.	2012	L	L	L	H	L	L	L	L	L	L	**M**
Graham et al.	2010	H	H	H	H	L	L	L	L	L	L	**H**
Hapke et al.	2006	L	L	L	L	L	L	L	L	L	L	**L**
Hinton et al.	2006	H	H	H	H	L	L	L	L	L	L	**H**
Humphreys et al.	2010	H	H	H	H	L	L	L	L	L	L	**H**
Johnson et al.	2006	H	H	H	H	L	H	H	L	H	L	**H**
Kelsall et al.	2009	H	H	H	L	L	L	L	L	H	L	**M**
Labbate et al.	1998	H	H	H	H	L	L	L	L	L	L	**H**
LaFrance et al.	2013	H	H	H	H	L	L	L	L	L	L	**H**
Morina et al.	2010	H	H	H	L	L	L	L	L	H	L	**H**
Morosco et al.	2013	H	H	H	H	L	L	L	L	H	L	**H**
North et al.	2004	H	H	H	L	L	L	L	L	L	L	**H**
Orsillo et al.	1996	H	H	H	H	L	L	L	L	L	L	**M**
Samelius et al.	2009	H	H	H	H	L	L	L	L	L	L	**H**
Seng et al.	2014	L	H	H	L	L	L	L	L	L	L	**M**
Trevino et al.	2014	H	H	H	H	H	L	L	H	H	L	**H**

Table 2.12 (continued).

Author(s)	Year	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11. Overall Risk of Bias
Villano et al.	2007	H	H	H	H	L	L	L	L	H	L	**H**

1=target population; 2=sampling frame; 3=random selection; 4=non-response; 5=data collection; 6=case definition; 7=study instrument; 8=data collection; 9=prevalence period; 10=numerator/ denominator; H=high risk of bias; L=low risk of bias; m=moderate risk of bias.

Figure 2.2 is a Funnel Plot for the 18 studies investigating the prevalence of PTSD in participants with MUPS. Heterogeneity was considerable (I^2 = 92.23%) with little evidence that the study population, country, or healthcare setting explained heterogeneity.

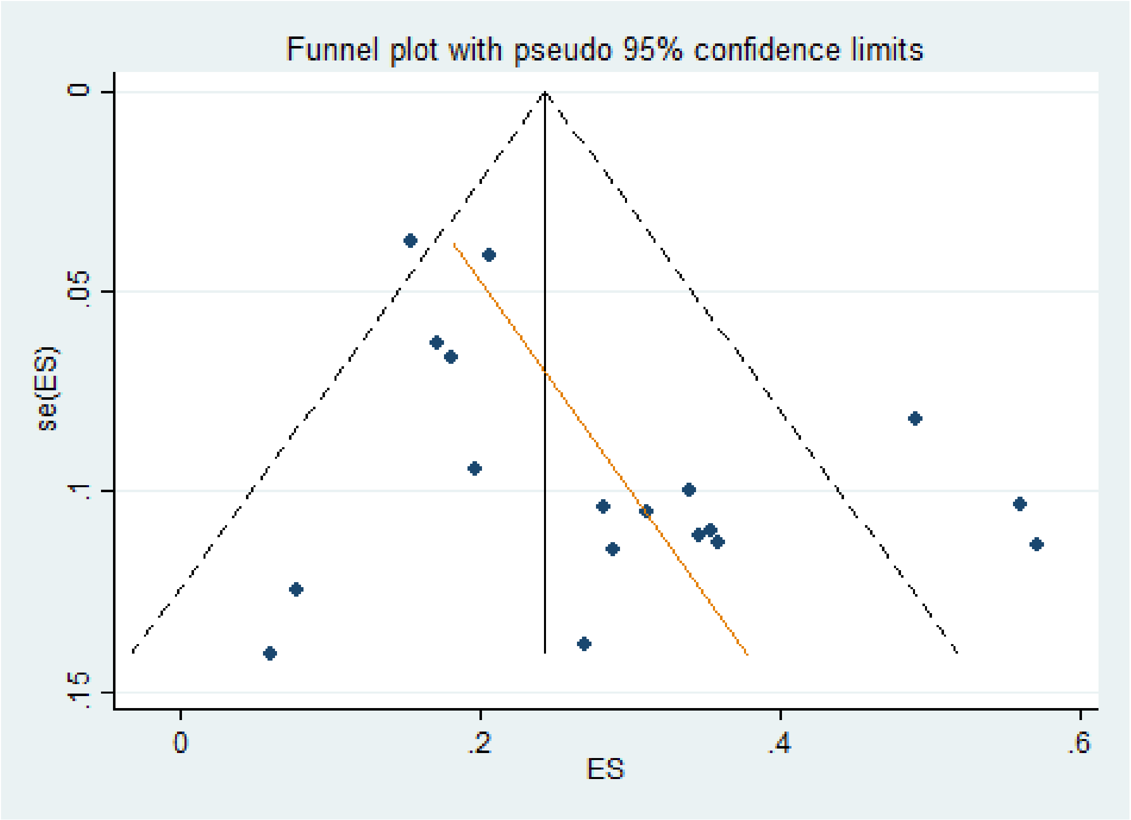


Figure 2.2 Funnel plot of studies investigating post-traumatic stress disorder in participants with medically unexplained physical symptoms.

The Funnel plot for the 22 studies investigating the prevalence of PTSD and MUPS in participants exposed to trauma is shown in **Figure 2.3**. Heterogeneity was considerable (I^2 = 98.71%) and there was little evidence that the study population, country, or healthcare setting explained heterogeneity.

2.4.4 Overall risk of bias for included studies

For the overall risk of bias ratings, there was an initial interrater agreement for 55% (n=26/47) of the studies with 45% (n=21/47) disagreement, which was reconciled through

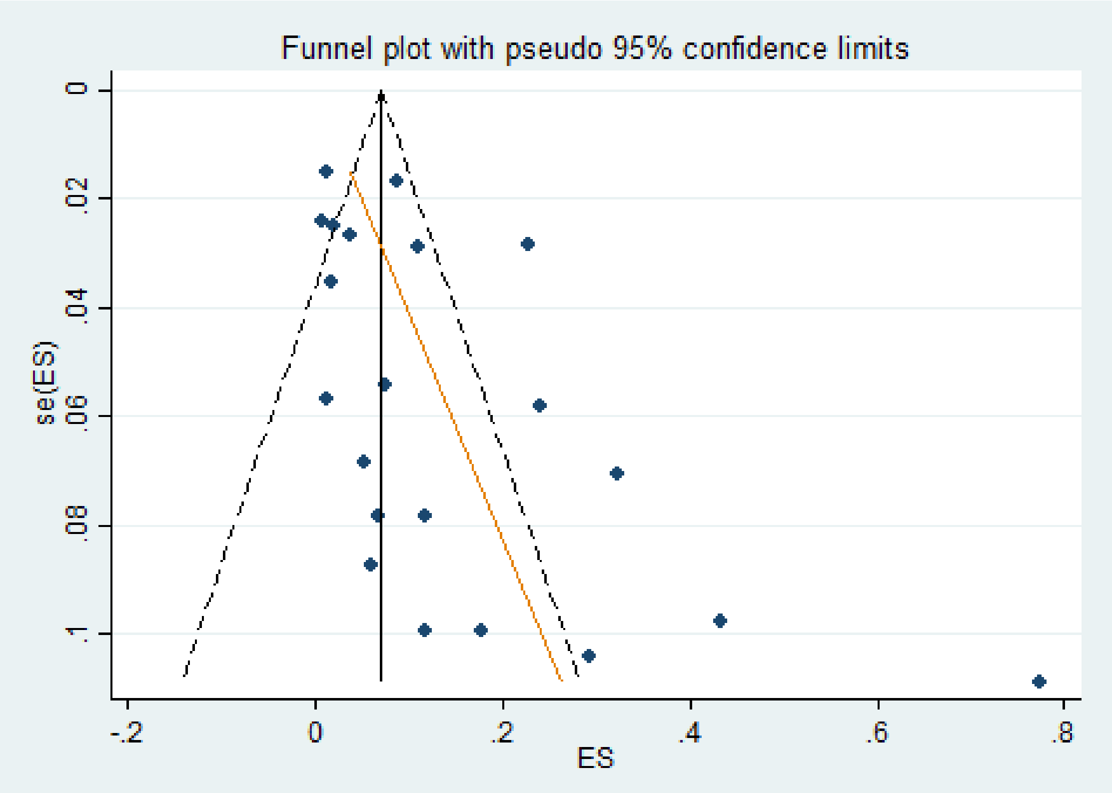


Figure 2.3 Funnel plot of studies investigating co-morbid post-traumatic stress disorder and medically unexplained physical symptoms in participants exposed to trauma.

critical appraisal and discussion between the two assessors (AJD and LAW), without third party adjudication. This reconciliation of overall risk of bias (RoB) is shown in Table 2.13 The overall RoB in disputed studies changed by one grade, which was similar to Hoy et al. (2012), with overall RoB ratings of 63.8%, (n=30/47) of studies rated high risk, 27.7% of studies (n=13/47) rated as medium risk and 8.5% of studies (n=4/47), rated as low risk. The direction of RoB changes were 62%, (n=13/21) of studies from moderate to high risk, 19% (n=4/21) from low to medium risk, 14.3% (n=3/21) from medium to low risk and 4.8% (n=1/21) high to medium risk. The overall RoB rating by subgroup was PTSD in MUPS 77.8% (n=14/18) high risk, 16.7% (n=3/18) moderate risk and 5.6% (n=1/18) low risk. MUPS in PTSD subgroup studies were rated 100% (n=2/2) high risk. General Population subgroup studies were rated 20% (n=1/5) high risk, 60% (n=3/5) moderate risk and 20% (n=1/5) low risk. For the Trauma Population subgroup, 59.1% (n=13/22) studies were rated high risk, 31.8% (n=7/22) moderate risk and 9.1% (n=2/22) low risk. The right-hand column of Table 2.9, Table 2.10, Table 2.11 and Table 2.12 provide the overall risk of bias for each study stratified into each of the respective four subgroups. A summary of overall risk of bias for each of the four subgroups is presented in Table 2.14.

Table 2.13 Reconciliation of overall risk of bias ratings by two assessors.

Author	Year	Rater 1	Rater 2	Raters 1&2	Bias considerations
Chung et al.	2010	H	M	M	Good Response rate, Not consecutive participants.
Eglington and Chung	2011	H	M	H	Self- report, Low response rate
Heim et al.	2009	M	L	L	Self -report
McCall-Hosenfeld et al.	2014	H	M	H	Non-responder data absent, consecutive participants.
Otis et a.	2010	H	M	H	Participants from one clinic; referral bias
Outcalt et al.	2015	H	M	H	Referral Bias, low response rate
Ruiz-Parraga and Lopez-Martinez	2014	H	M	H	No response rate, self- report measure, specialised clinic.
Weiner et al.	2011	H	M	H	Response rate unclear
Iorio et al.	2014	M	L	M	Self- report, no response rate
Park et al.	2012	M	L	L	Not excluded medical cause
Aragona et al.	2011	H	M	H	Self -report, consecutive participants
Comellas et al.	2015	M	L	L	Not excluded medical causes.
de Vries et al.	2002	M	L	M	Recall bias 4 years, self- report
Donnell et al.	2012	M	L	M	Recall 8-16 years, self-report
Graham et al.	2010	H	M	H	Self- report, demographic elderly female, selection bias
Labbate et al.	1998	H	M	H	Consecutive participants, recall- 3 years
Morina et al.	2010	H	M	H	Convenience sample, non- validated questionnaire. 8- year time lag
North et al.	2004	H	M	H	Selection bias, retrospective.
Samelius et al.	2009	H	M	H	Self- reports, selection bias, low response rate. Non validated instruments
Seng et al.	2014	M	L	M	Self-report, selection bias
Villano et al.	2007	H	M	H	Low response rate, medical causes not excluded

Table 2.14 Summary of overall risk of bias according to the four subgroups.

Subgroup	Overall Risk of Bias		
	High	**Medium**	**Low**
PTSD in participants with MUPS (k=18)	77.8% (n=14)	16.7% (n=3)	5.6% (n=1)
MUPS in participants with PTSD (k=2)	100% (n=2)	0.0% (n=0)	0.0% (n=0)
Co-morbid PTSD and MUPS in participants in the General Population (k=5)	20% (n=1)	60% (n=3)	20% (n=1)
Co-morbid PTSD and MUPS in Trauma Exposed Populations (k=22)	59.1% (n=13)	31.8% (n=7)	9.1% (n=2)

MUPS=medically unexplained physical symptoms; PTSD= post-traumatic stress disorder.

2.4.5 Synthesis of results: meta-analysis by subgroup

There were 18 studies with 2,984 participants which investigated the prevalence of PTSD in studies of people with MUPS. The mean prevalence of PTSD was 28% (95% CI 22%-34%) and the median prevalence of PTSD was 28.6% (IQR 18.1% - 35.3%). Heterogeneity was considerable ($I^2 = 92.23\%$) with little evidence that the study population, country, or healthcare setting explained heterogeneity (**Error! Reference source not found.**).

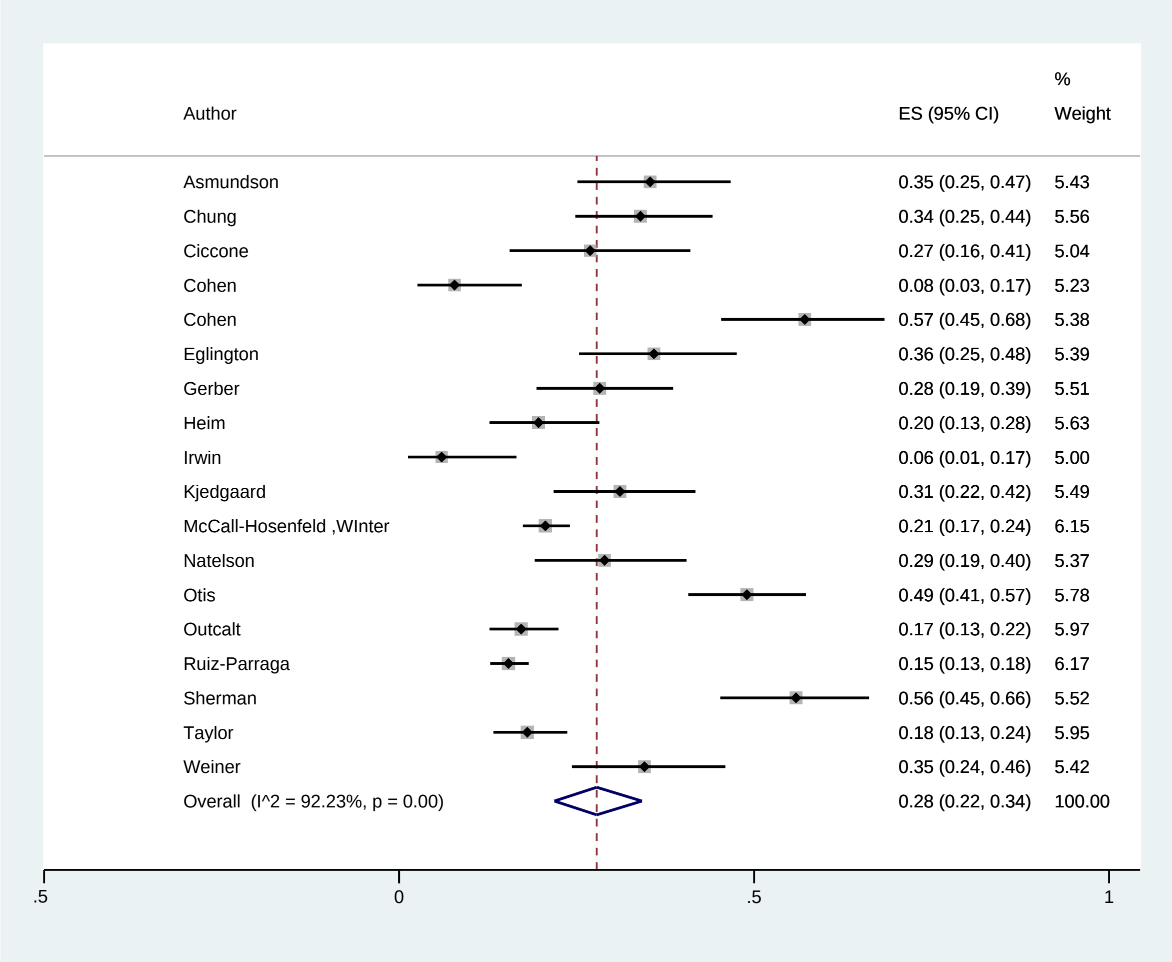


Figure 2.4 Forest plot of the prevalence of post-traumatic stress disorder in studies of participants with medically unexplained physical symptoms.

There were 2 studies with a total sample size of 229, which investigated the prevalence of MUPS in studies of participants with PTSD. The mean prevalence of MUPS was 81% (95% CI=75%-86%) and the median prevalence of MUPS was 80.9% (IQR=79.8% - 82.0%). Heterogeneity was considerable (I^2=98.72%), however, there were an insufficient number of studies to undertake meta-regression to explore heterogeneity (**Figure 2.5)**.

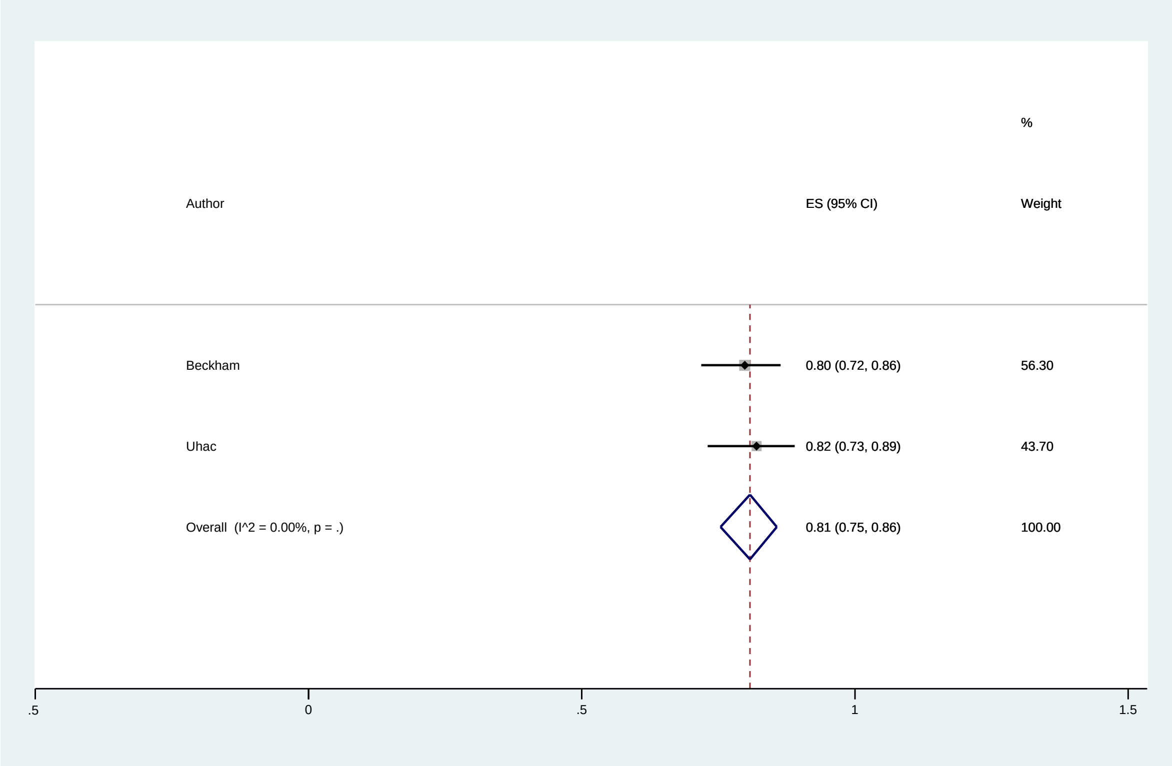


Figure 2.5 Forest plot of the prevalence of medically unexplained physical symptoms in studies of participants with post-traumatic stress disorder.

This meta-analysis investigating the prevalence of co-morbid PTSD and MUPS in the General Populations included five of ten studies with a sample size of 9,141. The mean prevalence of co-morbid PTSD and MUPS was 7% (95% CI=1%-18%) and the median prevalence of comorbid PTSD and MUPS was 8.9% (IQR=6.1%-11.7%). Heterogeneity was considerable (I^2=99.3%).

Ten studies with a total sample size of 22,899 were categorised as general population. The mean prevalence of PTSD was 12% (95% CI=4%-23%) and the median prevalence of PTSD was 16.4% (IQR=3.4%-22%). Heterogeneity was considerable (I^2=99.79%). The mean prevalence of MUPS was 15% (95% CI=8%-24%) and the median prevalence of MUPS was 11.1% (IQR 7.0%-22.0%). Heterogeneity was considerable (I^2=99.56%). There were an insufficient number of studies to conduct meta-regression and explore heterogeneity **Figure 2.6**.

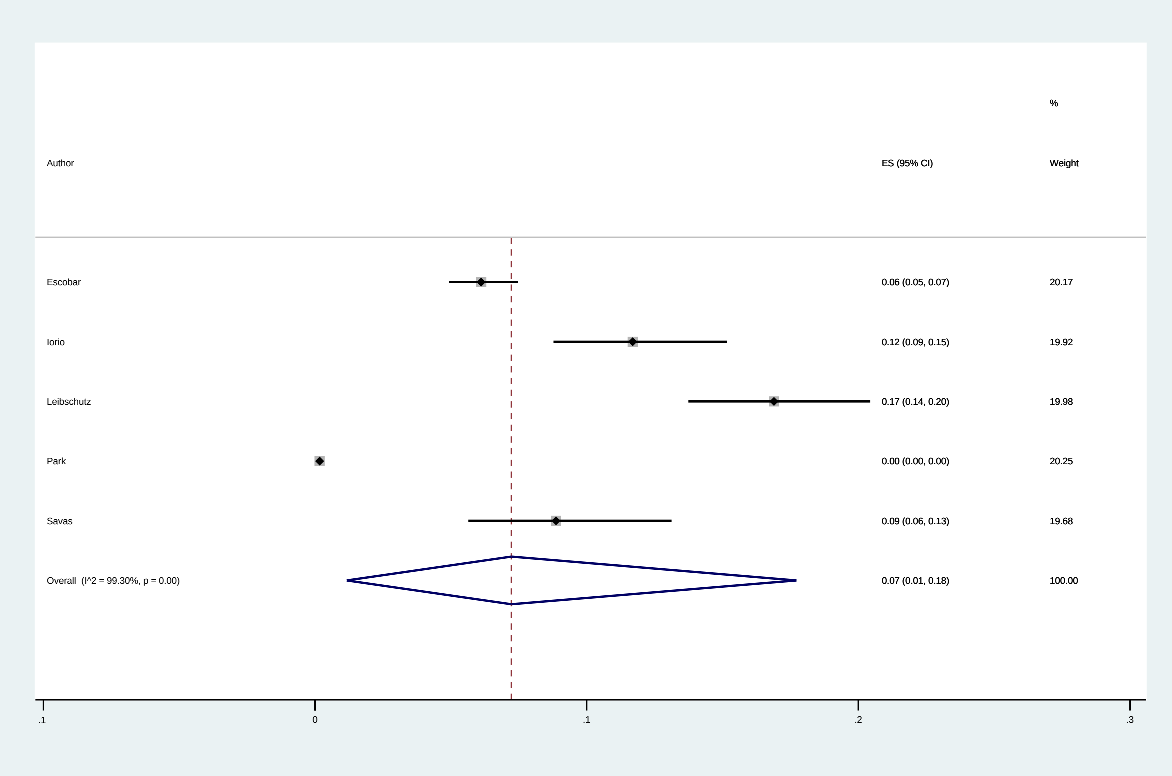


Figure 2.6 Forest plot of the prevalence of post-traumatic stress disorder and medically unexplained physical symptoms in studies of the general population.

There were 22 of 44 studies with a total sample size of 18,543, which investigated the prevalence of PTSD and MUPS in populations exposed to trauma. The mean prevalence of PTSD and MUPS was 12% (95% CI=8%-16%) and the median prevalence was 8.1% (IQR=3.8%-22.8%). Heterogeneity was considerable (I^2=98.71%) and there was little evidence that the study population, country, or healthcare setting explained heterogeneity.

44 studies with a total sample size of 50,181, were identified as populations exposed to trauma. The mean prevalence of PTSD in studies of trauma exposed participants was 22% (95% CI=18%-26%) and the median prevalence of PTSD was 18.3% (IQR=8.6%-32.1%). Heterogeneity was considerable (I^2=99.14%). The mean prevalence of MUPS was 32% (95% CI=26%-38%) and the median prevalence of MUPS was 28.9% (IQR= 12.9%-46.15%). Heterogeneity was considerable (I^2=99.55%). There was little evidence that the study population, country, or healthcare setting explained heterogeneity.

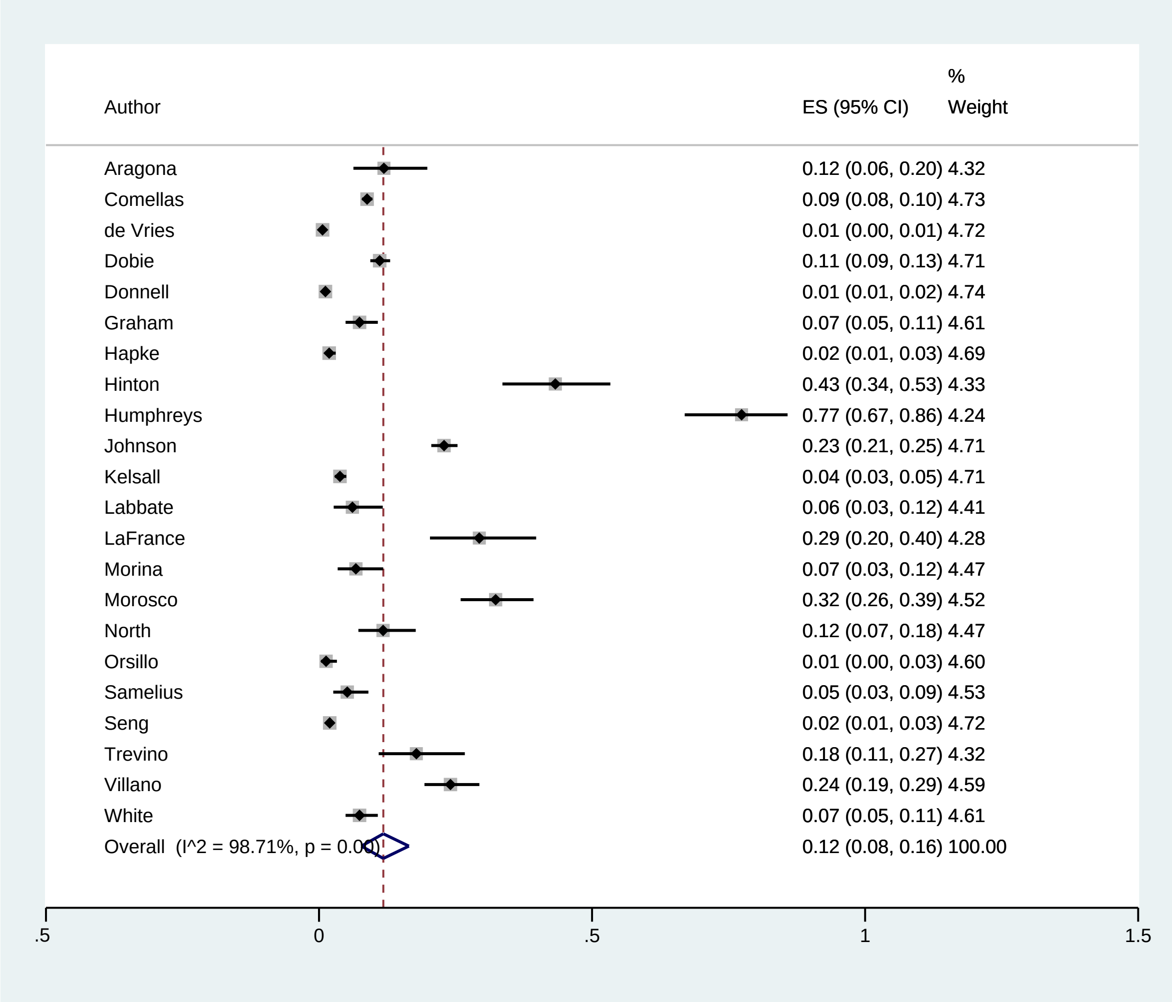


Figure 2.7 Forest plot of the prevalence of post-traumatic stress disorder and medically unexplained physical symptoms in studies of participants exposed to trauma.

Table 2.15 provides a summary of estimated prevalence rates for PTSD and MUPS from meta-analysis of four subgroups: Participants with PTSD and MUPS, and participants exposed to trauma or participated in studies in the general population. These four subgroups included prevalence rates of PTSD in studies of participants with MUPS; prevalence rates of MUPS in studies of participants with PTSD; and prevalence of PTSD, MUPS and co-morbid PTSD and MUPS in studies of trauma exposed participants and the general population.

Table 2.15 Summary of subgroup prevalence estimates.

Prevalence rates	PTSD	MUPS	PTSD and MUPS
MUPS	28%	0	0
PTSD	0	81%	0
General Population	12%	15%	7%
Trauma Exposed	22%	32%	12%

0= No data; MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder.

Table 2.16 provides a summary of heterogeneity derived from meta-regression of four subgroups: Participants with PTSD and MUPS, and participants exposed to trauma or participated in studies in the general population. These four subgroups included PTSD in studies of participants with MUPS; MUPS in studies of participants with PTSD; and PTSD, MUPS and co-morbid PTSD and MUPS in studies of trauma exposed participants and the general population.

Table 2.16 Summary of heterogeneity from meta-analysis according to the four groups.

Heterogeneity (I^2)	PTSD	MUPS	PTSD and MUPS
MUPS	I^2 = 92.23%	0	0
PTSD	0	I^2 = 98.72%	0
General Population	I^2 = 99.79%	I^2 = 99.56%	I^2 = 99.3%
Trauma Exposed	I^2 = 99.1%	I^2 = 99.55%	I^2 = 98.71%

0= No data; MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder.

2.5 Discussion

2.5.1 Main findings

The four objectives of this systematic review and meta-analysis were achieved and the main findings are summarised in **Table** 2.17**.**

Table 2.17 Summary of Chapter Three main findings.

Chapter objectives	**Main chapter findings**
To systematically review the literature to identify relevant papers on studies that contain prevalence data on PTSD and MUPS.	75 full text studies were identified that met eligibility criteria.
To meta-analyse the data extracted from the relevant studies to estimate the prevalence of PTSD and MUPS.	• 47 of 75 studies with co-morbid PTSD and MUPS were divided into four subgroups for meta-analysis: ○ The prevalence of PTSD in participants with MUPS was 28%. ○ The prevalence of MUPS in participants with PTSD was 81%. ○ The prevalence of co-morbid PTSD and MUPS was higher in participants exposed to trauma compared to participants from a general population (12%v7%).
To assess the risk of bias of included studies.	• The overall risk of bias was determined using Hoy et al. (2012)’s tool: ○ PTSD in MUPS; the majority had high risk of bias (RoB) (77.8%). ○ MUPS in PTSD; the majority had a high RoB (100%). ○ PTSD MUPS in the general population; the majority had medium RoB (80%). ○ PTSD and MUPS in populations exposed to trauma; the majority had a high RoB (59.1%).
To assess heterogeneity and moderator effects on the prevalence of PTSD and MUPS through meta-regression.	• Heterogeneity was considerable with little evidence that the study population, country or healthcare setting explained the heterogeneity.

PTSD=post-traumatic stress disorder; MUPS=medically unexplained physical symptoms

2.5.2 Comparison with the literature

To the author's knowledge, the investigation into the relationship between co-morbid PTSD and MUPS in this systematic review was unique by the 'current' PTSD definition and the range of MUPS examined. Results from this systematic review and meta-analysis indicated a high degree of association between PTSD and MUPS, which is further explored through comparison with the wider literature.

The pooled PTSD prevalence estimates for the general population and trauma exposed population subgroups

General population

The pooled prevalence estimate of current PTSD in the general population subgroup was 12%, which was substantially higher than rates found in comparable studies. Although the second USA National Co-morbidity Survey (NCS) reported a current PTSD rate of 3.5% (Kessler et al. 2005), and a UK general population survey reported 3% prevalence (McManus 2007), the Australian National Survey reported a much lower rate of 1.3% (Creamer et al. 2001). Furthermore, cross-cultural current PTSD prevalence estimates were also much lower than found in the USA and UK, with rates approximately 0.5% to 1.0% (Hinton and Lewis-Fernandez 2011). Although 75% of studies in the general population subgroup were from USA samples, and therefore reasonable to expect the PTSD estimate in this subgroup to be closer to the USA study, the rate was approximately four times the USA rate.

A number of factors could account for the disparity in prevalence estimates between studies. The UK rate could be over-estimated through the use of a self-reports rather than structured interviews, which were utilised in the USA and Australian surveys. Nonetheless, the cross-cultural community studies also indicated much lower PTSD estimates than the USA survey, even though similarly structured interviews were utilised (Hinton and Lewis-Fernandez 2011). Another factor could have been trauma type exposure, whereby increased PTSD rates are associated with interpersonal traumas such as sexual assault and physical violence (Roberts et al. 2011). Such traumas occurred at a higher frequency in the USA sample compared to the Australian sample, which could possibly help explain differences in PTSD rates between both studies. Although trauma type was not explicit in this subgroup to allow comparison with the USA, UK and Australian studies, methodological bias was a feature of all studies and comparable to the general population subgroup.

Although trauma type and methodological bias could influence prevalence estimates, both factors were unlikely to account for the magnitude of the pooled PTSD estimate in this subgroup. It could be reasoned, instead, that the sample in this review might not be as representative of the general population as were comparison studies. Although other studies examined PTSD co-morbidity such as anxiety and depression, somatoform disorders were not included in analysis. An important difference therefore between this review and comparison studies is that only samples with both PTSD and MUPS prevalence rates were included for analysis. It is possible, therefore, that the high PTSD estimate in this subgroup is a secondary effect of included studies that reported both PTSD and MUPS, which were not as representative of the general population as the comparison studies.

Trauma exposed population

The pooled PTSD prevalence estimate in the trauma exposed sample was 22%, which is almost twice the rate reported for the general population sample (12%). This is not surprising as not everyone in the general population studies would have been trauma exposed. As previously discussed, trauma type can influence PTSD prevalence with higher rates associated with interpersonal traumas such as rape and torture, war exposure, mass displacement of people and persisting threat (Steel et al. 2009) (Hinton and Lewis-Fernandez 2011), (Kessler et al. 2017), (Hoppen and Morina 2019). Therefore, it was reasonable to expect a high PTSD estimate in this subgroup given most samples were exposed to such traumas. Although the pooled current PTSD estimate in this subgroup is congruent with comparison studies, current PTSD estimates were wide ranging from 1.7% to 62% across culturally diverse studies (Silove et al. 2008), (Hinton and Lewis-Fernandez 2011).

Whereas differences in PTSD estimates could be ascribed to methodological bias and varied trauma-type exposure between samples, the estimate in this subgroup was lower for comparison civilian samples and higher for veteran samples. A systematic review and meta-analysis of war- exposed populations, refugees and torture survivors estimated an unadjusted weighted PTSD prevalence of 30.6% (Steel et al. 2009), and 30% globally in adult war survivors (Hoppen and Morina 2019). Veteran studies accounted for approximately 38% of samples in this subgroup, and in comparison, current PTSD estimates for Gulf war veterans were (12.1%), (Kang et al. 2003). Results from a WHO review World Mental Health Survey, which investigated trauma-type exposure and PTSD, suggested that vulnerability to developing PTSD can result from re-victimisation. This could be a possible factor contributing to high PTSD rates in chronically traumatised civilian populations (Kessler et al. 2017).

Pooled MUPS prevalence estimates for the general population

The prevalence estimate of MUPS was 15% in this subgroup, which comprised mostly of FSS. Although this rate was within the range (1-19%) for functional disorders in comparison studies (Creed and Barsky 2004) (Fink 2015, p. 30), the definition of MUPS is more extensive than FSS and comprises a heterogenous group of symptoms and conditions. Furthermore, it has been suggested that the vague and unreliable MUPS definition has reduced its utility in research, which has led to omission of somatoform disorders from some psychiatric population studies (Creed et al. 2012), (Gureje et al. 1997). In a systematic review and meta-analysis of the prevalence of somatoform disorders and MUPS in primary care, considerable variation in diagnostic criteria between somatoform disorders and MUPS was identified. This was postulated to affect the accuracy of prevalence estimates in primary care settings'. Results of this study suggested an increased prevalence of somatoform disorders when less restrictive diagnostic criteria were used (Haller et al. 2015).

In addition to the problem of defining MUPS, methodological bias and heterogeneity were considerable in this subgroup, which could have reduced the validity of the MUPS estimate. A systematic review and meta-analysis of chronic pain in the general population reported a MUPS rate of between 10% and 15% in low risk of bias studies, with prevalence twice as high in women (Mansfield et al. 2016). In a chronic fatigue syndrome/ myeloencephalitis (CFS/ME) study (Johnston et al. 2013), prevalence estimates varied by measure, with 3.28% prevalence for self-reports and lower rate of 0.76% prevalence for clinical assessments. In a systematic review and meta-analysis investigating the global prevalence of IBS (Lovell and Ford 2012), estimates ranged from 1.1% to 45% depending on population characteristics and IBS measures used.

Irrespective of heterogeneity and methodological bias, the pooled MUPS prevalence estimate in this subgroup was within the range of estimates found in other studies. This finding, however, is in contrast to the very high PTSD estimate in the same subgroup, which does not appear to support a strong co-morbid relationship between PTSD and MUPS. Nevertheless, the low validity of the MUPS definition and possible omission of somatoform disorders from some psychiatric studies, might have led to an underestimation MUPS prevalence in this subgroup (Creed 2006).

Pooled MUPS Prevalence Estimates for the Trauma Exposed Population

The MUPS prevalence estimate in the trauma exposed group was approximately twice the general population rate (32%v15%), as was PTSD prevalence. Although other studies did not provide absolute risk for comparison, relative risk of developing MUPS through exposure to trauma has been described. A prospective population-based cohort study (Creed et al. 2012) indicated the highest risk developing multiple somatic symptoms was associated with childhood psychological abuse. In a systematic review and meta-analysis, investigating the relationship between psychological trauma and FSS, (Afari et al. 2014) found people with PTSD, more than any other traumatic stressor, had a 2.7 increased risk of developing FSS. A longitudinal study by Andreski et al. (1998) that investigated PTSD and the risk of developing somatisation symptoms, found people with PTSD had a 2.1 to 2.3 increased risk of developing somatic symptoms. As previously identified, methodological bias and the considerable heterogeneity in this review could have reduced the accuracy of the pooled estimate.

Co-morbid PTSD and MUPS prevalence; general considerations

The co-morbidity estimates in this review are, to the author's best knowledge, the first known absolute prevalence rates for PTSD and MUPS and it is, therefore, not possible to make direct comparisons with the literature. Furthermore, it is has been considered throughout this discussion that the majority of studies in this review have a high risk of bias rating and considerable heterogeneity, which could reduce the validity of the pooled co-morbid PTSD and MUPS estimates in all subgroups.

Co-morbid PTSD in the general population and trauma exposed subgroups

The co-morbid PTSD and MUPS prevalence estimate in the trauma-exposed sample was almost double the general population rate. Compared to the general population sample, the risk of both conditions seemed to increase with exposure to certain trauma types such as interpersonal trauma and exposure to war and mass displacement. As previously discussed, these findings are consistent with the literature (Steel et al. 2009), (Hinton et al. 2013).

MUPS prevalence estimates, however, were in excess of PTSD estimates in both the trauma-exposed subgroup (32% v 22%), and the general population subgroup (15% v 12%). Although PTSD appears to be highly co-morbid with MUPS, other psychiatric conditions such as Anxiety and Depression are also co-morbid with MUPS (Creed et al.

2012), (den Boeft et al. 2016). Furthermore, non-PTSD qualifying psychological- traumas can give rise to MUPS, and MUPS can also occur alone without associated mental disorders. (Stone et al. 2005). The substantive co-morbid prevalence estimate in trauma exposed samples suggests a high co-morbid relationship between PTSD and MUPS.

Co-morbid MUPS in PTSD subgroup

The prevalence of MUPS in the PTSD subgroup was very high at 81%, however, the pooled estimate was based on only two war- exposed samples. It was that suggested by Afari et al (2014), that PTSD and war exposure trauma led to the highest risk of developing FSS including Chronic Pain. Additionally, the risk of somatisation was associated with PTSD more than any other psychiatric condition.

In this review, although two studies precluded meta-regression, considerable heterogeneity was described through the I^2 statistic. However, this finding contrasted with inspection of the Forest Plot in which both samples seemed quite homogenous. The anomaly could be statistical heterogeneity due to the influence of a small number of studies on the on the I^2 statistic properties (von Hippel 2015). Both studies were based on DSM-IV PTSD criteria, and both investigated chronic pain in war exposed populations. However, high methodological bias in both studies could have led to overestimation of co-morbid prevalence. Systematic bias included non-random selection of participants (Tyrer and Heyman 2016), non- recording of response rates (Mazor et al. 2002), small sample size (Hackshaw 2008), use of non-valid instruments and self- reports (Haberer et al. 2013) (Volzke et al.). In addition, in both studies, health seeking participants were recruited from specialist healthcare settings only and may represent the most severe experience of PTSD and MUPS. Majority ethnicity and gender were not available from one sample, which prevented full comparison between studies. In conclusion, the findings in this subgroup suggests high co-morbidity between PTSD and MUPS.

Co-morbid PTSD in MUPS subgroup

The prevalence of co-morbid PTSD in participants with MUPS was 28%, which was considerably less than the MUPS in PTSD sample (80%). Although this review indicates high co-morbidity between both conditions, the lower prevalence of PTSD in MUPS indicates MUPS can be associated with other disorders. While Afari et al (2014) found the highest association between MUPS and PTSD, Andreski et al (1998) found MUPS to be associated with other psychiatric disorders. A high prevalence of anxiety and depression in secondary health care was found in people with FSS (Nimnuan et al. 2001). It has been suggested that limited evidence supported somatoform disorders as an independent psychiatric disorder (Creed 2006), which has led to omission of MUPS from some psychiatric epidemiological studies. The association between PTSD and MUPS does not seem to be fully reciprocal. Interestingly, (Andreski et al. 1998) found that people with MUPS who were exposed to psychological traumas, did not have increased risk of developing PTSD. Furthermore, MUPS can also occur in the absence any mental disorders or a trauma history (Stone et al. 2005) (Stone et al. 2014).

2.5.3 Strengths and limitations

To the authors knowledge, this review represented the most comprehensive systematic review and meta-analysis of the relationship between PTSD and MUPS and first pooled estimate of the absolute risk for both conditions. The search strategy was extensive and included a wide-ranging definition of MUPS through five databases. Quality assurance was maximised by two reviewers who independently selected studies, extracted data and assessed bias with a third reviewer available for adjudication.

There were several limitations in this review. Included studies were cross- sectional, which precluded causal inferences. Furthermore, the majority of studies were rated with a high risk of bias and there was considerable heterogeneity, which diminished the accuracy of the pooled prevalence estimate derived through meta-analysis. Included studies spanned 19 years and the review incorporated four DSM versions from DSM-III to DSM-IV TR with associated PTSD definition changes. Furthermore ICD-10 and DSM -5 based studies were not included, although both versions were available at the time of the search. ICD-11 based studies were not available due to its delayed release of ICD-11, and as such, ICD-11 studies were not included in this review. English language studies only were used.

2.5.4 Implications for clinical practice

The considerable heterogeneity and methodological bias precludes generalisation of co-morbid PTSD and MUPS as a public health problem. The prevalence rates, however, suggest that both conditions could be important in clinical practice as well as for service configuration. Better recognition and understanding of co-morbid PTSD and MUPS by clinicians and managers could have implications for education, professional development and commissioning.

An improved understanding of co-morbid PTSD and MUPS for clinicians, managers and people with lived experience, could support the development of more effective, evidence-based interventions ranging from psychoeducation to psychological and medical therapies, clinical guidelines and care pathways. In addition to extending the scope of Clinical Governance, Corporate Governance strategies could also be implicated in costs, value and resource allocation.

2.5.5 Implications of findings for further research

A more accurate estimate of co-morbid PTSD and MUPS prevalence is required. This could be better achieved through high quality, large studies that minimised methodological bias and heterogeneity. In particular, more inclusive and representative samples through use of comprehensive sample frames in the community, primary care and secondary care services. Prospective studies that examine trauma history in relation to onset of PTSD and MUPS are required for temporal perspectives to inform cause and effect.

PTSD and MUPS measures used should be validated and incorporate both self- reports for improved disclosure of sensitive information and face to face interviews. For MUPS, validated physical health/ disease measures and examinations could help differentiate between medically explained and medically unexplained physical symptoms. The use of DSM-5 PTSD and Somatic Symptom Disorder (APA, 2013), and ICD-11 PTSD, Complex PTSD and Bodily Distress Disorder (WHO 2018) criteria could provide more valid and practical case definitions for PTSD and MUPS measures. For future systematic reviews and meta-analysis, reduced heterogeneity through more valid case definition and measurement, could lead to a more accurate pooled estimate through meta-analysis and also allow comparison between the non-convergent DSM-5 and ICD-11 classification systems.

2.5.6 Conclusion

The pooled prevalence estimates for co-morbid PTSD and MUPS indicated a substantial relationship between the two conditions, which is consistent with existing reviews. However, the accuracy of the pooled estimates was likely reduced by considerable methodological bias and heterogeneity. Further research is required to ascertain the true prevalence of co-morbid PTSD and MUPS. Given the high comorbid relationship between PTSD and MUPS, the impact of this relationship on individual health and service provision is explored in Chapter Three.

3 Chapter Three: A qualitative study investigating the patient journey for people with co-morbid post-traumatic stress disorder and medically unexplained physical symptoms

3.1 Introduction

Notwithstanding the high methodological bias and heterogeneity in included studies, the systematic review and meta-analysis undertaken in this thesis suggested a high co-morbid prevalence of post-traumatic stress disorder (PTSD) and medically unexplained physical symptoms (MUPS). Although this high prevalence estimate indicated a potential public health problem, to the author's knowledge, no studies have been previously undertaken to examine the care trajectory and experiences of people with both conditions.

3.2 Aims and objectives

This qualitative study aims to develop understanding of the relationship between PTSD and MUPS, through examination of the healthcare and social journeys for people with the lived experience of both conditions.

The objectives are to use inductive thematic analysis to investigate two areas:

1. The pathways experienced by individuals with co-morbid PTSD and MUPS through primary care, secondary care and tertiary care, including Third Sector (Charities) and Fourth Sector (Social Enterprise) services.

2. The variables associated with co-morbid PTSD and MUPS and the patient journey, such as type of trauma and MUPS.

3.3 Methods

3.3.1 Ethical and research approval

The following approvals were received:

- REC6 Reference 17/W A/0075
- BCUHB R&D, IRAS ID 222610
- Protocol Number SPON1578-17

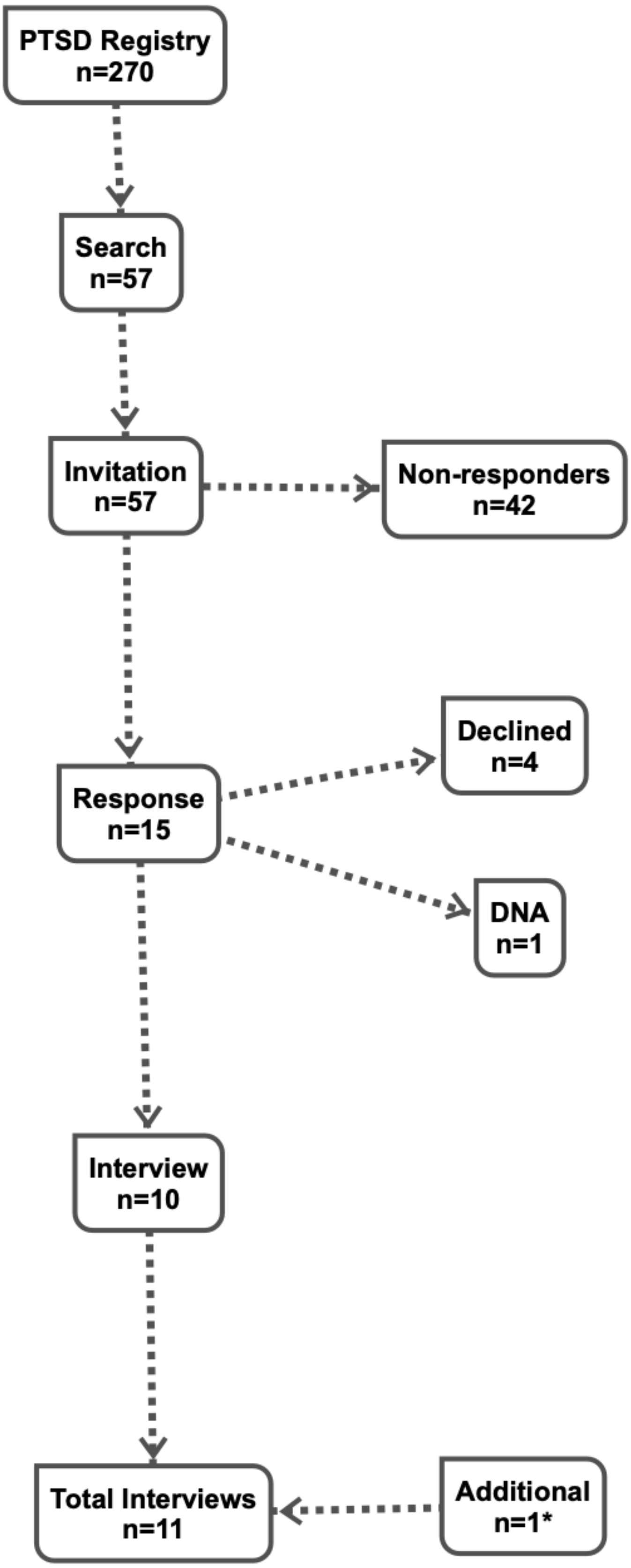
This study was registered and approved by the Wales Research Ethics Committee 6, (REC6) and Betsi Cadwaladr University Health Board (BCUHB) NHS Research and Development (R&D) through the Integrated Research Application System (IRAS). R&D approval was granted through the Internal Review Panel at Ysbyty Gwynedd, Glan Clwyd and Maelor Hospitals under the All Wales, Health and Care Research Wales Permission Co-ordinating Unit (PCU). The study was sponsored and indemnified by Cardiff University.

3.3.2 Recruitment

Participants with co-morbid PTSD and MUPS were identified from the All-Wales PTSD Research Registry, which included approximately 270 adults at the time of this study. The PTSD Registry comprises 'a cohort of deeply phenotyped PTSD sufferers willing to help with research aimed at understanding the causes, triggers and course modifiers of disease and pathogenesis of PTSD' (NCMH 2017).

The PTSD Registry data base search was conducted by Dr Neil Roberts following discussions about inclusion criteria with AJD. The answers of PTSD Registry participants to the PHQ15 and questions on functional somatic symptoms, and medical history were reviewed. If it was suspected that the participant may be experiencing medically unexplained symptoms, they were considered potential participants for the qualitative study. Purposeful sampling from the PTSD Registry by was undertaken BY AJD to recruit participants to achieve theme saturation (**Figure** 3.1).

A letter of invitation to participate in the study (Appendix F), was sent to all people identified from the search together with a reply slip, patient information sheet (Appendix G), and a consent form (Appendix H). People accepting invitation to participate were contacted by telephone by an administrator, (DJ), and offered date and place of interview.



*DNA=did not attend interview; *=participant selected from PTSD Registry additional to main search.*

Figure 3.1 Flow chart of participant recruitment into the qualitative study

3.3.3 Sample size

The sample size was determined by the number of participants necessary to facilitate theme saturation, and it was anticipated prior to the study, that between 10 and 15 individuals with co-morbid PTSD and MUPS would be required. Theme saturation was deemed to occur when no new information could be identified from the data. The point of theme saturation is a contentious concept and depends on factors such as epistemology and population characteristics of the qualitative study (Saunders et al. 2018). A systematic review examining saturation estimates for thematic analysis, suggested approximately 12 interviews were required (Guest 2006).

3.3.4 Semi-structured interview

All semi-structured interviews were audio-taped, with the purpose of eliciting and recording pathway experiences and variables by participants. The pre-determined interview questions were designed to be open and responsive, with some flexibility through prompts and supplementary questions, (Appendix I). A summary of interview questions is listed in Box 1. At cessation of the recorded interview and with participant verbal permission, ID coded paper notes on any supplementary information were recorded.

Table 3.1 Box 1: Summary of the patients qualitative study interview questions

- Can you tell me something about your symptoms and when they began?
- Could you tell me about any diagnosis you have been given for your symptoms and what that was like?
- Could you tell me about any explanations you have been given about your symptoms and how that was for you?
- What is your understanding of the symptoms you have?
- Can you tell me about your first experience of seeking help for these symptoms?
- Can you tell me about other experiences you have had when seeking help for your symptoms?
- How did you find the help that you received?
- What was helpful to you in the process?
- Was there anything unhelpful in the process?
- Can you tell me about your most recent health encounter or treatment experience and what has this has been like?
- The PTSD Registry research you have been involved with suggests that you have a combination of medically unexplained symptoms and post-traumatic stress disorder symptoms. How would you recommend health professionals manage patients with similar symptoms in the future?
- Is there anything else about your symptoms and care experiences that you would like to talk about?

3.3.5 Conduct of interviews

Interviews were conducted throughout Wales at three main sites: a GP surgery in primary care, the National Centre for Mental Health (NCMH), and at participant homes. Participants were provided with a letter of invitation and patient information sheet (Appendix F and G, respectfully), and just prior to the interview, a discussion about the patient information sheet and interview process was held between AJD and participant. If the participant was satisfied to continue with an interview following the discussion, a consent form was completed (Appendix H).

Given the subject matter, the interviews had the potential to cause some individuals distress. This was minimised by the experience of AJD, who is a General Medical Practitioner trained in the management of people with PTSD and MUPS, and who regularly supports patients who disclose sensitive information such as sexual abuse. If required, appropriate follow-up care following the interview was assured by AJD.

3.3.6 Data governance

This study was fully compliant with data protection regulations. Participant details were stored on a password protected NHS general medical practice IT system. Access to the study database was given to the Chief Investigator (AJD) and an administrator (DJ) only, both who have been trained in standard operating procedures (SOPs) and good clinical practice for research (GCP). All paper documents and device-based audio recordings relating to the study were stored in a secure room with restricted access to AJD and DJ within a primary care, general medical practice.

For the purpose of analysis, a digital copy of the interview recordings and transcriptions were stored on a password protected laptop computer. Both audio-recordings and transcripts were identified by code only, the code translations were held separately and securely on the NHS database; no participant identifiable information was stored on the laptop. NVivo for Mac, version 12 software on the password protected computer was used for analysis of the interview transcripts (QRS 2018).

DJ transcribed recorded interviews onto word documents without participant or third- party identification, which were stored in a designated secure room. To ensure anonymity, each transcription excluded third-party information. Participant code-keys were held separately from all participant data.

Coded electronic transcripts were uploaded onto NVivo software for thematic analysis. Paper copies of each transcript were read and re-read by AJD with notes marked on each record to identify potential codes and themes. Throughout the process, the need to identify theme saturation was considered to decide the total number of interviews required.

3.3.7 Inductive thematic analysis

Inductive thematic analysis (ITA) was the qualitative analytic method used in this study. Although thematic analysis has been regarded as a flexible method that provides core, generic skills across qualitative analysis, it has not been considered as an analytic method in its own right (Braun and Clarke 2006, p. 4).

The decision to use ITA was preceded by the consideration of other theme based qualitative analytic methodologies, that identify patterns in the data set. In a review of other qualitative methodologies, Braun and Clarke 2006 identified two broad categories of study. Firstly, those developed from an epistemological position with restricted variability in application such as conversation analysis (Drew et al. 2001) and interpretive phenomenological analysis (Smith and Osborn 2015), and methodologies with some variability in their application such as Grounded Theory (Chun Tie et al. 2019) or Narrative Analysis (Edwards 2016). Secondly, methodologies with theoretical and epistemological freedom that included thematic analysis. Braun and Clarke (2006) define Thematic Analysis (TA) in general terms as a method to identify, analyse and report patterns, described as themes, within data. However, they cautioned that TA is not an explicit qualitative process, such as IPA, with several TA approaches under the same title. TA entails a process that can be influenced by the personal perspective of the researcher, who must be mindful of this throughout the TA process.

TA has been considered adaptable to three main epistemologies: realist, which report the reality of a participant (Lefroy et al. 2017); constructionist which report the impact of wider influences on a participant’s reality (Thomas et al. 2014), and an intermediary theoretical position of critical realism (McEvoy and Richards 2003), which report the way participants make meaning of their experiences. Braun and Clarke (2006) advocate that the overall process of critical realism allows analysis to extend beyond the simple reporting of interview outcomes and ‘facilitates the disentangling’ of the underlying factors that influence the participant’s experience and reality.

For this study, ‘bottom up’ data driven ITA was undertaken, with the themes strongly linked to the data and less linked to the research questions or restricted by the underlying assumptions of a particular ontological or epistemological position. Although the author was aware of personal bias from pre-study ideas about the research topic, Braun and Clarke’s suggestion that data analysis through ITA will always be influenced by the researcher to some extent, was heeded during data analysis. ITA contrasts to ‘top down’ deductive thematic analysis (DTA), which is considered to be influenced more by the analyst. In the process of analysis, the data elicited by DTA is related to pre-existing ideas. This contrasts with the ITA process of ‘immersion in the data’ without presumptions about data content. Braun and Clarke (2006) propose the strengths of TA to include flexibility of analysis that can be applied by less experienced researchers. Weaknesses of TA include limited interpretive power with the potential to generate extensive data. TA follows defined stages in a recursive process of transcription of data, familiarisation with the data, coding and reviewing data, defining themes derived from the data, and analysing the derived themes.

3.3.8 Transcription of verbal data

The transcriptions were checked against the audio recordings for accuracy by AJD as part of the iterative ITA process. Although some qualitative methodologies had set protocols for transcription because of specificity of the research process (Davidson 2009), variability in the ITA process had not facilitated a standardised transcription process. However, for this study, transcription ensured a verbatim and ‘utterances’ included record of each interview.

3.3.9 Generating initial codes

Codes, the most basic quantity of information for analysis (Volzke et al.), were used to organise data into meaningful groups. Coding was data driven from individual transcriptions and across the whole data set. Codes were matched to data extracts throughout the coding process and inspected for patterns. NVivo 12 for Mac software (QRS 2018) was used to develop and collate codes and associated data extracts, a process which also utilised paper transcript notes made during the data familiarisation process.

3.3.10 Searching for and reviewing themes

Potential code patterns were explored and developed through ‘mind maps’, which were developed utilising paper flipcharts, NVivo software and the ‘SimpleMind’ application (BV-Simpleapps 2019). Initial code patterns formed potential ‘candidate’ themes, which were further developed through mind mapping, into overarching themes and subthemes.

3.3.11 Defining and naming themes

Data was coded and organised into themes and subthemes, which were analysed to form the basis of a narrative that related to the research question.

Three (3/11) transcripts were coded separately by (AJD) and a second coder, Mr Matt Ploszajski (MP). The purpose of second coding was to examine the data from two different perspectives to help ensure data trustworthiness. For each coded transcript, AD and MP met online through Zoom video calls to compare and discuss individual coding as related to inductive thematic analysis. There was general agreement between AD and MP on all three coded transcripts, which differed by the granularity of coding only; AD produced more codes than MP. This may have been due to differences in interpretation of what constituted a code or a theme or may be due to personal style and approach; MP identified similar themes to AD but identified less codes to support a theme. Contrast in coding could also reflect differences in professional background and experience between researchers.

3.4 Results and analysis

3.4.1 Summary of search results and sample characteristics

From a total of 57 potential participants 21.1%, (n=57/250) were identified from the PTSD Registry database. Response rate was 26.3%, (n=15/57), with 10 completed interviews (17.5%, n=10/57). Emerging themes from the 10 interviews indicated additional sampling would be required for theme saturation. Based on AJD’s experience as a regional PTSD Registry lead, and following consideration of emergent themes, a further participant was identified by AJD from the PTSD Registry and invited to participate as per the interview protocol. A final total sample size of 11 participants was derived from the PTSD Registry, when AJD deemed theme saturation to have occurred and significant new themes were unlikely from further interviews (Figure 3.1). Interviews were conducted over a one-year period between 31/08/17 to 30/08/18, with 36.4% (n=4) in a primary care setting, 36.4% (n=4) at the National Centre for Mental Health (NCMH) and 27.3%, (n=3) at the participant's homes. Interview transcriptions ranged from 3,533 to 14,207 words, with a total transcribed word count of 94,807 words.

3.4.2 Summary of demographics and self-reported symptoms and conditions

Tables 3.1 and 3.2 summarise self-disclosed symptoms and health conditions from the eleven participants who were selected from the PTSD Registry on the basis of having experienced PTSD and MUPS. The 54.5% (n=6), of participants were female and the mean age was 47.6 years (range= 35-67). 63.6% (n=7) of participants were civilians and 36.4% (n=4) were war exposed veterans. All participants interviewed were of white ethnicity and English speaking.

The majority of reported traumas in this study were interpersonal: 36.4% (n=4/11) childhood abuse and 36.4% (n=4/11) war-exposure, with 27.3% (n=3) non- interpersonal accident only. 36.4% (n=4/11) of participants reported two psychological traumas: 75% (n=3/4) disclosed childhood abuse, were 100% female, comprising 66.7% (n=4/6) of all female participants. 40% (n=2/5) of participants who experienced MVA trauma, also disclosed childhood abuse. Veterans were all male, comprising 80% (n=4/5) of male participants, who disclosed war-related trauma only.

All participants reported at least one MUPS condition and 72.7% (n=8/11) reported two MUPS conditions. Functional somatic syndromes (FSS) comprised 36.4% (n=4/11) each for irritable bowels syndrome, chronic pain and chronic fatigue, and 9.1% (n=1) for fibromyalgia. At least one physical disease was reported by 81.8% (n=9/11) and 72.7% (n=8/11) reported two diseases. 27.3% (n=3/11) described undergoing surgery for injuries sustained at the time of their trauma and 18.2% (n=2/11) described surgery for bladder conditions.

Dissociative symptoms were reported by 81.8% (n=9/11), nightmares (90.9%, n=10/11), flashbacks (72.7%, n=8/11) and conversion symptoms (63.6%, n=3/11) were also described. All participants (100%, n=11) disclosed hyperarousal symptoms, and 72% (n=8/11) of participants experienced sleep disturbance.

Problems with self-organisation were reported by 81% (9/11) participants; 36.4% (n=4/11) described symptoms of emotional dysregulation, 36.4% (n=4/11) suicidality, 18.2% (n=2/11) substance misuse and 36.4% (n=4/11) reported eating problems. Reported psychiatric co-morbidity; 54.5% (n=6/11) of participants described depression (36.4%, n=4), anxiety (9.1%, n=1/11) and dissociative disorder (9.1%, n=1/11). Disability was reported by 54.5% (n=6/11).

Table 3.2 Summary of demographics, self-reported trauma history and symptoms of participants with post-traumatic stress disorder and medically unexplained physical symptoms

ID	01	02	03	04	05	06	07	08	09	10	11
Age (years)	40	65	43	67	43	60	54	47	48	35	35
Gender	Female	Male	Male	Male	Female	Male	Male	Female	Female	Female	Female
War-exposure	Civilian	Civilian	Veteran	Veteran	Civilian	Veteran	Veteran	Civilian	Civilian	Civilian	Civilian
Trauma 1	Physical assault	Motor vehicle accident	War exposure	War exposure	Childhood physical abuse	War exposure	War exposure	Motor vehicle accident	Motor vehicle accident	Childhood sexual abuse	Motor vehicle accident
Trauma 2	Childhood abuse unspecified	Previous accidental injury	0	0	Motor vehicle accident	0	0	Childhood abuse unspecified	0	0	0
MUPS 1	Chronic fatigue	Suffocation	Chronic pain	Fibromyalgia	Chronic pain	Bladder symptoms	Autonomic tight muscles	Irritable bowel syndrome	Dissociative seizure	Bladder symptoms (Interstitial Cystitis)	Chronic pain
MUPS 2	Chronic Pain	Chronic pain	Chronic fatigue	Chronic fatigue	0		0	Chronic fatigue	Irritable bowel syndrome	Irritable bowel syndrome	Vertigo

Table 3.1 (continued).

ID	01	02	03	04	05	06	07	08	09	10	11
MUPS 3	0	Irritable bowel syndrome	Facial pain	0	0		0	0	0	Tonic immobility	0
Dissociation	Foggy feeling	Mood dips. Concentration	Confused mind-fog	Mind numb at time of trauma	Amnesia	Not present	Amnesia	0	Third person at time of trauma	Dissociative identity disorder	Amnesia
Conversion	0	Ocular spasm	Present Arm	0	Leg paralysis	Blindness. Arm numbness. Falls	0	0	Dissociative seizure	Tonic immobility	Numbness hands and legs
Flashbacks	Present	Present	Initially	Present	Present	Present	Present	Present	Present	Present	Not Present
Nightmares	Present	Present	Initially	Present	Present	Present	Present	Present	Present	Present	Not Present
Hyperarousal	Present	Present	Present	Present	Present	Initially	Present	Present	Present	Present	Present
Mood Dysregulation	Present	Present	0	Present	0	0	Present	0	0	0	0
Sleep Disturbance	Present	Present	Present	Present	Present	0	Present	Present	0	Present	0

Table 3.1 (continued).

ID	01	02	03	04	05	06	07	08	09	10	11
Reported mental health 1	0	Depression	0	Suicidal, past	0	Suicidal, past	Depression	Depression	0	Dissociative identity disorder	Anxiety
Reported mental health 2	0	0	0	0	0	0	Suicidal-past	Suicidality past	0	0	0
Reported mental health 3	0	0	Alcohol-past	0	0	0	Alcohol-past	0	0	0	0
Reported Mental health problem 4	0	Eating problem	0	0	Eating problem	0	Eating problem	0	0	Eating problem	0
Reported Disease 1	Prolactinoma	Spinal injury	Head injury	Spondylosis	Scoliosis	Multiples sclerosis (diagnosis revoked)	0	Migraine	Leg injury	IC	0
Reported Disease 2	Painful periods Endometriosis Fibroids	Urinary problem unspecified	Stroke	Raynaud's	Polycystic ovaries	Shoulder dislocation	0	Asthma	Hypertension	0	0

Table 3.1 (continued).

ID	01	02	03	04	05	06	07	08	09	10	11
Reported Disease 3	Hypothyroid	0	Osteo-arthritis	0	Neural tube defect	Leg weakness	0	Antiphospholipid syndrome	0	0	0
Reported Disease 4	Vitiligo	0	0	0	Weight loss	Partial blindness	0	Low Iron	0	0	0
Reported Reported Disease 5	Low vitamin B12	0	Migraine	0	0	Spinal injury	0	0	0	0	0
Reported Disease 6	Low Iron	0	0	0	0	0	0	0	0	0	0
Surgery related to physical trauma	0	Oro-facial injuries. Neck-surgery.	Head, neck. Shoulder injuries.	0	0	0	0	0	Leg surgery following MVA	0	0
Other Surgery	0	0	0	0	0	Bladder	0	0	0	Bladder	
Disability	0	Present	0	Present	Present	Present	0	Present	Present	0	0

0=not disclosed; MVA=motor vehicle accident; MUPS=medically unexplained physical symptoms; NCMH=National Centre for Mental Health.

Table 3.3 Summary of self-reported symptoms in participants with post-traumatic stress disorder and medically unexplained physical symptoms

Variables % (n)	**Female participants:** 54.5 (n=6)	**Male participants:** 45.5 (n=5)	**All**
Civilian	100.0 (n=6)	20.0 (n=1)	63.6 (n=7)
War Exposed	0.0 (n=0)	80.0 (n= 4)	36.4 (n=4)
Mean Age years (range)	41.3 (35-48)	57.8 (43-67)	47.6 (35-67)
Reported primary trauma type			
Interpersonal trauma	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Non-interpersonal trauma	50.0 (n=3)	20.0 (n=1)	36.4 (n=4)
Childhood sexual abuse	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Childhood physical abuse	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
War exposure	0.0 (n=0)	80.0 (n=4)	36.4 (n=4)
Reported secondary trauma type			
Childhood abuse unspecified	33.2 (n=2)	0.0 (n=0)	18.2 (n=2)
Accidental injury	0.0 (n=0)	20.0 (n=1)	9.1 (n=1)
MVA	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Reported MUPS 1			
Main MUPS condition	100.0 (n=6)	100 (n=5)	100 (n=11)
Fibromyalgia	0.0 (n=0)	20.0 (n=1)	9.1 (n=1)
Chronic fatigue	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Chronic pain	16.7 (n=1)	20.0 (n=1)	18.2 (n=2)
Irritable bowel syndrome	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Suffocation	0.0 (n=0)	20.0 (n=1)	9.1 (n=1)
Visceral/ Muscle	0.0 (n=0)	20.0 (n=1)	9.1 (n=1)
MS like symptoms	0.0 (n=0)	20.0 (n=1)	9.1 (n=1)

Table 3.2 (continued).

Variables % (n)	Female participants	Male participants	All
Reported MUPS 1			
Chronic Bladder Pain (Interstitial Cystitis)	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Dissociative seizures	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Vertigo	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Reported MUPS 2			
Two MUPS conditions	66.7 (n=4)	80.0 (n=4)	72.7 (n=8)
Fibromyalgia	0.0 (n=0)	0.0 (n=0)	0.0 (n=0)
Chronic fatigue	16.7 (n=1)	40.0 (n=2)	27.3 (n=3)
Chronic pain	16.7 (n=1)	20.0 (n=1)	18.2 (n=2)
Irritable bowel syndrome	33.2 (n=2)	0.0 (n=0)	18.2 (n=2)
Suffocation	0.0 (n=0)	0.0 (n=0)	0.0 (n=0)
Autonomic/ Muscle	0.0 (n=0)	0.0 (n=0)	0.0 (n=0)
MS like symptoms	0.0 (n=0)	0.0 (n=0)	0.0 (n=0)
Bladder symptoms	0.0 (n=0)	20.0 (n=1)	9.1 (n=1)
Dissociative seizures	0.0 (n=0)	0.0 (n=0)	0.0 (n=0)
Vertigo	0.0 (n=0)	0.0 (n=0)	0.0 (n=0)
Reported MUPS 3			
Three MUPS conditions	0.0 (n=0)	20.0 (n=1)	9.1 (n=1)
Reported symptoms			
Dissociation	83.3 (n=5)	80.0 (n=4)	81.8(n=9)
Conversion	66.7 (n=4)	60.0 (n=3)	63.6 (n=7)
Flashbacks	83.3 (n=5)	60.0 (n=3)	72.7 (n=8)
Nightmares	83.3 (n=5)	100.0 (n=5)	90.9 (n=10)
Hyperarousal	100.0 (n=6)	100.0 (n=5)	100.0 (n=11)
Sleep disturbance	66.7 (n=4)	80.0 (n=4)	72.7 (n=8)
Mood dysregulation	16.7 (n=1)	60.0 (n=3)	36.4 (n=4)
Suicidality	16.7 (n=1)	60.0 (n=3)	36.4 (n=4)

Table 3.2 (continued).

Variables % (n)	Female participants	Male participants	All
Reported symptoms			
Substance misuse	0.0 (n=0)	20.0 (n=1)	18.2 (n=2)
Eating Problems	33.3% (n=2)	40% (n=2)	36.4 (n=4)
Reported mental conditions			
Depression	16.7 (n=1)	60.0 (n=3)	36.4 (n=4)
Anxiety	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Dissociative Disorder	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Number of reported physical conditions			
One disease	83.3 (n=5)	80.0 (n=4)	81.8(n=9)
Two diseases	66.7 (n=4)	80.0 (n=4)	72.7 (n=8)
Three diseases	50.0 (n=3)	40.0 (n=2)	45.5 (n=5)
Four diseases	50.0 (n=3)	40.0 (n=2)	45.5 (n=5)
Five Diseases	16.7 (n=1)	20.0 (n=1)	18.2 (n=2)
Six Diseases	16.7 (n=1)	0.0 (n=0)	9.1 (n=1)
Reported Surgery			
Related to physical trauma	16.7 (n=1)	40.0 (n=2)	27.3 (n=3)
Bladder	16.7 (n=1)	20.0 (n=1)	18.2 (n=2)
Reported Disability			
Present	50.0 (n=3)	60.0 (n=3)	54.5 (n=6)

MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder.

3.4.3 Findings from inductive thematic analysis

Two overarching themes, ‘uncertainty’ and ‘adaptation’ were identified from thematic analysis of eleven interviews (Figures 3.2, 3.3, 3.4), which are explored further.

3.4.4 Uncertainty

The overarching theme, uncertainty, comprised three main interconnected subthemes; iatrogenesis, antipathy, and inefficiency. Variables derived from thematic analysis are illustrated in Figure 3.2.

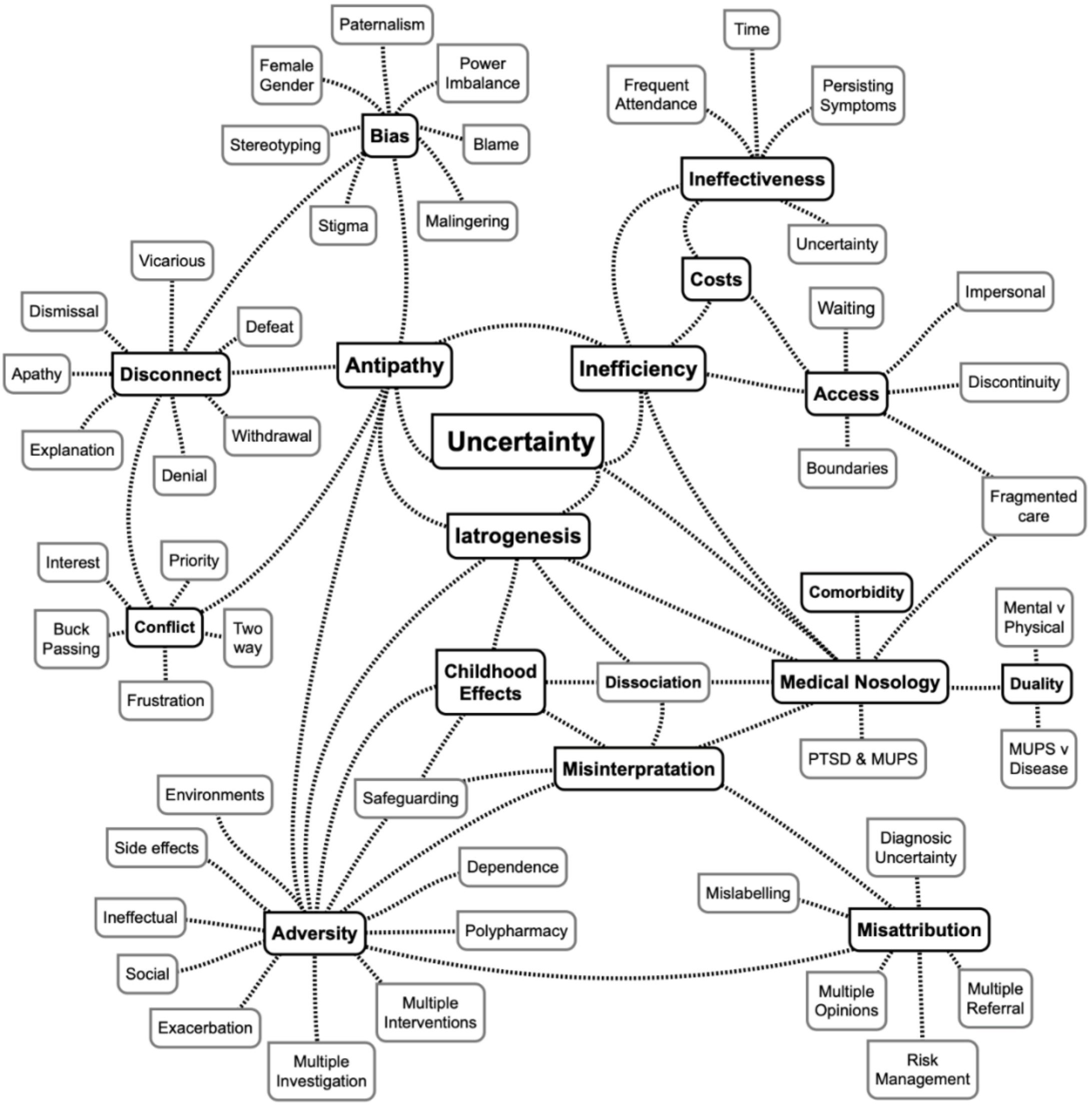


Figure 3.2 Thematic map of uncertainty

Negative experiences were described by several participants during their help seeking journey. The impact of such experiences was summed up by Participant 10, who self-reported PTSD, MUPS, dissociative identity disorder and prolonged childhood abuse, described her journey prior to receiving PTSD and MUPS informed care:

"Having the counselling, that didn't work, they didn't have the time, not being listened to about the physical symptoms, not seeing a connection between both of them, being on the meds, being off the meds, being ok, not being ok".

Uncertainty: Medical Nosology; Duality; Co-morbidity; PTSD and MUPS; Childhood Effects

Findings from this study indicated that contemporary medical nosology was a major contributory factor to uncertainty and ensuing negative sequalae in clinical practice. Uncertainty seemed to increase the risk of iatrogenic harm through misinterpretation and misattribution of symptoms, with risk of subsequent diagnostic uncertainty, mislabelling and inappropriate interventions. Uncertainty was also found to be a significant factor in antipathic relationships between participant and professional, which contributed to service inefficiency and ineffectiveness.

Thematic analysis (TA) indicated that uncertainty was supported and promoted by two features of medical classification systems; mental/physical duality and co-morbidity. Notwithstanding the separation of mental and physical disorders in clinical practice, TA suggested considerable interconnection between conditions from different categories, such as PTSD, MUPS and dissociation (Figure 3.2). Two other factors contributing to uncertainty were non-recognition of PTSD and MUPS as disease, ambiguity between disease and MUPS, and possible causal effects of past childhood trauma on adult symptoms and conditions.

Participant 10, who self-reported childhood sexual, emotional and physical abuse, PTSD, dissociative identity disorder (DID), irritable bowel syndrome (Welsh et al.), and interstitial cystitis (IC); whereby the latter condition required major surgery with pre- investigative and post- surgical complications, summarised negative uncertainty-based experiences on her health seeking journey:

"I don't think it helped that people didn't know what the cystitis was...maybe they didn't know about dissociative disorder and maybe the bigger picture is they don't link the mental to the physical. They see it as two separate entities".

Participant 09 described clinician uncertainty after developing post-MVA PTSD and dissociative seizures, which required multiple referrals to surgeons, mental health professionals, GPs and allied professionals including physiotherapists:

“I think it was the psychiatrist...gosh hard to remember now. I saw quite a lot of, I think I saw in all ten psychiatrists, two, ten psychologists, two psychiatrists em, and then the, em, orthopaedic consultant as well".

Uncertainty: duality and co-morbidity; misinterpretation and misattribution

Participant experience of dualism and comorbidity, and iatrogenic risk through misinterpretation and misattribution of symptoms, is examined further.

Following an MVA related physical trauma, Participant 09 described a dualistic approach in her care:

" it took a while for people to realise what was happening and to differentiate what the different symptoms were...I was being asked constantly... what are your physical symptoms and what are your mental symptoms”

After prolonged childhood physical and emotional abuse, Participant 05 described personal uncertainty about the nature of her adult physical symptoms as being either physical or mental in origin:
“when it’s feeling the bruising, all the cuts again, and feeling low, I know that that’s in my head you know what I mean, it feels like it’s there, I know it can’t be, it’s, it’s bazaar”.

Dualistic based uncertainty leading to alternating mental or physical diagnoses were described by Participant 01, who had disclosed childhood and adult interpersonal physical and psychological trauma. The combination of mood swings and distressing persisting physical symptoms, which included gynaecological pain and fatigue, led to numerous referrals to both mental and physical health services over many years, with various investigations and clinician opinions without diagnosis, explanation or effective treatment:

" my moods were very, em, erratic, so I would be crying one minute and then be fine the next...put down really to my... monthly’s”.

...when you’ve got something like the tiredness... they would diagnose it as mental, and then when the blood test came back...it was actually a physical reason for it”.

The interpretation of symptoms as disease or MUPS could be contentious for participant and clinician alike whereby uncertainty risked missing serious disease. Participant antipathy arising that related to diagnostic uncertainty about persisting unexplained bladder pain since childhood, was described by Participant 10 who developed IC in young adulthood:

“I think stress is a mental thing, but it can display itself in physical symptoms...It took me a while to make that link to begin with...yes the PTSD can be linked to the IC, for to me it was two separate things and the IC was a disease, and to begin with I thought I was being told no, with the IC isn’t real it’s in your head and I was, had to fight that to the hilt, that was never going to happen”

Participant 01 had seen various medical specialists and GPs for her symptoms, none of whom shared their uncertainty with each other and followed a dualistic approach towards diagnosis. She described a continuing lack of clarity as to whether or not her chronic fatigue and mood swings were caused by disease:

“with the anaemia, em, there was again the tiredness which led to them finding that my B12 was low, then my iron was low, em, and the under-active thyroid...

In the absence of suitable explanations and confirmatory investigation results, and in order to reduce uncertainty, some participants self-ascribed their persisting physical symptoms. Whereas repeat infections were deemed due to previous work exposure by Participant 02, who following an MVA, suffered recurrent unexplained respiratory symptoms including perceptions of suffocation:

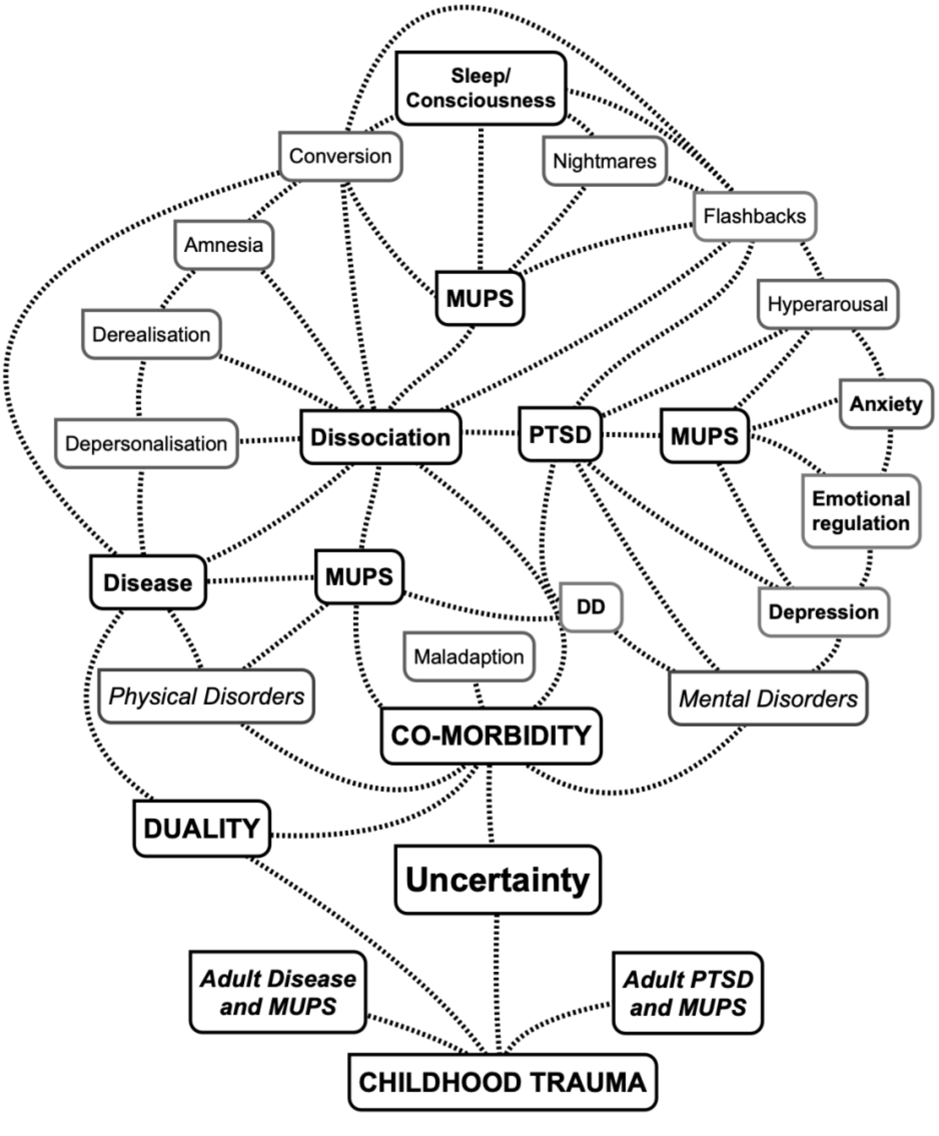
"I got a lot of nasty chest infections with work em and it’s left me just prone to getting infections. Em, as I said, I get chest infections; it’s not just one or two courses, it would be three or four courses of antibiotics before it clears up".

Increased personal risk from misinterpretation and misattribution by clinicians, when trying to distinguish between MUPS, disease and mental health, was described by Participant 10. Following major surgery for IC, and although her IC symptoms had eased, her irritable bowel disease (Welsh et al.) symptoms had worsened post operatively:

“So, if I was to go to my local hospital, and say I have IBS and I was dismissed, I’d probably fight it against because I’ve had such a big operation, it might be that I have a lesion or a bowel twist or whatever it might be my IBS has gone off the scale”.

Co-morbidity

TA of self-reported symptoms and conditions implied significant interconnectedness between dissociation, PTSD, MUPS, disease and mental disorders, including problems with emotional regulation (Figure 3.3). The thematic map of uncertainty indicated a complex network of symptoms and conditions that crossed dualistic and categorical boundaries. The interconnectivity of variables also suggests some disparity between nosology and the lived experience.



PTSD=post-traumatic stress disorder; MUPS=medically unexplained physical symptoms, DD=dissociative disorder.

Figure 3.3 Thematic map of uncertainty: duality, co-morbidity and childhood experiences.

Particularly noticeable was the centrality and high connectivity of dissociation with PTSD and MUPs, which is described further:

Sleep and altered states of consciousness*:* Sleep disturbance and altered states of consciousness were described by several participants. The distinction between being asleep and being fully conscious were not always clear, and PTSD, MUPS, dissociation and sleep symptoms were found to be interconnected.

Dissociation: Reported symptom experiences consistent with dissociation varied in severity and characteristics, ranging from amnesia to ‘out of body’ experiences. Some participants depicted dissociation at the time of their trauma; peritraumatic dissociation, and others described ongoing post- traumatic depersonalisation, derealisation and amnesia, as well as conversion type symptoms. Additionally, diagnoses of dissociative identity disorder (DID) and dissociative seizures were disclosed. Significantly, two participants described escalation of dissociation symptoms from mild derealisation to flashbacks, to conversion and altered states of consciousness. Some participants also described both mental and physical symptoms with dissociative symptoms.

Peri-traumatic Dissociation:

Participant 09, who described continuing dissociative seizures and chronic pain, also disclosed severe depersonalisation, akin to an 'out of body' experiences, at the time of her MVA trauma:

“em that happened in the accident...you lose your peripheral vision em, that had happened, and you know I felt like I’d come out through my eyes, and possibly gone through the window...I was in the stretcher looking back... where I ‘d been…I thought, ‘who was that’ about myself?”

Depersonalisation*:* Participant 10, who experienced repeated childhood sexual, emotional and physical abuse, and suffers adult IC and IBS, described a mind-body separation type of de-personalisation. This experience occurred at the time of abuse, which was usually accompanied by MUPS:

“my body would go and do things that my mind actually did not want to do, but was like they were separate, my body would just do it anyway…

… I’m thinking, I don’t want to…with you, my body is. And then afterwards, I would just lie there and freeze and not move, like my body was completely shut down, and then I’d go straight into a flare, or just feel ill or my tummy would swell”.

***Derealisation**:* As well as depersonalisation, Participant 11 also described episodes of de-realisation when in a car, the source of her trauma, and in other confined spaces:

" I get it as a driver. It feels like your car’s going too fast, but it’s not... you go in a lift it feels like it’s too, it’s going too fast...weird feeling, going up and then you get it when you’re coming down”.

Participant 01, who had chronic fatigue and chronic pain, experienced derealisation, depersonalisation and amnesia:

" a foggy detached feeling...and then other days it was more like a cloudiness...I couldn’t concentrate on anything and just constantly felt like I was an imposter...just wasn’t with it at all, I was just going through the motions constantly ...I tend to sort of not dwell on things...it’s hard to remember".

***Amnesia**:* Amnesia was a significant problem for some people. Participant 05, who had been subject to prolonged and repeated childhood physical abuse, had great difficulty with recalling her childhood and past events:

"really don’t remember if I’m honest, em, I can’t remember from back then em, I wish I could say I did but... I don’t know...I can’t tell you. I’d love to, but I, I can’t...I don’t know if it’s my head’s demonising things even worse than they already were or... something that generally happened because I blocked out quite a lot of it".

***PTSD, dissociation and MUPS**:* Hyperarousal type experiences were disclosed by several participants. The boundaries between hyperarousal and anxiety states were not generally clear from description, and symptoms of hyperarousal and dissociation also occurred at the same time. Symptoms could be experienced as both mental and physical, leading to further perplexity.

Participant 03, a war exposed veteran, described symptoms indicative of both hyperarousal and dissociation:

" the symptoms that I've still got…sweaty palms, shaking, feeling just generally nervous but with no real consciousness of why that's happening…I couldn't stay in the house, I would sit there shaking, confused, mind fog".

In addition to depicting symptoms of peri- traumatic dissociation after an MVA, participant 09 described similar persisting hyperarousal and dissociative symptoms when triggered:

"if I'm out and somebody comes within arm's length of me... I'm really, really jumpy…if there's a lot of people around me…when I say jumpy, I mean the hypervigilance, and panic, very panicky…really frightening, even when I was thinking about trying to go out in a crowded place, I was coming out of my eyes… It was completely confusing and em, terrifying".

Flashbacks and MUPS*:* Flashbacks were disclosed by a high proportion of participants who described both physical and mental symptoms described by participant 06, a war exposed veteran:

"I get very vivid flash backs; I can smell, I can taste, I can hear".

Participant 02 who described a secondary trauma at the time of an MVA, whereby a focus on mitigating a potential serious neck injury led to airway obstruction. Subsequent sensations of suffocation triggered flashbacks with physical symptoms and emotional distress:

"but I kept getting flashbacks, not of not the accident but of the suffocation, the drowning in my secretions...I wake up in a panic because my nose is blocked...I can't get my air...I get this feeling then of flashback, of being back, now strapped on that board".

Nightmares and MUPS*:* MUPS were experienced in 'nightmares' by Participant 05, who had endured repeated physical abuse in childhood, with MUPS localised at the site of physical trauma sustained in childhood. Some symptom experiences described as 'nightmares', could be interpreted as flashbacks, with ambiguity possibly due to altered states of consciousness between awake and sleep a feature of both experiences:

“X (perpetrator) caused me...an awful lot of injuries from fractured bones, dislocations, cracks, bruises, just concussion...And yeh, the nightmares are relating to that, it’s like it’s fresh, like it’s just happened again...I still feel like I’m bruised or I’m bleeding... that’s terrifying...

…when I remember X’s been beating me around the head, I feel it in my face… it very much represents back to what was occurring…takes a lot of while for the pain to go away. I know it’s not happening… but you can’t tell your mind that all the time”.

Participant 10 described dissociative and conversion type symptoms with altered states of consciousness and emotional distress. PTSD nightmares were described without clear distinction between being asleep or awake when recalling physical symptoms:

“loads of nightmares and I used to have this horrible thing, which I think was just described as tonic-immobilisation, where I would be asleep but I’m awake, and I can’t move, and I’m blank, frozen em…

***Conversion and MUPS**:* TA indicated inter- relatedness between participant reported symptoms of PTSD, MUPS, dissociation and conversion. From the lived experience perspective, reported degree of perceived threat was an important factor that could escalate dissociative symptoms from mild depersonalisation to severe flashbacks, to conversion.

Participant 09 disclosed ‘dissociative seizures’ and PTSD symptoms and described a changing emphasis of symptom experiences in relation to perceived threat. Interestingly, as PTSD symptoms of flashbacks and nightmares reduced in frequency, conversions symptoms increased. Dissociative symptoms escalated from absences under mild stress, to falls and dissociative seizures, triggered from part of the body injured at the time of psychological trauma. Furthermore, relief from flashback emotional distress by conversion was significant for the participant:

“probably depends on the stress level…the more stressed I am the more likely just keel over. If it’s more minor stress perhaps... I might just leave myself behind...if it’s sudden loud noise behind me, I’m likely to just collapse straight away....I can’t feel my (limb)*…then its complete seizure…*

…I’d have flashbacks all day and nightmares in the night... that’s gradually less... but the seizures have become more prominent... it’s almost a relief with the seizure, although it’s

dangerous, because I don't feel anything, but the flashback is the full on. I'm there, I'm trying push somebody off me".

Diagnostic uncertainty; mislabelling

Disease and/or MUPS*:* So far, uncertainty about diagnoses and potential for iatrogenic harm has been described through the perspectives of duality and co-morbidity arising from medical classification. The potential for uncertainty to encourage multiple referrals and opinions, misdiagnosis and mislabelling from misattribution is described further. As previously indicated, a notable finding from TA was a primary focus on disease as symptom cause, and mostly without alternative or additional consideration of MUPS as symptom source.

In addition to a seeming reluctance to consider MUPS diagnoses alongside disease in physical care services, PTSD and dissociative symptoms were also inconsistently recognised or considered. Various neurological motor and sensory type symptoms were reported by participants that could plausibly represent dissociative/ conversion processes, instead of/ additional to disease. Some symptoms were non-specific, whilst other symptoms, as described, were located at the site of the physical injury, which seemed to act as triggers for dissociation and conversion type experiences. Participant 02, a civilian who sustained facial injuries during an MVA, described periodic unexplained eye closure, which occurred after the traumatic event:

"I've got problem with one eye which closes on its own, which is, they can't explain that… I smashed my face against...the steering wheel...they say it's a form of myasthenia gravis that's effecting the eye em, and I've had botox injections to try and alleviate some of the worst of the drooping".

Following a bomb blast injury, numerous investigations, referrals, specialist opinions and neurological explanation for chronic intermittent symptoms, Participant 03 was later informed by physicians of radiological findings that had indicated a brain lesion consistent with a stroke.

" it was useful to find out that I'd had a stroke... it did explain some of that paraesthesia…I was told initially that that's neurological damage... sometimes it does feel…I've been

sleeping on it, I've still got the sensations...if I look at it, just feels numb... although the strength in my fists is still there".

"I would have to look at where my arm actually was, it would be, feel like it was behind my back or it was on my lap. It would be somewhere else; it would be hanging by my side"

The following case summary illustrates problems associated with interpretation and attribution of Disease, MUPS and PTSD symptoms for patients and clinicians alike. In addition to uncertainty generated by duality and co-morbidity, Participant 06's experiences also illustrated iatrogenesis, antipathy and inefficiency. Importantly, over investigation and reluctance by clinicians to also positively consider MUPS rather than disease explanations:

Box 2: Case history on management of co-morbid PTSD, MUPS and disease

Participant 06 described intermittent episodes of blindness, limb weakness and falls. He also had persisting unexplained shoulder problems requiring frequent outpatient appointments without diagnosis. Together with urinary problems, his symptoms led to a diagnosis of MS, and later to major surgery.

After approximately 23 years, the MS diagnosis was revoked without adequate explanation and was replaced by an 'unspecified' neurological label awaiting confirmation through further investigations. Although Participant 06 had considered 'shell shock' himself, he associated a shellshock diagnosis with PTSD, not his physical symptoms.

A potential MUPS account for physical symptoms had not been considered by either clinicians or the participant; meanwhile, both parties awaited a new disease diagnosis. This could represent an example of clinician focussed risk management concerned not to miss a serious disease, however, leading to significant iatrogenic distress for participant 06 from continuing uncertainty:

"I went very quickly from walking to a walking stick to a Zimmer-frame into a wheelchair into an all-power chair......well they thought I had multiple sclerosis... I was getting all the symptoms…my eyesight was failing; I was having relapses… I couldn't walk, my renal system was shutting down...I would bypass urethrally for no reason...I couldn't get my balance, I couldn't, couldn't see properly em ... A mate of mine said you've got a brain tumour, I'm sure it's a brain tumour...

...I've got a spinal injury; I've got a spinal cord stimulator in my back… I had my bladder removed em, because my bladder packed-up and my renal system is shutting down through the spinal injury...I'm basically paraplegic, I don't walk... I've got no feeling from

above mid-thigh down...I had …a lumbar puncture done…that was inconclusive, so they decided to treat me with relapsing…MS".

Approximately 23 years later, a new specialist withdrew the MS diagnosis without a firm alternative diagnosis, although the problem was still considered a disease process:

…X *who did all the tests…passed away…they came across my notes and there was this suspicion that it might not be MS…I've seen XX…they have said that we really don't think it is, we don't know what it is …we think it's coming from the spine; it is a neurological problem but it's not MS".*

Box 2. (continued).

The uncertainty generated following withdrawal of the MS diagnosis without a clear alternative explanation, exacerbated his PTSD and physical symptoms; MS symptom 'relapses':

"So, my coping mechanism now goes into overdrive. And by going into overdrive makes post-traumatic worse, I'm stressing, I'm what's wrong with me… have they missed something, did I have something, they missed it, is it gonna cause more damage, than having found the MS… months of waiting … I'm still waiting for the test results…

… now the tag's been removed I'm back to... where I was in the early 90's...I've got something wrong with me and I want to know what it is, because when I know what it is, I can get my coping mechanism into it, so what's happened now they've told me I've not got MS now".

His distress from uncertainty was compounded by continued MS care and specialist review, despite removal of an MS diagnosis:

…so, I've gone from say up to (23 years) *being treated, because they still (haaggghhh) give me, they still give me my tablets…still...on the MS register…they still want to know every month what was happening…I'm a little bit anxious about waiting for that letter to drop from P department".*

Difficulty distinguishing between symptoms of anxiety, depression, mood dysregulation PTSD and MUPS led to diagnostic uncertainty, misinterpretation and misattribution of symptoms, importantly, labelling could be at variance with participant beliefs and experiences.

Some participants recounted being labelled and treated for depression against their own judgement, with adverse effects as described by Participant 01:

" they put me on sertraline...for all the moods swings and that hasn't really been helpful at all, I felt like it deadened...I've had depression, I know what depression is and these were completely different... that wasn't helpful".

Participant 05 who's labels of depression misinterpreted their PTSD experiences:

"PTSD? I wasn't really diagnosed until I met X (trauma therapist). *It was always just put down as depression, my anxiety…it was never related to PTSD at all, even with the nightmares and things like that".*

Participant 07, who was also a war exposed veteran with PTSD and MUPS, described the social consequences of his emotional dysregulation:

"I was having flashbacks, em mood swings, anger... I was, was out of control…I lost my job because yet again in work because of my anger…And I was really in trouble all the time with the police...I smashed the house up...it wasn't just a little bit of the house, I wrecked everything in my house. I smashed everything, everything".

Although Participants 07 recounted the negative social consequences of PTSD hyperarousal, Participant 09 described social difficulty arising from dissociative PTSD experiences:

"Flashbacks are very difficult when you're trying to engage socially…if you are not actually in your own body".

Although MUPS syndromes such as fibromyalgia (FM) and irritable bowel syndrome (Welsh et al.) are specialty specific and seen as separate entities, several MUPS syndromes can co-exist as indicated by participant experience. Participant 08 who disclosed unspecified childhood abuse and an MVA in adulthood, described anxiety based physical symptoms. She also described IBS and chronic fatigue symptoms present since young adulthood, and migraine type headaches presented after the MVA:

"you 're still shaking and I feel so anxious… your chest gets so tight… I can't breathe properly…I am so wound up…dry mouth…very jumpy as well…just became a very nervous

driver…I stopped driving...the irritable bowel would start, my stomach would bloat and, then eventually I'd get headaches… just didn't want to drive at all".

***Fragmented care*:** Participants identified risks fragmented care and gaps in provision for their PTSD and MUPS. Experiences could be related to classification of disease, reflected in specialised health services.

Following major surgery for IC, Participant 10's IBS symptoms, which were present since childhood, worsened, their bladder and bowel complaints were managed by different medical and surgical specialities:

"with the IBS, If I was stressed or anxious, those symptoms just seem to just suddenly flare, and it would suddenly get worse...my IBS symptoms, it's hell. It's definitely made my IBS worse. I've never, ever been admitted to hospital with IBS symptoms before, and I had to be rushed to P (hospital)...I just couldn't cope with the pain that was in my tummy...I haven't got any IC symptoms whatsoever...I think bladder and bowel issues are definitely related".

Uncertainty: Childhood effects

Several participants disclosed previous childhood abuse with frequent attribution of their adult mental and physical symptoms, maladaptive behaviours and health problems to previous traumatic childhood experiences (Figure 3.2). The temporal lag between childhood trauma and adult symptoms added to diagnostic uncertainty for adult symptoms of PTSD, MUPS, disease and mental disorders.

Participant 05 who had suffered repeated physical abuse as a child developed bulimia and emotional dysregulation in childhood, with chronic pain in adulthood:

"*I just get told well my body has been through a lot you know, with being beaten about…that's not what the body normally goes through, especially during the stages where you're growing...*

... I've got a really dodgy stomach but that's through having eating disorders as a teenager, that's why I've always put it down to. Em, like I was bulimic for a long time, I was terrified of being fat...

...I got hold of X's pills and took whatever I could get my hands on. And that's when I first got diagnosed with depression…so, I've always had depression since about 12".

Without forthcoming explanations and a very difficult journey, connections between childhood trauma and adult health experiences were made by Participant 10 herself:

...I didn't know that it was PTSD but looking back I can see the dissociative there and the different parts were there from my childhood...

...would I have had a different childhood; would I have IC? Would I have the IBS? Em, I don't think...things have happened which have definitely caused that initial IC which has then turned into a disease, the same with the IBS, it then turned into a syndrome Em, so I can see it now how it's all linked".

***Safeguarding**: Safeguarding deficits were illustrated by Participant 05, who had also endured prolonged childhood abuse, and was accompanied by the perpetrators X and XX to Accident and Emergency (A&E) with her injuries:

"In A&E…when I was a child…I knew most of the nurses…by name, that's never a good sign...so X (perpetrator) used to come with us…was there 'keep your mouth shut'…

… yeh X caused me an awful lot, an awful lot of injuries from fractured bones, dislocations, cracks, bruises, just concussion. I can't even remember the number of concussions X given me".

Child protection was not initiated at school either for Participant 05, with significant impact on her mental health leading to suicide attempts as a child.:

"Couldn't take being laughed at, being bruised, because I'd get bullied in school for it, you know, have everyone 'ahh she's comes here, she fell over, she fell into this, this happened'...

…I got fed up and I got hold of... pills and took whatever I could get my hands on, but I didn't tell them what was happening because I wasn't allowed to… being so young, X (perpetrator) had to be with me… I just never spoke about it... I just told them I was angry".

Inappropriate medical care in childhood: Antidepressants were prescribed to Participant 10 in childhood:

"I've been on and off Citalopram since…managed to feel better when I would take myself off the Citalopram, and then something will happen, and I would end up on the Citalopram. Em, that's kind of been an on and off since childhood".

Adversity: Some iatrogenic consequences of uncertainty and antipathic relationships were various adverse effects, which included investigations and interventions, labelling, polypharmacy and opioid dependence. Furthermore, distress was evoked by healthcare environments such as hospital and GP waiting areas. Iatrogenic adversity was also interconnected with frequent attendance and persisting symptoms that led to service inefficiency and ineffectiveness.

***Multiple investigation*:** Repeated clinical investigations without diagnosis caused considerable distress and self-doubt to Participant 10:

"It was 24/7 the cystitis, it was horrendous... they kept giving me antibiotics which obviously wouldn't work because there was no bacteria in it…

… I kept going back to them and this was going on for about a year and in the end the doctor stopped seeing me...and started making me see a nurse instead...thought maybe it was in my head".

Participant 10 later underwent repeated invasive investigations and was also involved in clinical trials, which did not help her:

"*new medications, trials of medications...I had...everything basically that they've come up with, I've tried and tested it… it was bordering on two cystoscopies a year...he said (Donington et al.), we can't be doing this because it's not actually helping you".*

***Medication dependence*:** Persisting PTSD and MUPS symptoms led to polypharmacy and medication dependence such as opioids and benzodiazepines:

Diazepam led to significant problems with dependence for Participant 03:

"the diazepam…I had to bring myself off them because I was taking so many benzo's…I was on diazepam, lorazepam all day long, washing it down with alcohol to try and get more of a benefit out of it…and the level of addiction that I had to benzodiazepines in the end,

em just shocking, …having waking fits… just coming off, I was taking so many of the damn things".

***Polypharmacy**:* Participant 02 described a nocebo response to medication for chronic pain. Frequent changes of powerful analgesic, including controlled drugs with little therapeutic response, led to polypharmacy and side effects. Overall, his chronic pain seemed to be helped more by talking than by prescription medicines.

"They were treating...my chronic pain, with strong painkillers... I'm on so many, so much medication...the hydrocodeine... the codeine …I was on morphine sulphate for a number of years together with tramadol and gabapentin...I asked to have that changed, so now I'm on oxycodone…I'm on pregabalin and remedeine…

… they would, just kept upping...my medication and changing... the combination medications around...just trying anything they could, just go get a handle on it...I was taking MST with, ooh, lots and lots of oramorph in-between...

…we're so good at giving pills and potions out, that talking to patients is something better".

***Side effects:** Potential risks to physical health from medication prescribed for PTSD were highlighted by Participant 07:*

'I wasn't a diabetic before, but when I started taking olanzapine, I become a diabetic...I'm not quite sure…he's (doctor) not quite sure what might have caused my diabetes'

Ineffectual medication*;* ineffectual psychological therapy:

Participant 07 described persisting, severe symptoms that required continuing medication to mitigate the symptoms and risk of suicide, without symptom relief. He had not responded either to psychological therapy at specialised veteran PTSD services:

"There's nothing they can do about it…will I ever, ever be cured and he says no. And so I just take it on the chin and so I've got to live like this day out and day in and take tablets to keep me going"

Other participants disclosed that psychological interventions either did not relieve or sometimes exacerbated their PTSD and MUPS symptoms. Non-trauma focussed counselling, which did not include physical symptoms or anticipate dissociation, were found ineffectual and/or symptom provoking.

Although Participant 01 had undergone counselling prior to specialised PTSD psychological therapy, physical symptoms were not included in the psychological care and continued under the separate remit of medical services:

“They never really went they never really included the pain, em yeh, in the counselling that wasn’t included”.

Pre- PTSD, MUPS and dissociation counselling was not found helpful for Participant 10:

“a bout of six-week counselling, which used to make things worse. It never answered any questions, so in my head, I was still like ‘is there something wrong with me, or is there not, and because of that conflict, the dissociation bit would, would come back in and that would just end up going back to my brain…I walked out of the room with all of this stuff on a plate thinking OK now it’s out, now what the hell do I do with it?”.

Traumatic care environments: Some participants were distressed by the care facility environments, particularly waiting areas before consultations. Participant 09, who describes dissociative seizures triggered by unfamiliar people and social events also found GP waiting areas traumatic:

“Sometimes I’d collapse, even in, in the doctors’ waiting room because there’s a lot of people around.”

Antipathy: Bias, disconnect and conflict

Negative relationships with clinicians were perceived by several participants at some point in their health seeking journey. Three antipathy subthemes were identified from thematic analysis; bias, conflict and disconnect:

***Female gender**:* Participant 01 described stereotyping and feeling blamed from responses to her persisting symptoms, and felt her experiences were undervalued and dismissed by male clinicians:
“*my physical symptoms, I am not happy with the way I’m treated because I’m just treated like a woman...I should have had kids, really that might have solved my period problems...*

...they never really took it seriously. I just felt like it was being fobbed off...the consultant in the hospital told me that his wife also had mood swings and it was something I had to put up with... which I thought was quite rich coming from a man…

***Power imbalance**:* Some negative encountered were perceived power imbalances between patient and clinician were described. Participant 08 perceived differences in power attitude between mental and physical health practitioners:

"sometimes they don't like you when you say, when you tell them that you think you've linked something. Some doctors, like my mental health doctor liked it when I said some things, but other doctors don't like it when you tell them".

***Paternalism**:* Participant 10 described power imbalance through paternalistic attitudes:

"the original (specialist)…*was very old-school and quite a scary character, so I wouldn't necessarily have sat there and divulged anything to him... he never said this why you've got it, he just said that's what you've got…*

***Stigma**:* Although some participants recounted difficult relationships with clinicians, Participant 04, a war exposed veteran, perceived difficult engagement with care professionals arising from himself. Despite offers of help from trauma informed professional's, personally perceived stigma from within about PTSD and fibromyalgia diagnoses, made engagement very difficult for him:

"Yeh, the problem is we're our own worst enemies, all of us, because when I was speaking to X… he said the tragic thing is, with you lot, is you don't accept it until about twelve, thirteen years down the line…because you're all roughie toughies… it's because you don't want to be labelled, you've got your own self-pride you, nobody wants to be labelled, it's still a stigma…

***PTSD Stereotypes: Military v civilian**:* Some participants perceived less credibility for their (civilian) PTSD against general perceptions about PTSD as a military based health problem. This was described by Participant 09 who suffered limb injuries and developed PTSD after an MVA:

“I’ve had an awful lot of ‘but you’re not a soldier’, em, most people... they don’t think that civilians get it, so they either think your lying because it doesn’t fit with their ...understanding of it, or... they only think it only happens to soldiers”.

Malingering: Participant 11, who disclosed chronic pain and dissociative symptoms following an MVA, described experiences of not being believed and an assumption about malingering when engaging with the benefits system:
“ if people are on benefits and stuff you have to prove that, prove that you’ve obviously have got these symptoms, and when they send you for medicals they just look at you as a person, and if you look OK, then they send you to work, they don’t see it, they don’t see what you’re suffering inside. They just looking at you and just judge you from the outside”

Blame: Some participants felt prone to blame that might reflect an aspect of PTSD rather than an actual antipathic response from authority figures:

Participant 05 felt she would be judged by her church:

“so, you had…confessionals but that’s you’re saying, you’re the bad person, that you’re in the wrong.”

Disconnect: The second antipathetic response identified was ‘disconnect’, which could be passive such as apathy, or active when participants perceived their experiences were denied and dismissed. Disconnect could also be a two-way process through vicarious effects such as dissociation, or a response to antipathy such as defeat and withdrawal.

Passive disconnect of apathy through insufficient explanation about symptoms was described by Participant 03:

“I was very tired all the time, but I’m certain from the point of view of the fatigue, that was possibly more a negative experience because I wasn’t given any explanation for it at the time”

In contrast to passive disconnect some participants perceived a more active type of disconnect of denial, dismissal and rejection that led to participant disconnect, defeat and withdrawal. Participant 05, as a young adult, described her first opportunity to describe her past, extensive childhood abuse, to a mental health professional, without the presence of the perpetrator. She recounts the harmful effect by denial and dismissal of her experiences:

…I'd say a lot…explaining well my entire back story to a stranger, which I don't particularly like doing… I was just looked dead in the eye and told to get a grip of myself…

…I was told to get myself together, just pull myself together, I was over-reacting and I'm like 'someone's just tried to choke the life out of me they left me for dead and I need to get myself together' that, that was it then, I just gave up after that, I didn't go back em".

Participant 09 felt that the severity of her PTSD diagnosis and limb injury, caused by an MVA, were denied by her surgeon:

"It was interesting then going back to the hospital, em, and explaining that to the (Donington et al.) who said 'what, you've got your PTSD just from this…which felt incredibly dismissive…

Participant 10, who had persisting bladder symptoms that were eventually diagnosed as IC when a young adult described several experiences of perceived dismissal and antipathy with health professionals. She also reflected on previous attempts to secure help for her emotional distress, which was had met with apathy.

"I saw this nurse...I remember her words exactly, she just said… there's nothing wrong with your bladder.' And I would love to bump into her today, I really would...

...And it didn't help that when I used to go to A&E, and I'd tell them what I had, they'd look at me and say 'oooh, what the hell is that'…you'd get a doctor that would be quite obnoxious and not say that he didn't know what it was".

Vicarious Effects*:* Participant 10 had also considered another apathetic response by a previous counsellor, which was considered possible vicarious dissociation:

"I felt I was ready to talk, I had six weeks and that, that was it and the counsellor even fell asleep. Which speaking to (trauma therapist) …didn't necessarily mean he was bored, it meant that he might have actually been picking up on the dissociative bit".

Conflict*:* Participant 06 frustration and perceived rejection from a surgeon who had been dealing with his MUPS without diagnosis or improvement over a long period of time. He described the clinician passing the problem onto another specialty when the opportunity arose:

"I went to see a surgeon… said...I'm so really fed up of seeing you, what the hell's going on...I've been seeing you for all this time and what I'll do… if a CT scan (is ok)…then we'll have to discharge you and you'll have to get on with life...

After investigation for an unexplained shoulder problem, Participant 06 described an opportunistic all body scan, taken at the time of the shoulder scan that led to another major diagnosis:

(Radiologist)…he said have you ever heard of MS (multiple sclerosis) ...he said that's what I think you've got…

...he came back up the surgeon with me and he said, look, I know you're sort of really hacked off with this guy, but look at this, and the surgeon looked at it and he said ohhhhh great, you can go to neurology now, and here's a referral, bye, and that was it".

***Conflict of Interest**:* Antipathic relationships due to perceived conflict of interest was identified by Participant 03, a war exposed veteran, who recounted an assessment by his employer's insurer that made his condition worse. Malingering seemed an implicit assumption:

"I am making it all up, that I'd falsified the entire event despite the fact there were reams of paperwork on it, but em, despite being an independent consultant, he had been paid for by the insurance company, huh so that was his job really...It was just a very strange surreal experience to be told you are a liar…very unusual, something I've not been used to in in my life".

Inefficiency and Ineffectiveness

Iatrogenic factors relating to uncertainty, antipathy and adversity, described by participants, contributed to inefficiency and ineffectiveness that further impaired the patient journey.

***Frequent attendance**:* Misinterpretation, diagnostic uncertainty and ineffectual interventions for persisting symptoms contributed to the frequent use of routine and emergency services, which in turn encouraged antipathy for some participants.

Participant 09 felt his chronic pain, PTSD and depression were not being recognised by health services, which led to frequent admissions:

“I think I had 4 or 5 admissions, over a pace of a couple of months ehh, now that with the number of admissions together with my low mood, you know, didn’t seem to be helping my, my condition”.

Frequent ambulance calls and admissions for Participant 06, led to perceived antipathy from ambulance responders:

“is it me? You know, am I making this up. I was called everything…I was in and out of hospital every three or four weeks…the ambulance service had me down as one of their regular users, or I was called a timewaster, a bed-hopper”.

Participant 10 frequently attended health services because no diagnosis was forthcoming, and no satisfactory care provided:

“Em, I think I’ve had 150 admissions in the 15 years, to a hospital. And it didn’t help that when I used to go to A&E”.

Access: TA indicated considerable service inefficiency, ineffectiveness and iatrogenic harm for people with PTSD associated with suboptimal access to appropriate care:

Waiting*:* Delay due to diagnosis uncertainty was identified by several participants.

Participant 10 described extensive investigations for IC that eventually required major surgery:

“Em, a nightmare, it took me 2 years to get diagnosed with the IC”.

In order to meet her chronic pain needs after several years extensive NHS care in mental and physical services, Participant 09 commissioned a private physiotherapist for diagnosis and treatment:

“oh, it’s taken 9 years to get the diagnosis of the, the slipped disc”.

Although waiting for PTSD care had escalated Participants 08’s symptoms, deterioration in her condition facilitated access by implementation of an emergency mental health protocol*:*

“it’s taken me a really long time to get help. I had to wait weeks and weeks and weeks for an appointment, and then the appointment was cancelled, then had another appointment, and then that got cancelled…

…at that time I was very, very low, I was self-harming, and everything was just a total mess…I had every single symptom you could think of then…everything had gone wrong and I ended up taking an overdose because I’d waited, and waited, and waited, and appointments kept getting cancelled”.

***Impersonal Care**:* Participant 02 highlighted inefficiency from lack of continuity of care by somebody who knew him and his story:

“it seemed a total waste of time because every time I went, there was a different doctor, and I would have to explain everything over and over, and over again, even though...there was copious notes written. And by the time I’d explained, my time was up, so there was no treatment given then, except keep taking the tablets”.

Participant 02’s perception of insufficient time with clinical staff was supported by participant 04:

“with the PTSD...you can only see somebody for 10 minutes and then it’s chooo, and you think, hang on a minute, I need longer than 10 minutes to talk to the chap because I, there’s a lot I’d like to say and tried to explain but the medical profession you’ve only got 10 minutes and off you go... the system just can’t give them enough time to you know so that’s one of the bigish, big issues”.

And Participant 10, who suggested further traumatisation by limited therapy sessions for complex problems:

“I had six weeks with this one counsellor, em and there’s absolutely no way in that six weeks that I could go through what I wanted to talk through, so I felt I was ready to talk, I had six weeks and that, that was it...

...But if you get somebody that is complex, or has a history of abuse, how on earth are you going to go deal with that in six weeks. What you’re doing is making that patient worse, because you’re bringing stuff out and then you’re sending them away with it”.

Costs: Resource allocation, constraints and waste were perceived as a problem: Participant 02 highlighted the gap between his experience and health policy aspiration:

“think there’d be more joined up care in the community, is supposed to be a seamless transition between care, but it isn’t because resources haven’t been put in, to make it seamless...I think that em, resources being ploughed into something, being used inappropriately...money is going out in the wrong areas”.

The influence of health policy funding rules for out of area treatment was an issue for Participant 10:

I was stuck in the funding battle between who was going to pay for it, Wales or England? it’s alright coming up with all of these recommendations but if there’s no funding...it just gets blocked”.

And Participant 01 recognised the potential to save money with access to appropriate care:

“I do believe that if the counselling, especially the PTSD counselling...if they were more readily available to people, I just think you know, it they would save the country a fortune in, in em medical bills...and also...less waiting time”.

3.4.5 Adaptation

The second overarching theme is adaptation (Figure 3.4). Variables identified through thematic analysis suggest possible solutions to iatrogenic effects of uncertainty to improve the patient journey experience for people with PTSD and MUPS. Theme inter-relatedness suggested improved outcomes could be achieved by helping patient and clinician make sense of symptoms through increased trauma and MUPS awareness. Additionally, increased control through self-resourcing and involvement in co-produced education, interventions and services. Holistic care trajectories with an emphasis on responsive and informed, personalised care and empathic relationships was also suggested. Adaptation variables are described further.

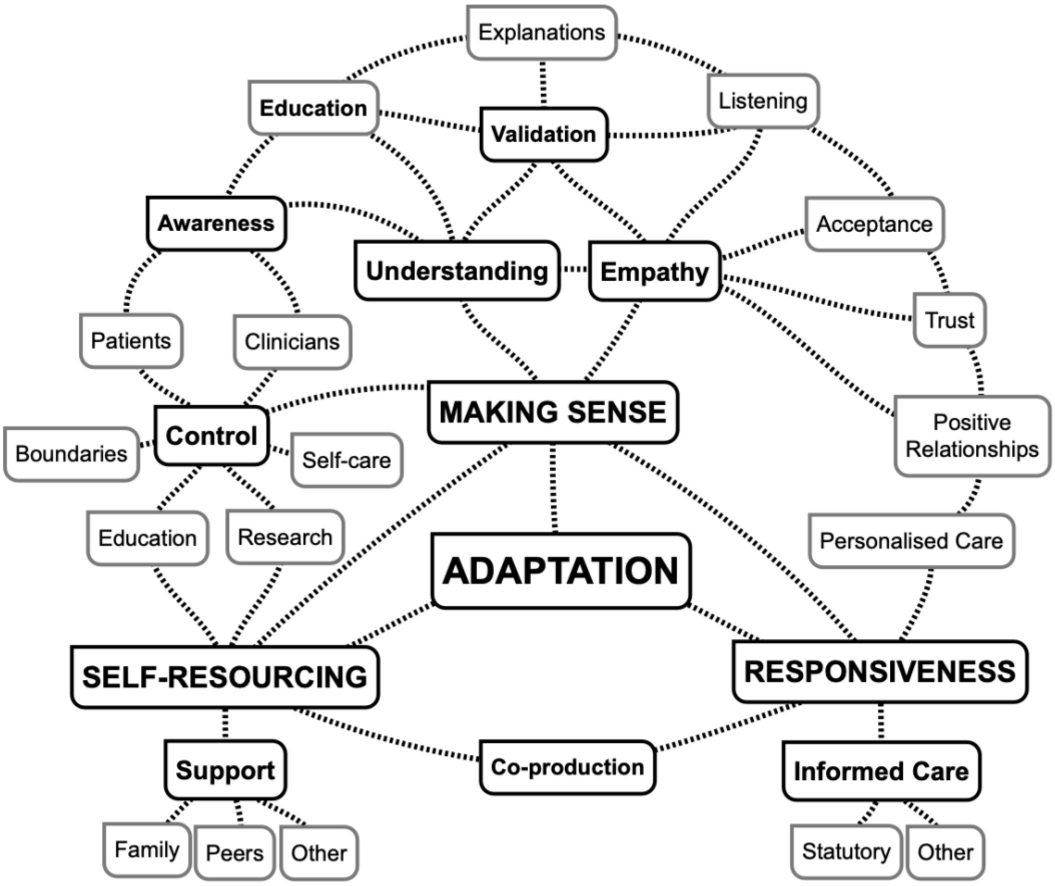


Figure 3.4 Thematic map for adaptation

Making Sense

Making sense of PTSD and MUPS symptoms appeared to be a major factor that helped participants better adapt to everyday life. In order to make sense of their experiences, o participants suggested greater awareness and understanding of both conditions was required. Equally, after perceiving much antipathy from services from where help was sought, empathic interactions between patient and clinician was valued. It was suggested from participants that better understanding about PTSD and MUPS was required by clinicians as well as participants. Again, clinicians were not involved in this study and as such, comparisons of need cannot be made. Participant 02 described a traumatic care journey following an MVA and reflected on the need for and importance of both understanding and empathy, to deal with uncertainty and support adaptation:

"What I'm saying is that one has to identify the root cause of the problem and some things you can't even find the root cause. You know the root cause is a hazy jumble at the bottom, that even the person suffering can't identify what the root cause is"

Understanding

***Trauma and MUPS awareness**:* Lack of control and anxiousness were frequently suggested by participants, whereby trauma and MUPS informed care, when received, helped them make sense of their symptoms and behaviours, as well as effects of previous childhood traumatic experiences. Overall, a greater understanding of their PTSD and MUPS experiences led to a greater sense of control. The need to reduce uncertainty, in the absence of informed explanations, was evident in participants who had to resort to their own explanations: Participant 01, linked her chronic pain and fatigue to sleep problems:

"but I know with the, the sleeping, the tiredness, the fatigue… my body was just constantly on alert... I was not resting enough…I had a lot of neck pain with back pain…. which I think that was because I was constantly stressed; my shoulders would be hunched up and I was only alert all the time and the aching because of that".

Prior to PTSD and MUPS informed explanations, Participant 04, who had PTSD and fibromyalgia, also tried to make sense of his symptoms:

"Well, I call them flu, nothing with my chest, just you know when you have the flu your body generally aches and I thought that it was a, bout, a bout of flu...

... I originally, I'd put it down to wear 'n' tear. You know, getting old now, and I've… overdone this".

Participant 04's symptoms continued to cause significant distress to himself, his work colleagues, and his family for some time. However, he was able to come to terms with his PTSD and fibromyalgia symptoms through an occupational health service with trauma informed personnel. Although he was initially resistant to the diagnostic labels, he described some benefit from the new understanding:

"Because…he linked…he also spoke about fibromyalgia and he said it was linked with PTSD, it was stress and, and you know all the other bits and pieces that go with it… it's linked to the PTSD because your you're highly strung all the time, and your body's wearing

down and your brain is tired and for some reason or another...it triggers something off and then your body starts aching, and it tells you it needs to rest".

Participant 05, who disclosed PTSD, chronic pain and prolonged childhood physical abuse, described the benefit to her of PTSD and MUPS awareness gained through trauma informed care:

"a lot more aware these days of mental health…but it's your physical stuff as well…with the education comes a lot more understanding… I actually feel like I'm getting somewhere for once instead of just treading water".

Explanations during PTSD therapy at a designated NHS PTSD service increased understanding for Participant 08:

"why I'm dreaming these dreams and why I'm getting these flashbacks... understanding why when next door kicks-off...why I feel the way I feel, and I get the symptoms...and get the illness...irritable bowel, the migraine, the shaking, the nervousness and the anxiousness".

However, she had also noticed a disparity of understanding between medical services and PTSD informed mental health services:

"there's been em, more help from the PTSD side because I had such a good mental health doctor and psychiatrist who, who went into everything in details. Em, the physical side it was more a case of why you've got this, here's a leaflet and here's the medication and that's it, so I think it's more a case of the mental health side is, is the better because they went into more detail and more, and I understood more".

For Participant 09, in addition to help making sense of her dissociative seizures, she described relief from her PTSD and MUPS symptoms being diagnosed, labelled and validated:

"the psychologist...was the first person who recognised PTSD...and explained to me, you know, you're, not going mad, this is PTSD...and she diagnosed...the dissociative seizures...

...she described, em, the way I was losing the map of my leg and she also said, em, sometimes when people were talking to you, you dissociated".

Similarly, to Participant 08, she had noticed a disparity between mental and physical health services in understanding her symptoms. Also, her prior experience of non-PTSD/ MUPS informed care contrasted with the benefits of her new understanding gleaned from trauma informed clinicians. Her experiences led her to suggest changes that could benefit others:

…I'd love to say .... people in physical medicine with more understanding of the mental health issues because that is really lacking. Some people do, most people don't…you get the odd person who really understands and is accommodating, and some people who are just dismissive and they'll stand there rolling their eyes at you"

Empathy

In addition to increased cognitive understanding and awareness of PTSD and MUPS through informed education and explanations, participants also valued emotional engagement in their care. This need correlated with the considerable antipathy most participants had perceived at some time in their journey. The importance of empathic relationships in care was illustrated by Participant 05:

"the empathy…can mean more like something like a diagnosis…I think that empathy is a huge part of it…that personally... it's been the reason why I've felt comfortable to come back because I wasn't being judged".

Participant 03 valued the supportive role of his GP:

"My GP was very supportive, em, he seemed to understand what I was going through, he seemed to be there for me".

The main elements of empathy were identified by participants who described the importance of listening, acceptance, validation and trust, through positive relationships with clinicians.

Participant 05, who had reported persisting childhood physical abuse and frequent unsatisfactory contacts with health services, described the benefits of empathic listening and validation by trauma-informed clinicians:

"I was listened to, for what felt like the first time, and ... that means more than I could say to be honest...someone's not going 'idiot', "over-re-acting", "just get out of my way", "you're a waste of my time"; no, listen to what I've got to say, let's find out what's going on. That's

... that been huge, that really has... like a weight's been lifted. I don't feel like I have to hide any more".

Participant 10, who disclosed extensive childhood abuse, PTSD, DID and major surgery for chronic pain, described inconsistent listening by clinicians throughout her journey:

"if I'm trying to describe how I feel with something, if they can't physically see the connection to why I'm feeling that, then they don't listen. Because they can't see that physical connection…so that hasn't been helpful...

... but ...X (consultant), he takes the time to listen… I told X I had PTSD and I told the sister on the ward I have dissociation; this is what I do to help myself. Em, and this is what you can do to help me, and they do it, and it's really good…

Similar to Participant 06's experiences, Participant 10 made repeated pleas for clinicians to listen to their patients:

…so, listen, listen to the patient. Em, because you have to get a history from them anyway so just listen, so instead of you listening to one bit of it and thinking, oh yeh, I know what you're gonna say, and it's absolutely not what I'm going to say, you need to listen to actually what I'm actually saying to you".

In addition to empathic listening, and similarly to Participant 09 who eventually realised her symptoms didn't mean she was 'going mad', validation of experiences was also deemed important. This was expressed by Participant 05, who had undergone trauma informed therapy after years of feeling dismissed by healthcare professionals:

"I've been through both sides from the not serious, to being taken serious…and, it was the first time anyone had said 'oh we can help you'. You know, it wasn't, 'you're wrong, you can't feel that way'. No, 'we can help you with this', 'it's ok if you feel that way', 'we can fix it'...it's hard to explain how much that means to me…well that's everything… it's the biggest start to the most important steps was just having someone believe me".

Empathic support to encourage self-acceptance was also important. Participant 10, who had described antipathic denial of his symptoms from an insurer's expert assessor, was able to accept his symptoms after further opinions from more empathic professionals:

"I think well, I just got on, on with that, I've just accepted that myself that, that was quite normal after being quite badly battered"

Self-acceptance as well as acceptance from others was also valued. Participant 04 who experienced trouble accepting his PTSD and fibromyalgia diagnoses until he received informed, empathic feedback from health professionals, and support from his family and peers' networks:

"the PTSD, which I do accept it now, when I spoke to the guy in P (trauma informed service)*…he also spoke about fibromyalgia and he said it was linked with PTSD...he said 'we need to slow you down; you need to accept it and start trying to relax'…I accept it now because I've, I've spoken to my family and other friends and they say yes, you know, but you tend to be highly strung all the time".*

In addition to her PTSD and MUPS symptoms, Participant 10 was able to accept her various dissociative symptoms and ego states, associated with her childhood trauma after trauma informed psychoeducation:

"And afterwards I actually feel quite happy, not dissociative like I did last time, like I'd done something wrong. Em, so I've learnt to dealt with the parts of the physical symptoms and to accept that I have these different parts and to learn what the triggers are. And to link the trigger to the part to the symptom".

Although trust was an important attribute, mistrust that is intrinsic to PTSD meant that participant trust had to be earned by the professional. For Participant 04, a war exposed veteran with PTSD related avoidance, although he wanted to trust, it was not easily achieved or accepted:

"You knew somebody who totally understood you so you could put your trust in him which was great because again…that system, them and us you know, don't trust nobody that was the thing, I don't trust anybody and I still don't unless it's part of the medical, professional people that I know who I can trust".

And Participant 03 found difficulty with trust following a 'near miss', from investigations ordered by a third-party insurer's expert; trust was later restored by empathic, informed care:

“So, there was some trust issues with some certain people there when you when you’ve been referred to a renowned neuro-psychiatrist that wants to put you in to a machine that would undoubtedly kill you…

…Most of the people I saw were very knowledgeable, very trustworthy, they provided answers that made sense on the whole”.

In addition to fostering trust between clinician and patient, continuing positive/ therapeutic relationships were deemed important for participants when engaging in therapy. Participant 07, valued a long-term relationship with his therapist:

“I still keep in touch with X (trauma clinician)…I always send him a postcard you know, he’ll write back...and say, ‘how you keeping’ ...he’s very helpful, am glad I met him and XX (other clinician) was good as well...helped me out a lot”.

Participant 10 had formed valued positive relationship with her GP (X) and a trauma therapist (XX) in the same healthcare team. When the therapist moved on, although distressing, the relationship- based trauma therapy with XX had facilitated ‘grounding’ abilities and enhanced understanding for self-resourcing when needed. However, continuity of care with a trusted, informed professional who also knew her was also required such as X until further trauma therapist availability:

“*the first sessions (with XX), were really about us getting to know each other...because it wasn’t X, I was a bit guarded, because I felt like I’d developed like a relationship with X where I could be open…*

*…I think the session when (XX) told me (*was leaving), *probably the worst session because I felt like I’d been abandoned again”.*

Responsiveness

***Personalised Care**:* Although the benefits of empathic PTSD and MUPS informed care were described by several participants, their experiences varied considerably across general health and specialised trauma-informed service providers.

Iatrogenesis, duality and co-morbidity led to suboptimal experiences in some statutory services, led to self-resourcing by some participants to better meet their personal unmet needs. This included the hiring of private physical and psychological therapists and embracing complementary therapies such as acupuncture and manipulation. The need for personalised care was summarised by Participant 02:

…we're not car engines that you can get a manual, you know, people are complex, jumble of all sorts of different things, and no two people are the same, no two conditions are the same. Don't try to square pegs in round holes; it just doesn't work you know".

An example of personalised care in clinical practice found useful by Participant 10 was the facility to book review appointments when needed, rather than setting fixed review appointments:

"I know if I got too bad and I needed an appointment with X (GP)... if I phoned they usually put me through to (XX) (trauma informed practice secretary), and (XX)'s lovely and I'd say, 'I'm failing', and I'm you know, 'breaking-apart', I need that, and I'd get an appointment when X will help, that is everything, that is like…it's a big foundation...

...I think just having somebody that I could ring and come in and see and have an appointment...when I wasn't feeling that healthy, was really effective for me because it wasn't 'oh, ok, we'll put you on a waiting list and you'll see someone in six months...

Participant 09, who became fearful of crowded clinical waiting areas that could trigger dissociative seizures, described a personalised response from her GP surgery, whereby her appointments were arranged at times that minimised the risk of a crowded waiting room:

"They try and accommodate me sort of at the end of the day when it's a, maybe a little bit quieter. Em, there's not a crowd of people coming in after me, em so tend to get the last appointment, yeh, they've been very good with that…the GP I see now seems more understanding".

PTSD and MUPS Informed Care: The majority of participants described long unstructured journeys, often receiving non-specific care that made them worse off. This contrasted with more positive experiences and outcomes reported by participants who had been given access to trauma and MUPS informed care.

Participant 03, a veteran, lamented the lack of any mental health support at the time of his trauma, although his eventual PTSD informed care at a designated veteran service (P) was transformative:

"Perhaps an early referral to first access...or em to a community health team in retrospect might have mitigated the, the emotional the mental problems that I was having at the time because that didn't happen until P (veteran service) got involved".

...and that's when EMDR was offered to me...it worked really rapidly…and I was able to stop my antidepressant medication…I'd been on a high dose…for a good while, and yeh, my energy levels started picking up again afterwards my mind became a little bit clearer"

Participant 07 a war exposed veteran, who was initially avoidant of care, responded well to specialised PTSD care for veterans:

"It was positive, X (PTSD clinician) told me of how I could deal with my symptoms, how do deal with panic attacks, how do deal with my breathing, em, how I could deal with nightmares and things like the…mental health it's, is at the moment the best it's been in a long time which is phenomenal for me".

In addition to veteran PTSD services, trauma informed care was provided for civilians at specialised PTSD services with benefit. Although critical of the long waiting time, participant 01 described the benefit of care at specialist an NHS PTSD service (P):

"went back to P facility…every time I, I got, I saw somebody professional it was brilliant, and the experience was brilliant, and it really helped".

Participant 08, also described her personal benefit from interventions delivered in a specialised NHS PTSD service:

'It stopped me from having so much irritable bowel symptoms because I was talking everything out all the time. Every time I had night terrors or flashbacks, I would write it down and then when she came, we talked through it and, because I was writing it down it was if I was getting everything out of my head'

Participant 05 summarised the outcome of trauma and MUPS informed primary care after describing years of antipathy and ineffectual care since childhood:

" it's helped, me. I go out now, I don't go out a lot, but I go out more than I was, that's, that's progress for me. In fairness, yeh, I nearly made it to (event)... I didn't quite make it, but I got further than I ever thought I would four years ago...

…I can't tell you how lucky I feel...I've come it at the … right time, right place…doesn't usually happen for me…I'm extremely happy about that".

The variable propensity for iatrogenic consequences of care and inappropriate responsiveness in relation to PTSD and MUPS, was suggested by Participant 02. He described possible iatrogenic PTSD and MUPS symptoms following emergency care provision, which later led to frequent admissions. After some time, his considerable difficulties, were recognised and he was referred for PTSD therapy:

"I saw the consultant, em, I explained to the consultant, you know what had happened and then he was a bit concerned, he said, 'well you should have been admitted em, but not the way you were'… he did then send me to P to see somebody, a PTSD counsellor".

Inconsistency of approach to PTSD and MUPS by health services was also depicted by Participant 09, who described a mixed experience from tiered care approaches within the same mental health facility; primary care mental health services were found to be limited to anxiety and depression management, whilst secondary care mental health services, provided PTSD therapies. Furthermore, both tiers were time limited:

"they offered me the, the intensive week em, which was brilliant that was the first time I'd really got somewhere with that… flashbacks and em, particularly the dissociative seizures. …they were, they were absolutely marvellous…that was incredibly intense and difficult to do that for a week…

… and then the person that I saw was moving on...they couldn't see me anymore and they said you can go back into primary care, em, which was actually, if I'm honest, useless...they'd no idea of PTSD. They're used to dealing with people with depression. Em, completely different ball game. Em. Didn't find that helpful at all after, after being in specialist care".

In addition to improved access to designated PTSD and MUPS care, participants disclosures suggested a more joined up, holistic, personalised and participatory approach was required.

Participant 03, a war exposed veteran, reported a tortuous and ineffectual international healthcare journey over several years, following a blast injury. He eventually received care from a specialised brain injury service (P), occupational therapy and from social care. This was prior to specialist veteran PTSD care several years later.

...I finally got a referral... to the P brain injury service and things really started to pick up from there. I was being seen weekly, I got some occupational therapy finally and started moving around a little bit more and got put on a workshop… and everything started progressing from there...

...more social services involved would have been more…useful, social links did a wonderful job".

Self-Resourcing

Some of the participants reported they were unable to obtain suitable care from statutory or charitable services and sought interventions, and self-funded private therapy to help themselves. Some participants drew upon support networks, including family and peers, and others utilised knowledge and techniques gained from previous therapy, and others pursued self-directed education, training and research.

Self Help: Ineffectual interventions and inequitable access to appropriate care led some participants to consider developing their own care. For Participant 09, the lack of response to medication for chronic pain led to her to apply her own remedies:

"The chronic pain...I keep having hot baths, I've bought different items that have, give me ease; I've got a TENS machine, I've got heat pads for my shoulder and neck...for my lower back".

Participant 10 described good outcomes from trauma and MUPS informed care, however, when this work ceased, she utilised knowledge and skills gained in therapy and secured further trauma informed counselling outside of healthcare services:

"but I've surprised by myself... she (trauma therapist) gave this tool kit...but I used these tools...the work that this counsellor...already been done with me is amazing, and there isn't a lot always more to do...so I have...an affirmation book...I carry... a grounding kit with ...coconut, vaseline, I wear perfume on my wrists...

...I'm learning to listen to my body more, I don' feel like I've got two separate entities, I feel like I'm a whole person...sometimes the little girls who was abused would come through, and I'd start clamping up…so, I've learnt to speak to her and say you're not a little girl anymore you're safe, I bring in a wolf and she stays with the wolf...afterwards...I feel quite happy not dissociative".

Self-control was important to Participant 04, a war exposed veteran, who found music satisfied both his personal and social requirements:

"*I like listening to music...I like it when I'm on my own....if you go to somewhere like the charity we've got, like when you sing with the rest of the group...that's the only time you feel safe."*

Due to time limits on PTSD care, and with continuing symptoms and social isolation, Participant 09 self- financed personal PTSD and MUPS care with an EMDR therapist and physiotherapist:

"I'd been told that the NHS wouldn't em be able to pay for any more treatment…they felt there was nothing they could do…so I saw a therapist here who specialised in PTSD and did EMDR…she was really helpful…I'm yes, very grateful to meeting somebody like that…I saw her for two years…she did some EMDR sessions privately".

Her chronic back pain was treated also treated by manipulation to great benefit:

"And she went let's do this, em and put it back for me and I couldn't believe the difference…was a private physio...I can breathe again now…which is amazing".

Through greater mobility, she was able to gradually expose herself to social situations that had usually triggered flashbacks or dissociative seizures:

…tried to take me out to see, em, how I could cope... I saw her for two years and she was absolutely marvellous…I couldn't get out at all…until she did that…...she made a huge difference to me...we practiced for about a year going in the same café… I can now just about get in somewhere".

Support networks*:* In addition to self- directed learning and care, support from family and peers was crucial for some participants. Trusted individuals and groups provided necessary support to seek care, engage with care, and to help them come to terms with their symptoms and behaviours: Participant 04 described long term problems with anger and avoiding help:

"Well it's not nonsense obviously but I couldn't get my head around it you know. I accept it now because I've, I've spoken to my family and other friends"

Participant 07 who was also avoidant of care services, discussed how his wife persevered to ensure he sought care:

"It was my wife who, who seeked help, for me because I didn't want to be, I didn't want to come out of the army see, and I, she said I'm gonna see the doctor and I said I don't want to see a doctor I'll be alright?".

In addition to support from family, the credibility inherent in peer networks also helped adaption. Participant 04's difficulty accepting of his PTSD and fibromyalgia diagnoses was eased by voluntary veteran peer support groups. Although PTSD therapies were rejected, his own antipathy was mitigated by peers:

"the coping methods to me some were really nonsense like this EMDR, you know, aggh, who dreamt this one up you know. Em. And some of the other stuff, the psychological stuff, I though ah this is a lot of nonsense it's just, it's just not squaddie…

…it's like a commune come on in lads or come on in or if you've got any problems, pick up the phone and listen and I'm having a bad time, hey, can I come in and see you, I think that is what they need"

Similarly, Participant 06, a veteran also found peer support groups helpful, preferable to medical interventions:

"I'm with the veteran's group...we just have a cup of coffee and we tell each other our problems and that helps enormously, but better than any tablet on the, on the books that help, you can throw the BNF away, just sit there and talk about it. Talking is the best therapy of the lot".

Control: The overall importance of a sense of self-control and determination was indicated by examples of participant self- resourcing and making sense through responsive care. Participant 04 described a sense of control through a veteran peer support group:

"they're not afraid to talk there because they know we're all on the same wavelength, and they're in a safe environment... you're not controlled but they're under control and they can control their angers and their family problems"

Participant 10 utilised her knowledge gleaned from trauma therapy and from personal research into her PTSD, dissociation and MUPS:

"I went away and did my own research on that, I found an article on IC, how it doesn't show up in your urine culture...there is a correlation here...doing more research myself there is a lot of IC patients that have had some form of abuse in their past".

Participant 03 underwent trauma education and training to aid his own understanding and help others with PTSD; his trauma knowledge was apparent at interview:

"well since the em sensitising incident at the end of 2004, I have had a lot of ...what appear to be, how would I best describe it? Limbic symptoms…flight or fight... type... responses…pain can be related to em the psychological symptoms as well, that's something that in my professional life (trauma therapist); a lot of it is trying to understand how emotions can cause pain as well...

In addition to making sense, setting boundaries helped participants develop a sense of control to better manage their symptoms and behaviours:

Participant 01 who endured prolonged threat in her family established protective boundaries after therapy"

"the coping mechanisms really…were just being able to…realise that I could say no... to my family and to things without…feeling guilty…so, it helped me just to explain my reasons for saying no...they didn't like it …it caused a lot of problems, but now you know, a year on, em, things are a lot better".

Co-production: Following Participants 02's pathway experience, and based on previous professional experience, he became involved in care planning at a national level and describes a co-production approach to wellbeing:

"I had managed to get myself on a research project looking at Mental Health, em care planning...the care plan had to be collaborative... this all had to be done at an initial stage of involvement...and it was reviewed collaboratively, not just a doctor making a decision...

...I think there needs to be more co-operative work done between professionals and the recipients of care. Em, so that a, a treatment package can be arranged which is appropriate and accepted for the individual. It's not something which is imposed, it's something which is agreed upon that it then becomes something which the recipient can then carry out rather than ignore...with a better outcome".

Care Trajectories*:* Although participant journey experiences varied in this study, most self-reports indicated hit and miss, crisis driven pathways with varying outcomes, that is, defined care pathways for PTSD and MUPS were not apparent for participants. The need for co-produced, personalised and responsive care for people with PTSD and MUPS was indicated by participant experiences.

Participant 05 described the GP navigation role to secure chronic pain care despite having been referred for the same problem several times previously:

“he (GP), fair play, pushed me so hard to get me in, he wanted to get me help…he looked up my history, and you know, and he seen like how long it had been going on and it was like. He’d seen I’d done all the bouts of physio…’tell you’ve done the others; we can’t really send you back there. You’ve got this option’, and that’s where I ended up going”

For Participant 06, the preferred service navigator role; primary or secondary care depended on the perceived calibre of the GP:

“As a general, if you’ve got a good GP, I’d take primary care, if you’ve got a bad GP, I’d say secondary…I’ve got a brilliant GP…he gets me into the mental health clinic very quickly”.

Following her experiences, Participant 10 suggested access to trauma and MUPS services located in primary care facilities*:*

“I think having the support in P...(trauma informed) which is definitely unique, and I think that needs to happen more... maybe if it was just in a district, just having somebody that is trained like X, that people can just go and talk to you for 10 minutes, you know, instead of saying ‘here’s a Samaritan card’, or ‘I’ll refer you’...

...and I think that maybe you had a mental health kind of service at a (GP) surgery, it would take more pressure off people going to the hospitals.

Similarly to Participant 06, who had received outreach mental health care following a suicidal crisis, Participant 08, also received outreach multidisciplinary care after a threatened self-harm episode on a waiting list for specialised PTSD care:

“I saw somebody then within a week, and I’d got all my medication changed, and I got a community nurse come out to see me as well as my support worker and the community nurse em, worked with me one-to-one on the symptoms and working through the symptoms helped the physical side”

3.5 Discussion

3.5.1 Main findings and comparison with the literature

Rich data was derived from the eleven interviews, with two overarching themes obtained from TA. The first theme, ‘uncertainty’, identified problems and challenges faced by participants during their health seeking journeys, and the second theme, ‘adaptation’, provided insights into potential solutions to help address unmet participant need.

Findings suggested mental-physical duality in service provision, with negative journey experiences associated with the separation of mental and physical health services. Specialisation seemed to further fragment the patient journey. Additionally, a disease-MUPS duality, with a focus on disease rather than MUPS, was indicated. Considerable co-morbidity and interconnectedness between PTSD, MUPS and other conditions and symptoms was found (Figure 3.3). Furthermore, negative effects of childhood abuse on adult health experiences was described by some participants.

Reported factors were associated with considerable uncertainty and sequalae of diagnostic uncertainty with misinterpretation and misattribution of symptoms, mislabelling and a mismatch between participant need and services provided. Historic shortcomings in safeguarding was evident. Iatrogenic sequalae such as polypharmacy, opioid and benzodiazepine addiction and over investigation were concordant with the clinical iatrogenesis concept (Illich 1976), which defines side effects and harm resulting from medical interventions estimated as the fifth leading cause of death worldwide (Peer and Shabir 2018). Furthermore, another ‘iatrogenic’ factor was identified; ‘relationship harm’. Most participants perceived antipathy from healthcare services, which caused significant extra distress that made their physical and mental symptoms worse, encouraged avoidance behaviours and triggered suicidal impulses in some participants. Three aspects to antipathy were suggested: firstly, bias such as power imbalance and female gender bias. Secondly, disconnect that included apathy and denial of participants’ concerns, and thirdly, conflict between participant and clinician. Antipathic perceptions by participants, however, could also reflect cognitive bias associated with PTSD.

TA indicated interconnection between PTSD, MUPS, dissociation and emotional dysregulation, findings which were supportive of both the Herman ‘complex PTSD’ construct (Herman 1992), and DSM-IV’s ‘associated features of PTSD’, DESNOS construct (van der Kolk et al. 2005) The majority of participants reported interpersonal trauma, including past childhood abuse, which was consistent with the type of trauma most associated with complex PTSD and DESNOS. Additionally, analysis indicated interconnectedness between PTSD, dissociation, and conversion. Reported dissociative experiences ranged from mild depersonalisation to out of body experiences. Participant reports suggested a dimensional relationship between perceived stress level and PTSD, dissociative and conversion symptoms, and emotional numbing. Participants 06 and 09 described escalating dissociative responses according to perceived threat, with sequenced experiences from depersonalisation, to flashbacks to conversion and altered state of consciousness. In a study comparing symptom profiles between PTSD, somatoform dissociation and conversion symptoms, it was concluded that although PTSD and dissociative disorders were separate syndromes, PTSD could intensify dissociation but not necessarily cause conversion symptoms (Kienle et al. 2017).

Hyperarousal was also co-existent with de-personalisation for participants 06, 09 and 03 when triggered. The latter finding supports the proposition of dissociative and hyperarousal subtypes of PTSD (Lanius et al. 2010). Both PTSD subtypes were postulated to persist with chronic PTSD as indicated by neuroimaging. Participants 06 and 09's experiences also support the proposition of two types of dissociation: psychoform comprising depersonalisation, derealisation, amnesia and out of body experiences, and somatoform dissociation including loss of sensory perception and motor control. Although not applicable to Participants 06 and 09, both types of dissociation have been particularly linked to childhood sexual trauma (Farina et al. 2019).

Findings from the DSM-IV field study of PTSD (van der Kolk et al. 1996), suggested dissociation, emotional dysregulation and somatisation (MUPS) were mechanisms of adaptation, and all three could occur in different combinations at different times. Participant reports of changing patterns of PTSD and dissociative experiences over time, for example, a reduction in flashbacks and nightmares with a concomitant increase in dissociative symptoms, concurred with DSM-IV PTSD field study findings. This was also illustrated by Participant 10, who disclosed severe childhood sexual abuse, PTSD, dissociative identity disorder (DID), interstitial cystitis and IBS. Over time, a reduction in PTSD symptoms were replaced by an increase in MUPS and dissociative symptoms, such as tonic immobilisation and chronic bladder pain. Similarly, for Participant 09, who noticed a reduction in flashbacks with a concomitant increase in dissociative and conversion experiences. Participant 08 reported escalation of co-morbid MUPS symptoms from PTSD triggers, whereby physical hyperarousal symptoms led to IBS symptoms, then to migraine headaches, which had developed post-MVA trauma.

A further major source of uncertainty and anxiety for participants and clinicians was distinguishing between PTSD, MUPS and disease; physical symptoms associated with PTSD hyperarousal, and loss of sensation and movement through dissociation/ conversion, could also be explained by serious disease. Additionally, autoimmune disease and recurrent respiratory infection were given conflicting explanations of stress or idiopathic disease by clinicians. Participants 06 and 10, reported mislabelling of MS and IC/BPS related to diagnostic uncertainty. Findings from this study supported a non-systematic review of the literature that explored the relationship between somatic symptoms and PTSD (Gupta 2013). The review indicated associations between PTSD and a range of MUPS and diseases, which included autoimmune conditions, dissociation, altered states of conscious and sleep disturbances. Although causal biological mechanisms were proposed, the review was a non-systematic assessment of cross-sectional studies that did not examine confounding factors. This limited cause and effect assumptions about PTSD, MUPS and disease.

A perceived reluctance of healthcare professionals to consider MUPS/PTSD diagnoses and instead, to continue to seek disease explanations for persisting physical symptoms was another key theme that emerged. It has been proposed that clinician and patient anxiety about missing serious disease, such as cancer, is a main reason for over-investigation, misdiagnosis and iatrogenic harm (Kravitz and Callahan 2000), (Chew-Graham et al. 2017). The majority of participants described adverse consequences of symptom misinterpretation and mislabelling; PTSD symptoms diagnosed as anxiety and depression, serious disease labels revoked without alternative explanations and adverse effects from inappropriate medication, such as opioid and benzodiazepine dependency.

The second overarching theme derived from TA, adaptation, suggested ways to mitigate the effects of uncertainty, iatrogenic medical sequalae and antipathic ‘relationship harm’. Helping to make sense of symptoms through PTSD and MUPS informed education was proposed by participants. Importantly, addressing perceived antipathic responses from clinicians was sought. Considerable value was placed by participants on empathic relationships with healthcare personnel who were trauma and MUPS informed. Personalised care, with continuity of clinician and open access to PTSD and MUPS informed care was also wanted by participants. Furthermore, the need for a greater sense of control was identified, with participant involvement in their own care, equal relationships with professionals and co-produced care plans. Considerable benefit was also derived from credible peer groups and supportive family was an identified need.

Perceived service and treatment deficits led some participants to seek private acupuncture, counselling and physiotherapy. Also, some participants self-educated in trauma and one participant trained as trauma therapist. Access to PTSD-informed care was variable through a mixture of luck and location and following suggestions from family members to seek help. However, participants who experienced such care in primary, secondary and veteran services described considerable benefit. In contrast to PTSD, no formal access to MUPS services was reported by participants. PTSD and MUPS psychoeducation was found very helpful as was access to social care and trauma- informed physiotherapy. Overall, non-medication interventions and improved social engagement, in the context of trauma informed and continuing empathic relationships with care professionals, helped participants cope better with their considerable physical and psychological disabilities.

3.5.2 Strengths and limitations

A key strength in this study was recruitment from a national database comprising individuals who had consented to participate in PTSD related research. PTSD had been diagnosed by the CAPS structured interview (Weathers et al. 2001), and MUPS diagnosed by the PHQ-15 (Kroenke et al. 2002), which are both validated and reliable instruments. Theme saturation was achieved, which yielded rich data for purposive sampling.

A number of weaknesses were identified. The study sample was derived from one database only in Wales and the sample was not ethnically diverse. Additionally, the sample comprised help seeking participants with more severe experiences that might not be representative of people with co-morbid PTSD and MUPS more generally. Information was derived from participant self-reports without third-party views or corroborative reports. Therefore, results could be influenced by recall bias, and cognitive bias associated with PTSD. In addition to the factors discussed, the lack of generalisability and transferability inherent in qualitative methodology, should encourage some caution in interpreting the results.

3.5.3 Conclusion

This chapter explored the impact of PTSD and MUPS on patient health seeking journeys and services. Although the study comprised a small sample of help seeking participants and did not examine clinician or service experiences, rich data was obtained that provided new insights into unmet health needs and service deficits. Furthermore, results from this study suggested ways to meet unmet patient need to facilitate adaptation, and to address service deficits. Finally, findings from this study could inform future research into PTSD and

MUPS to improve patient experience and service provision. Chapter Four will further discuss the implications of findings from the systematic review and meta-analysis, and this qualitative study.

4 Chapter Four: A qualitative study investigating the experiences of health and social care professionals who manage patients/clients who may have post-traumatic stress disorder (PTSD) and medically unexplained physical symptoms (MUPS).

4.1 Introduction

This qualitative study was undertaken to complement the patient journey study in Chapter 3. To the investigator's knowledge, this is the first qualitative research which examines the experiences of health and social care practitioners who work with patients/ clients who may have experienced both conditions.

4.2 Aims and objectives

This research aims to investigate the experiences of health and social care professionals who manage people who may have both PTSD and MUPS. The objectives of the study are:

1 To undertake a qualitative study by conducting online interviews.

2 To investigate health and social care practitioner experiences of caring for people who may have PTSD and MUPS.

4.3 Methods

4.3.1 Ethical and research approval

As this study involved health and social care practitioners in their professional capacity, and not as patients, approval from an NHS Research Ethics Committee (NHS REC) was not required. The study was sponsored by Cardiff University (CU) and received a favourable opinion from CU's School of Medicine Research Ethics Committee (SMREC). Approvals from the Health Research Authority (HRA) and Health and Care Research Wales (HCRW) through the Integrated Research Application System (IRAS) were also obtained. The study was conducted in compliance with Good Clinical Practice, the NHS Research Governance Framework for Health and Social Care, and Cardiff University's Code of Practice for Research Integrity and Governance.

4.3.2 Recruitment

Health and social care practitioners who had experience of managing patients/clients who may have had PTSD and MUPS were included in this study. Undergraduate health and social care practitioners were excluded. An invitation letter (Appendix J), Participant

Information Sheet (Appendix K) and consent form (Appendix L) were sent to potential recruits by email, who were given a minimum of 24 hours to consider whether they wished to take part in this research. If the potential participant accepted the invitation and were happy to proceed, arrangements were made to enter them into the study. The preferred interview date, time, and choice of Zoom or Microsoft Teams for audio interview, were agreed through email correspondence.

4.3.3 Participant Identification

This qualitative research was conducted to gain a deeper understanding of the issues relating to practitioners who manage patients/ clients who may have PTSD and MUPS, and findings were not to be generalised. Purposeful sampling, a non-probability selective process which relies on a researchers'(AJD) own judgment, was used to recruit potential participants (Campbell et al. 2020). Researcher bias: the subjective or generalised assumptions when choosing participants, is the main risk from purposeful sampling.

Potential participants were initially identified by AJD from professional networks and educational events, including webinars, workshops, and conferences. Recruitment was through snowball sampling, a qualitative method initiated by the invitation of potential participants available to the researcher. Identified participants were requested by AJD, to encourage other potential participants suitable for the study, to approach AJD if they expressed interested in participating. This process was repeated until theme saturation was deemed to have occurred by AJD. (Tyrer and Heyman 2016). Email invitations to participate in the study were sent to individual health and social care professionals.

4.3.4 Sample size

The sample size was determined by the number of participants necessary to achieve theme saturation, which was deemed to have occurred when no new information could be identified from the data by AJD. Expert researcher advice suggested that 10-15 participants would be required to achieve theme saturation in this study.

4.3.5 Semi structured Interview

Interviews proceeded through either Zoom or Teams audio calls, which were recorded and stored as per CU's data governance procedures. The pre-determined semi-structured interview questions were designed by AD to be open and responsive, with some flexibility through prompts and supplementary questions that corresponded to participant responses (Box 2). The same semi-structured interview with participant specific supplementary questions and prompts, were used for all participants, who had the option of omitting questions they did not wish to answer.

Table 4.1 Box 2: Summary of professionals qualitative study interview questions

- What would make you think that your patient/client may have PTSD and MUPS?
- How do patients/ clients who may have PTSD and MUPS impact on your professional work and your service?
- How challenging do you find these patients/ clients, and can you explain why?
- What thoughts and feelings do they evoke for you?
- Could you tell me about the resources and support you have available in your workplace for treating and caring for patients/clients with both conditions?
- What changes would you like to see in health and care service provision and in professional roles, to help better care for such patients/ clients?
- What do you think are your learning needs and support requirements to help you care for this patient/client group?
- Are there any other issues relating to the management of patients/ clients with PTSD and MUPS you would like to discuss

4.3.6 Conduct of interviews

Semi-structured interviews were conducted, and demographic data was collected after obtaining informed consent. Prior to seeking consent, AJD checked that the participant had read and understood the participant information sheet and answered any questions. Informed consent was taken remotely by AJD, who read out verbatim each of the consent statements and asked the participant to respond ‘yes’ or ‘no’ aloud. As the participant responded, an electronic version of the consent form was completed by AJD, and a completed copy was sent to the participant by email.

After taking consent to participate in the study, participants were asked for demographic details which were entered onto an Excel spreadsheet and stored as per data Cardiff University data management procedures.

4.3.7 Transcription of verbal data

Audio interviews were recorded using Zoom or Microsoft Teams video conferencing software. Each recording was imported into Microsoft’s online Word Transcription Service, and transcription. Accuracy was checked word by word by AJD, and identifiable participant and third-party information were excluded. Completed transcripts were anonymised by unique identifying code and transferred to an online Word document. The audio files were then separated from the Word documents to ensure anonymity and stored as per CU’s data storage procedures.

4.3.8 Potential Harm to Participants and Researcher

This research investigates health and social care professionals' care experiences only and presented a very low risk of incidental disclosures in the context of the interview conversation. However, should disclosures have occurred, where the interviewer would have serious concerns regarding the safety or wellbeing of the interviewee or their patients/clients, and where there is a statutory duty to disclose if justifiable under common law of confidentiality, the appropriate channels would be followed depending on the participant's professional affiliation.

4.3.9 Data Governance

This study was fully compliant with current data protection regulations. All information collected during the research was kept strictly confidential in accordance with the UK General Data Protection Regulation (GDPR) and the Data Protection Act 2018.

The audio recordings of the interview and the transcripts are considered research data and will be kept for 5 years in compliance with CU's records retention policy. All research data was stored on CU's secure IT system and accessed by CU's virtual private network (VPN). All records pertaining to the identity of participants were maintained as private and confidential, and only personnel authorised by AJD had access to the data. All anonymised research data including audio recordings and transcripts will be retained in conformity with Cardiff University records retention policy. CU will act as the data controller for this study and will keep identifiable participant information, and anonymous research data will be retained for 15 years after the study has finished in line with CU's record retention policy.

Participants were allocated a unique study identifier number for audio recordings and transcripts, and code-keys were held separately from participant data. A spreadsheet holding participants' personal details and unique study identifier were password protected and held with all other participant research data, retained for as long as required under CU's research integrity policy. Data for source verification, including interviews and transcripts, was available for access and to be deleted in accordance with CU's records retention policy.

Cardiff University's IT environment included Office 365, Home and Shared drives, and OneDrive for Business, which were accessed through CU's VPN. No paper copies of participant data were produced. The semi-structured interview was audio recorded via CU's Enterprise versions of Zoom or Microsoft Teams and uploaded for transcription by approved software in CU's secure environment.

4.3.10 Data Analysis

NVivo 12 for Mac software was used to develop and collate codes and associated data extracts from anonymised transcripts (Ref).

4.3.11 Inductive thematic analysis

The qualitative data generated during the interview was analysed using inductive thematic analysis (TA) and followed the same process used in the qualitative study in Chapter Three of this thesis (Braun and Clarke 2006). TA is a straightforward and flexible method without theoretical epistemological process (Maguire and Delahunt, 2017). The data determines the themes in TA, compared to deductive thematic analysis, where the data is interpreted within pre-conceived themes, theories or knowledge (Caulfield, J., 2022).

Searching for and reviewing themes

Potential code patterns were explored and developed through ‘mind maps’, which were developed utilising SimpleMind’ application (BV-Simpleapps 2019).

4.3.12 Defining and naming themes

Initial code patterns formed potential ‘candidate’ themes, which were further developed through mind maps, into overarching themes and subthemes, which were analysed to form the basis of a narrative that related to the research question.

4.3.13 Second coding

Three (3/11) transcripts were coded separately by (AJD) and a second coder Mr Matt Ploszajski (MP), through the same process as the patient qualitative study in Chapter Three. Findings were similar to Chapter Three, with general agreement between AJD and MP on all three coded transcripts, which differed by the granularity of coding only; AJD produced more codes than MP, which may be due to the factors discussed in Chapter Three.

4.4 Results and analysis

4.4.1 Summary of sample characteristics

From a total of 19 potential participants, 11 participants were interviewed. Of the 8 potential participants not recruited, 6 did not respond to email invitation: two surgeons, one GP, one community drugs and alcohol team (CDAT) physician, one psychiatrist, and one psychotherapist. Two potential participants who were available for interview, a clinical psychologist, and a counselling psychologist, were not included as theme saturation was deemed to have occurred by AJD with the 11 participants.

Interviews were conducted over a 7-week period approximately, from 21/10/21 to 6/12/21.Total interview time was 387 minutes (6.45 hours) with an average interview time of 35 minutes. The interview time range was 21 to 59 minutes. Participant age was recorded by 5-year intervals and ranged from 25-29 years and 75-79 years. 8/11 (72.7%) participants were female, 9/11 (81.8%) identified as white British and 2/11 (18.2%) as white European. 10/11 (90.9%) participants consulted with patients/ clients face to face and online, and one participant consulted face to face only (table 4.2).

Table 4.2: Health and Social Care professionals' demographic

Age Range	Female	Male	Total
25-29	1		1
30-34	1		1
35-39		1	1
40-44	1		1
45-49	2	1	3
50-54	2		2
65-69		1	1
75-79	1		1
Participants	8	3	11

Ethnicity: 9/11 identified as white British.
2/11 identified as white European

The participants were from a variety of professional backgrounds and worked in a range of health and social care settings as summarised in table 4.3. Three (27%) practitioners worked in social care, three (27%) in primary care, and five (46%) in secondary care. Four participants (36%) were psychologists and mental health practitioners, of which, two (50%) worked in mental health services and two (50%) worked in physical health services; 3 (27%) mental health/ psychology participants worked in secondary care and one (9%) worked in primary care. Two generalist physicians (18%) worked in primary care.

Table 2.3: Health and Social Care professionals' roles

Participant	Occupation	Service	Sector	Division
1	Occupational Therapist (SOT)	Social Services	Social Care	Social Health
2	Counsellor (PCC)	NHS	Primary Care	Mental Health

3	Occupational Therapist (SOT)	Social Services	Social Care	Social Health
4	General Medical Practitioner (GP)	NHS	Primary Care	Mental, Physical &Social Health
5	Clinical Psychologist (CPM)	NHS	Secondary Care	Physical Health MUPS
6	Clinical Psychologist (CPD)	NHS	Secondary Care	Physical Health Disease
7	Physiotherapist (PT)	NHS	Secondary Care	Physical Health
8	Occupational Therapist (MOT)	NHS	Secondary Care	Physical Health
9	General Medical Practitioner (GP)	NHS	Primary Care	Mental, Physical & Social Health
10	Therapeutic Social Worker (TSW)	Social Services	Social Care	Social Health
11	Liaison Psychiatrist (LP)	NHS	Secondary Care	Mental Health

4.4.2 Reporting

The term ‘patient’ was used for healthcare settings, and ‘client’ for social care settings, with terminology reflecting use in practice (Ratnapalan 2009). The terms professional, practitioner and participant are used interchangeably. The term ‘practice’ was used to signify the workspace for therapeutic interaction between the practitioner and patient/ client, in health and social care. For clarity of written presentation, participant utterances, repeated words and phrases, and words representing thought processes, were removed from codes, to form sentences in the text. Participant codes were in italics and defined by quote marks, and participants were identified by unique study codes and abbreviation of professional role as described in Table 1. To ensure anonymity, any wording that could identify a participant was changed to more general terms.

4.4.3 Findings from inductive thematic analysis

Rich data was obtained in this study. Three overarching themes were identified from thematic analysis: Making Sense, Protraction and Amelioration.

4.4.4 Making Sense

Making sense comprised of 4 major themes with supporting subthemes: biomedical model; diagnosis, social care model; wellbeing outcomes, biopsychosocial model; formulation, and practitioner individual models of PTSD and MUPS (fig 4.1).

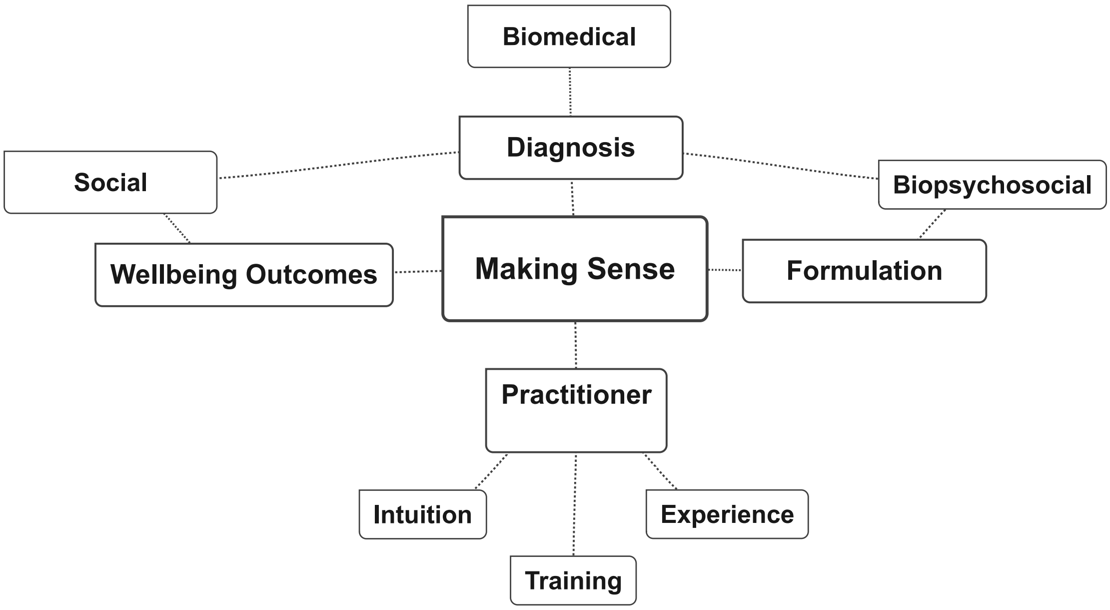


Figure 5 Making Sense Thematic Map

Biomedical model; Diagnosis

The importance of diagnosis to practice varied between practitioners, although diagnosis has been considered the cornerstone of medical practice. The absence of diagnosis was implicated in poor health journey experiences:

04 GP... *‘there's a slightly old-fashioned view of medicine which was quoted by a professor of medicine many years ago, which is that there are three important things in medicine, diagnosis, diagnosis, and diagnosis”*

08 MOT...*”people would get passed from pillar to post because they've not had a diagnosis given, or that diagnosis isn't clear”*

Diagnosis was considered to form the basis of treatment plans in medicine, although some healthcare practitioners did not use diagnoses as a basis for their work:

04 GP*..."if you have a diagnosis, you can formulate a plan to help the patient; if you haven't got diagnosis, you are floundering a bit"*

02 PCC... *"I'm not too concerned with diagnosis because I'm not medically trained, so I'm not trained in a* medical *model. I work very much erm, in a different approach entirely to a medical model"*

The diagnoses of PTSD and MUPS were described by direct and indirect sources of information. Direct diagnoses were made from patient disclosure and from their medical records, and validated PTSD diagnostic measures were used by some practitioners during patient/ client assessment. In contrast to PTSD, MUPS measures were not identified by participants for use in Practice.

06 CPD*..."the clinical interview we would ask about trauma, and we would give them screening measures as well, erm, as part of the initial assessment...*

...I'm not quite sure what there are for medically unexplained conditions and then I would ask questions at interview then around the nature of the symptoms somebody is presenting with they're quite varied the presentations. So, I'm not aware of any specific measures for medically unexplained symptoms"

Indirect diagnosis was suggested through practitioner expertise and intuition, which included a patient's demeanour, clinical presentations that did not make biomedical sense to the examining physician, and pre-labelling of patients as problematic by colleagues. Co-morbid health conditions such as anxiety, chronic fatigue, drug and alcohol misuse and suicidality were considered as cues for the presence of PTSD and MUPS. Additionally, third party diagnoses from other practitioners, multidisciplinary teams (MDT)'s and referral hubs, as well as veteran status were indicative of PTSD and MUPS. A co-morbid relationship between PTSD and MUPS was identified by some practitioners:

10 TSW... "it's almost that there needs to be that collaborative approach to support individuals with MUPS, and, you know, post-traumatic stress because each works hand in hand"

It was suggested that although patients with MUPS often gave a history of trauma, not all patients with MUPS had PTSD

11 LP... "a lot of patients who present with MUPS have underlying traumatic experiences. It's not unusual for me to identify that actually they have had a traumatic experience that has manifested itself that way...

...I can't say that all the patients that presented with medical unexplained symptoms have had a diagnosis of PTSD"

MUPS were suspected by practitioners in several ways, which include absent medical diagnosis, frequent presentation, frequent negative clinical tests and non-specific symptoms (fig 4 c). MUPS could be diagnosed by objective physical assessment:

07 PT... "Oxford Muscle Grading point of view, you know they're scoring 1's as if, which means they've just got flickers of muscle movement, but actually they can sit to stand and they can walk. So, they're gonna to have more than 1/5 muscle strength from a real specific point of view"

Also, MUPS were suspected if there was a mismatch between medical diagnosis and presentation:

03 SOT... "their medical presentation doesn't present perhaps to what the diagnosis or there isn't a diagnosis to answer some of the medical presentation or even functional presentation that people are showing to me"

Not all patients diagnosed with PTSD had MUPS:

11 LP:... "I think there is a lot of overlap between the two, but I'm not aware that all patients with medically unexplained symptoms have necessarily a diagnosis of PTSD or Complex PTSD, and the other way round too. Not all patients with PTSD express medically unexplained symptoms"

Some practitioners differentiated between complex trauma and simple trauma, although the distinction between trauma and PTSD was unclear. In a specialist MUPS clinic, complex trauma was less associated with core PTSD symptoms and more with childhood and interpersonal trauma by the practitioner:

05 CPM... "I've been maybe working with more of a complex trauma background, so it wouldn't necessarily always be the kind of flashbacks or difficult memories I'd be kind of thinking about their sort of early life experiences whether there were any kind of relational difficulties or learning difficulties or anything that's kind of giving them in some sort of interpersonal traumas"

Complex PTSD (CPTSD) was associated with emotional dysregulation and MUPS more than ‘simple’ PTSD:

11 LP ... “with complex PTSD you also look for additional symptoms of affect dysregulation where they have heightened emotions, or else maybe feel very numb and shut down and they also have very low appreciation of themselves like low self-worth and perhaps feel like failure, and they also have disturbed relationships. So, there's that sense of disorganisation of the self”

...”it seems that most, the most presentation are usually more Complex PTSD than simpler form of PTSD. I don't think that all patients are Complex PTSD, but it seems that MUPS are more complex, more dysfunctional, more disorganised”

Adverse childhood experiences were identified as a major influence on adult presentations:

02 PCC... “I only work with adults, but a large proportion of my patient population are people with adverse childhood experiences and unresolved trauma from childhood and frequently throughout their lives”

A practitioner considered MUPS as related to childhood PTSD, recognised in clinical practice as a complex and difficult to elucidate mix of MUPS and mental health issues that did not fit the medical model of care provided. Patients with MUPS and a history of childhood sexual abuse could present as lacking in emotional and cognitive insight, without a PTSD diagnosis:

09 GP...”the MUPS group and the childhood PTSD I think are often, I wouldn't say interchangeable as such, but there's commonality and they often will present with a complex mishmash of some mental health stuff, but that is often not volunteered, but odd physical symptoms that you really just cannot easily pin down, stuff that seemingly just doesn't quite add up in terms of how the body systems in terms of conventional scientific approach work”

06 CPD...”you have cases they have childhood sexual abuse trauma that they've never talked about and later on in life, it ends up being expressed through physical symptoms, so they're often the patients that find it very difficult to talk about how they think and feel you end up seeing them with all these physical symptoms so they are really PTSD, but they are cases that wouldn't be normally picked up and referred into mental health”

Clients were found to have symptoms throughout their lives. Although the influence of childhood trauma was recognised, one practitioner highlighted the burden of traumatic stress in older people including the impact of the Covid-19 pandemic

O2 PCC... "they'll say well, I've had this all my life, I've had these problems all my life"

10 *TSW... "you could probably say sixty, sixty, seventy per cent actually, of people do have some element of post-traumatic stress based on their life experience through bereavement, through trauma life experience really, where there have been episodes of abuse or whatever...*

...Covid has done that. I've seen a number of individuals that are suffering with post-traumatic stress...through being in hospital with covid and losing family members then they're suffering with a reduced amount of independence or their experiencing pain or other symptoms"

There was perceived bias and inequality of care for older people with both conditions:

...it's a case of, well, actually, it's a natural thing, that as you get older, you're going to lose people in life. But actually, that effect still has a very, very adverse effect on people"

The prevalence of PTSD and MUPS has been considered to be underestimated through lack of awareness in some practitioners for different reasons:

09 GP... "I think one of the factors within this is that you've got, a subset of GP's who have got a greater level of awareness and preferentially end up dealing with these patients, but the majority of GP's don't actually have an awful lot of dealings with people of this nature"

Unclear terminology for MUPS caused some confusion for participants in trying to make a diagnosis. Improved coding for MUPS was suggested to improve recognition and to support service developments:

08 MOT..."medically unexplained physical symptoms that's a newer terminology that's entered literature. Functional neurological disorders and before that you got the conversion or somatisation that's not helpful, because in order to support that patient through the system, or find out how many patients there are having all these different terminologies and all these different titles it's hard to know who's out there and what the demand for services are...

...I think there's diagnostic codes...and sort of terminology that would help with planning service provisions or identifying need"

PTSD diagnosis was considered easier than for MUPS. The risk of missing serious disease was a shared issue for practitioner and patient alike, including the potential for conflict and litigation:

04 GP*...”having a clear-cut diagnosis of PTSD is very helpful. Making a diagnosis of medically unexplained presenting symptoms is more challenging really getting the diagnosis is in many ways key, but it is extremely difficult the truth of the matter is that we probably faff around with medically unexplained symptoms for a long time before having the courage to accept that that's what the case is...*

...explaining to a patient who wants test after test after test because they are convinced that they've got something terribly wrong with them, that they don't need more scans or blood tests, they have to accept what they have, and the need for courage is to overcome their anger or their distress more usually, their distress and sometimes emotional blackmail: 'if I die of cancer, it's your fault, doctor”

For some practitioners, differentiation between MUPS and disease was made by a specialist physician, or the patient was referred to a specialist diagnostician by the intervening practitioner. Distinguishing between PTSD and disease could also pose diagnostic dilemmas:

08 MOT*...”depending on the types of symptoms there's (secondary care physicians), that's more specialised in (disease), and so, if it's something more like (MUPS), I'd probably link in and refer...to that clinic or link in with the (Donington et al.)...*

...CT scans and MRI scans, they were so very negative in terms of any sort of neurological impact (patient) was having a lot of anxiety, a lot of sleepless nights of nightmares, a lot of reliving the event it just felt that that was more attributable to PTSD than the brain injury, but so, it's kind of the opposite for (patient) in that (patient) thought it was a brain injury, but I didn't necessarily agree”

Social Care Model; Outcomes

As a general principal, social care practitioners described working to client outcomes rather than a diagnostic label and client symptoms:

01 SOT... “We work for social care, I think we're not as focused on diagnosis as such, we're more focused on what outcome the person wants to achieve”

10 TSW...”when I've delved further into that person from a well-being perspective, you're not focusing on the symptoms but thinking about the underlying issues”

Diagnostic labels, however, were considered potentially helpful for patients/ clients to understand their conditions to better achieve personal outcomes in the current Health and social care model. Suggested benefits of disease diagnoses for clients in social care were the validation of their experiences and receipt of appropriate service provision. This contrasted with clients without a formal PTSD or MUPS diagnosis who did not usually receive validation or comparable care:

10 TSW...”sometimes people feel they need a diagnosis of some kind to justify how they're feeling.... because there's a diagnosis people can justify and understand the connection to what their needs are if it's coming from a post-traumatic stress and MUPS situation outcomes aren't being achieved”

Although categorical diagnosis was considered advantageous, by contrast, diagnostic criteria could also lead to exclusion of some clients from services:

03 SOT...’we try not to work in, in diagnostics in a sense, often teams and areas have criteria, and sometimes we find people slip between criteria or services

Biopsychosocial Model; Formulation

Beyond a bio-medical approach to PTSD and MUPS in healthcare, which is based on international classification of disease (ICD) categorical diagnoses, a biopsychosocial framework is routinely used by some practitioners, recognising the complex and heterogeneous presentations of many patient/ clients with PTSD and MUPS:

06 CPD... “they're actually a very varied, they're not one group of patients. I mean medically unexplained are so very diverse and PTSD are very diverse, I like to see every patient as an individual, I've never seen two patients that are the same”

Additionally, MUPS were considered heterogeneous by both type and subtype, and outcomes were observed to vary for the same diagnostic label:

06 CPD...”medically unexplained are so very diverse, where people have got several different types of functional symptoms, ranging from the functional seizures right through to mobility problems or not being able to use a limb, even within functional seizure group they are different, everyone’s an individual”

01 SOT... “They impact, I suppose, differently because they're all individuals, everybody's outcome can be slightly different, so irrespective of what condition they have we can have very similar outcomes for people, or we can have them completely different despite them both being diagnosed with the same condition”

Formulation was proposed as a more appropriate method for a biopsychosocial evaluation, which accommodates patient/client heterogeneity to support personalised, tailored care:

06 CPD... "I'd look to try and understand how the symptoms, what was happening before the symptoms, how they developed and what could be maintaining the symptoms...

...it's a gathering of lots of information from different sources... a timeline to understand what was going on for that person there is as a template to gather lots of information we also ask about all the medical history, medication, their families health, their occupational, their qualification, their education, major life events. We'll formulate an opinion based on an initial hypothesis, set of hypotheses, we also do measures. So, it's a pulling together of lots of different bits of information"

Practitioner Models of PTSD and MUPS

To help make sense of PTSD and MUPS presentations in their Practice, some participants developed personal interpretations and terminology:

09 GP..."the sort of PTSD group, as such, I think probably needs to be subdivided into, say, military veterans who have had unfortunate experiences at a stage where they're essentially a mature adult, and the, I would say, probably arguably the childhood PTSD group where they've been subject to abuse or something of that nature"

06 CPD... "*non-epileptic attack disorder or functional seizures, they're also called, and I would describe that as an atypical form of PTSD, so they're often the patients that find it very difficult to talk about how they think and feel, and you end up seeing them with all these physical symptoms, so they are really PTSD"*

4.4.5 Protraction

Protraction is the state of lasting a long time or being made to last longer than necessary, which best describes findings for this theme which relates to the persistence of problems for individual patient/ client's care and services. The main subthemes underpinning protraction are Deficits, Resistance and Detriment (fig 4.2)

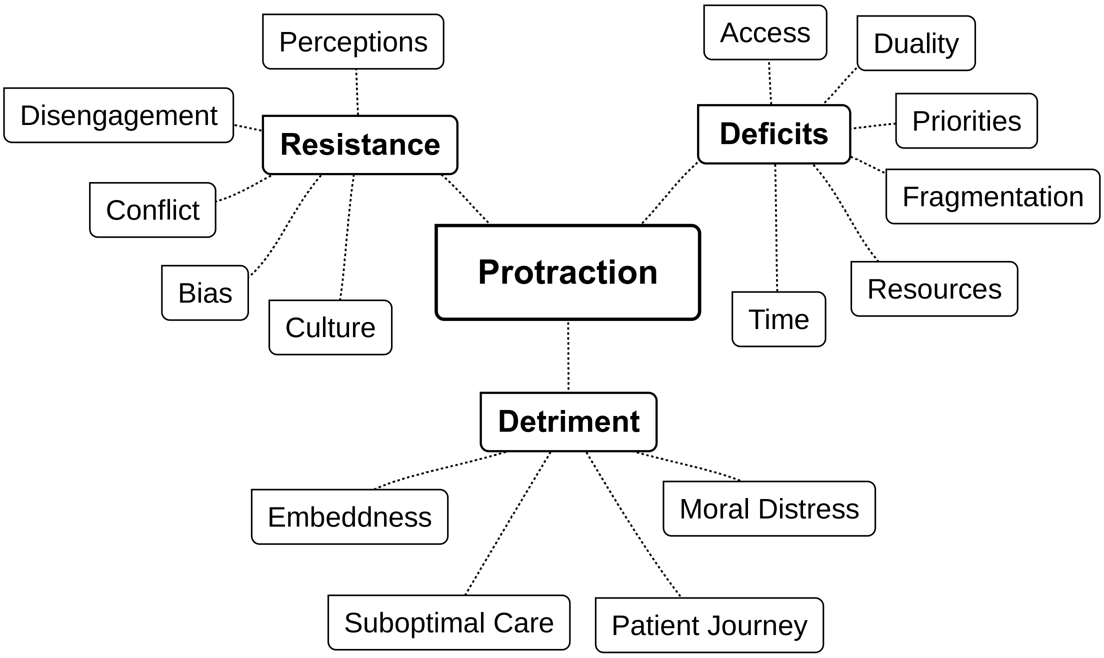


Figure 6 Protraction Thematic Map

Deficits; Access

Access to care for PTSD and MUPS was found variable, with more services identified for PTSD than for MUPS. One practitioner observed veteran PTSD care did not include MUPS when considering local provision of care for MUPS and PTSD, and a psychiatry based MUPS service was found to restrict access by strict criteria:

09 GP…"I haven't tried to refer a patient with MUPS to that service, it's more conventional PTSD during their military service"

07 PT…"*psychiatrists also runs a medically unexplained clinic, but that's quite, niche, very specific, not everyone with medical unexplained symptoms would fall under that, and they do kind of almost have to cherry pick, that's quite frustrating"*

Minimal local MUPS services, pathways and guidelines were identified by participants. In response, ad hoc referrals to existing services with possible MUPS expertise or symptom support was sometimes utilised. Practitioners would try and find their own solutions to help patients/ clients and utilise non -evidence based interventions. Individual funding requests were sometimes made for patients/ clients with MUPS:

07 PT... "We've linked in perhaps sometimes with a persistent pain team often have to think a little bit outside of the box that could be creative and fun and sometimes, and other times it can be very hard not knowing where to go with these patients"

08 MOT... "quite a lot of time there's no clear pathways, I say, complex to navigate because there is no pathway"

06 CPD... "those sorts of patients they need specialist multidisciplinary intervention and unfortunately, we don't have a service for those patients those ones are being referred by individual patient funding requests out of Wales to specialist services in England"

Deficits; Duality

The influence of Cartesian duality on service provision whereby mental health and physical health problems are identified and managed separately in healthcare, was identified as a factor that worked against a biopsychosocial approach to patient care. Physical symptoms were not usually included in mental health referrals:

06 CPD... *"it's immensely frustrating that there's a lack of understanding generally within the NHS about the relationship between how we think, how we feel and what our body does; mind and body separation"*

02 PCC... *I never get a referral that obviously talks about all the physical symptoms and histories, because often the patient hasn't even shared their histories, so it's always sort of a separate thing"*

Deficits; Priorities

In addition to problems related to PTSD and MUPS diagnosis in social care, the biomedical model of care appeared to prioritise categorical disease management. Patients/clients with PTSD and MUPs were seen to experience some difficulty in obtaining appropriate care because of the absence of a disease or categorical diagnosis:

10 TSW...*"I think from an outcomes point of view, if somebody's struggling to mobilise because they've got an arthritic condition, then we can look at a package of therapy, we can look at providing support and that that will achieve people outcomes. But I think if it's coming from the other side of things MUPS and post-traumatic stress, then actually people are still feeling quite frustrated that they haven't got the answers that they need or the solutions or the outcomes that they feel they should have. So, I think it does affect our therapeutic approach really, and outcomes for that person".*

In response to the Covid-19 pandemic, service priorities for 'Long Covid' were observed to have emerged, with resources directed to managing this new condition to the perceived exclusion of patients/ clients with pre-existing MUPS:

11 LP..."*with the emergence of Covid, I know that there has been recently lots invested into Long Covid, I feel that these patients with medically unexplained symptoms, it seems like they have been forgotten again because we're thinking about something more new, and they've been with us forever and yet we're not doing much about them"*

Deficits; Fragmentation

Fragmentation of services leading to siloed working was identified by practitioners as a major factor impeding care for this patient/client group, which can lead to gaps in service provision:

05 CPM... "there feels to be a lot of siloed areas, kind of working trying to support these patient groups but not being able to kind of connect up and work together, and equally with funding being fragmented in that way too"

03 SOT ... *"the client, often the groups of individuals fall between services much as we try not to work in, in diagnostics, often teams and areas have criteria, and sometimes we find people slip between criteria or services...*

Some participants identified themselves as 'uni-professionals' as they provided care outside of a multidisciplinary team (MDT) and described feelings of isolation and vulnerability to the risk of working outside of their scope of practice. Additionally, fragmented care was found to increase the workload of a uni-professional:

07 Physio..."*I work uni-professionally so I'm not in an MDT it's quite isolating treating them by yourself, and sometimes you do feel like you're on the risk of working outside your scope of practice...*

...*I've found that it's time-consuming outside of a session as well, because I'm having to... look into maybe some investigations for them...liaise with other services for support, such as persistent pain team, mental health team, chronic fatigue"*

Service and professional boundaries were felt to impel professionals to work within their professional limitations:

01 SOT..."I suppose the organisational constraints are where you work, if you work for social care, you do look at mental health and physical but obviously we're not experts in *mental health so I suppose the constraints are the limitations of your own knowledge and practise and competencies"*

07 PT... "they might go on to disclose things around their mental health, or significant events that might happened in their life, and I'm not trained to deal with that side of things, and I haven't got easy access to mental health services"

Although benefits of MDT's rather than uni-professional working were commended by practitioners, limitations were exposed in relation to care provision for PTSD and MUPS. Although a mixed professionals team could provide better care, such benefits could be compromised without ongoing relationships:

08 MOT..."because it's not a kind of dedicated MDT, you potentially could be working with a different GP, or a different neurologist, or a different psychologist, or a different mental health team, it's not an MDT that is formed and know each other well and can trust each other"

Deficits; Resources

Lack of resources, particularly for MUPS care was cited as a main issue leading to misuse of existing resources allocated for disease management, which could encourage game playing by other services:

06 CPD...*"it's not helpful when they end up being referred into a service that's commissioned to see (surgical) patients, because there's a lack of resources, I'm not funded to see people with medically unexplained conditions, but they will try to get them through by saying the patients got (a medical) problem, even though it's quite clear it's a functional presentation"*

Awareness, knowledge and skill deficits were identified for patients/ clients and practitioners alike:

10 TSW... "I've spoken to a number of colleagues and said about MUPS, and they don't even know what it is"

01 SOT..."very often practitioners don't know how to manage that specific group of people, that's not the appropriate approach to use with somebody with PTSD or MUPS, there's many OT's that struggle to find a different solution, as they're not sure how to manage or rehabilitate somebody with MUPS, as it's quite a difficult condition to manage...

...I don't think the person themselves know how to manage their condition"

Deficits; Time

A lack of time was a major issue for participants for service provision and professional job satisfaction. Insufficient time in social care for rehabilitation, the exclusion of patients with MUPS from medical services and inappropriate interventions were perceived to impact on waiting lists:

07 PT...”we're no longer accepting just MUPS into our service because we had to review all of it from a time management point of view”

O1 SOT...”whereas I feel that there is rehabilitation...those approaches take longer...that can be dictated by service and organisational constraints, we're not an endless service, there are limits on how long you would be involved with the case, because there's fifty other people waiting on the wait list to be seen as well”

Patients/clients with PTSD and MUPS can be mismatched with service provision that is time limited and designed for episodic care. This was considered to result in repeated episodes of care over extended periods of time:

02 PCC... “I would be predominantly discharging those people after five or six sessions. But with trauma histories, often they will need to be re- referred for another episode”

04 GP... “what I find satisfying, is seeing a problem, sorting it, giving it the time, it needs, and then withdrawing once the problem is sorted. But people with PTSD and people with medically unexplained symptoms can be a lot more difficult to withdraw from once one is satisfied one has a diagnosis”

Caring for patients/ clients with PTSD and MUPS, was found to generate significant extra work for more attuned practitioners, and time constraints could prevent better understanding of presenting problems:

09 GP...”this actually is a substantial workload addition, when compared to more straightforward, more conventional stuff. The more complex patients with PTSD and MUPS often they're very complex in terms of presentation, very complex to tease out the physical from the sort of psychological distress levels, and these are by the nature of it, complex consultations often very prolonged”

Resistance; Perceptions

Themes underpinning resistance were perceptions, bias, disengagement, and culture. Problems of perception were a major theme and related to insight, emotional dysregulation and personality. Insight was considered an essential pre-requisite to patient engagement and lack of insight was associated with physical symptoms fixation:

11 LP... *"where patient has insight, they're more likely to be open to discussing where it is all coming from, but they don't relate that to how they're feeling emotionally, their relationships, some of it is about possibly attachments that they may have had...*

...the patients who hold on to the symptoms...it seems like there isn't much else if you remove those symptoms"

Patients with possible personality disorders, although considered a small percentage of presentations, were perceived to be more resistant to help with repeated presentations and poor engagement with care. Challenge and conflict were a feature of some patient/ client-practitioner interactions:

06 CPD... *"the ones that they find immensely challenging are probably the subtype where there are personality problems there, I don't like using the word disorders, I think you kind of expect that some of these patients just want to vent their anger and you can go round and round in circles with them, and not get anywhere...*

...you're left feeling very frustrated and exhausted with it, so with those patients I am quite boundaried"

Some patients/clients presented with unpredictable moods and behaviour which could cause apprehension for the practitioner:

09 GP... "depending on where they are at any given time, they can often present in a variety of different mental states and states of you're not entirely sure what you're in for a lot of these patients have good days and bad days and are quite amenable for discussion and plans being put forward on a good day, but may not be amenable if they're having a bad day where they've got a high level of underlying psychological distress going on for whatever reason"

Resistance: Disengagement

Patient/ client disengagement from care was identified by non-acceptance of their MUPS diagnosis and, as a consequence, patient/ clients would continually search for a physical disease diagnosis, whilst failing to engage with therapy:

07 Physio... "maybe by the time they get to us they're still not settled on their diagnosis, and that can make it really challenging, some people are still seeking other diagnoses.

And I generally feel like you need to have an acceptance of the diagnosis in order to make progress"

Patient/ client avoidance behaviour, was another reason cited for disengagement, which could impact on waiting lists:

04 GP... "it's usually trying to get the people with PTSD to engage with the approach; it's recognising it in the first place and then getting them engage with the appropriate help is the key really"

01 SOT..."*the person very often has an expectation that because they're in pain or because they are fatigued, that they shouldn't do the stairs, or that they shouldn't do a bathing assessment or demonstrate how they actually do an everyday activity because they're too fatigued or in too much pain because pain equals well, I shouldn't carry on with what I'm doing because that causes pain, or I shouldn't carry on doing what I'm doing because I'm very tired"*

Resistance: Bias

Practitioner responses to resistant attitudes varied and could be expressed through professionals' interest in the patient/ client condition, avoidance of patients/ clients, mistrust and antipathy towards some patients/clients. Some professionals held interest in the psychological impact of disease, not in MUPS or the traumatic/ emotional consequences of disease:

06 CPD... "I think the ones (psychologists) where people don't like to work with these patients...who are not keen on it, tend to be the ones who've got a particular interest in (medical) patients and don't want to be going down the route of anything to do with mental health, because they've come away from mental health and don't have an interest in mental health...

... and are more inclined like the (Donington et al.) to run a mile if somebody's got a functional condition, because it means that they've got to look at treating, investing in the emotional side of things and mental health side of the assessment"

A reason postulated for practitioner avoidance was lack of confidence with the PTSD and MUPS patient/ client subgroup:

01 SOT..."I feel like there's reluctance and people are frightened or most lack confidence in changing their practise because it's so unknown"

Mistrust due to previous traumatic interpersonal relationships has been suggested as the basis for conflict and pejorative labelling between patient/ client and practitioner:

11 LP... "Whereas somebody who may already have perhaps an insecure attachment it's like that they're wired, their blueprint is already in a way...makes them not resilient already, and therefore they may also have difficult trusting issue"

09 GP... "trying to rebuild bridges and trust with professionals, particularly if they've previously been labelled as problematic, or a 'nut case', or some unfortunate terminology, 'oh yeah, ok, such and such is pretty bonkers, blah blah'. So often it's a case of establishing some two-way trust"

Mistrust could lead to patients/ clients repeated presentations to service for tests:

11 LP... "Maybe if they have something in mind that they think they have a diagnosis that is being missed, they don't trust that the investigations are showing that there's nothing serious they may keep on wanting to explore further"

Antipathy in colleagues was reported by participants and related to a practitioner's understanding and empathy:

09 GP... *"it's very, very difficult to actually try and rationalise this within a conventional sort of medical scientific framework, and this often, I think, leads to frustration on the part of the practitioner involved, in that they feel that the patients are quote-unquote, 'giving them the run-around' the patients in many instances, labelled as being problematic"*

06 CPD...'there's a real failure of other colleagues to think psychologically, to understand why somebody's developed the symptoms they've got, where they got to, where they are, and how distressing that must be for that person and their family'

Frustration was frequently expressed by professionals which could lead to negative beliefs about patients/client motivation and responses, which could include gaslighting and denial:

11 LP... "patients with medically unexplained symptoms can be a frequent occurrence to us, the general feeling you get from physicians is that they are the patients that drain their resources, and they don't move. They don't feel that they are making any progress with them'

10 TSW... 'I think it can be difficult because they might already come into our service with a preconception that we don't believe what they're saying health colleagues, saying oh, *you know this person keeps coming back; there's absolutely nothing wrong with them, it can be quite judgmental really'*

Age bias was perceived where older peoples' symptoms were deemed part of the aging process and patient/clients were not considered the same as younger people with PTSD and MUPS .

10 TSW... "it's the understanding, especially with elderly people, that people will go through a number of events which may cause post-traumatic stress. But it's ok, because when you're older, that's a natural progression. I see loads of people with post-traumatic stress through bereavement, and it's a case of 'it's a natural thing', that as you get older, you're going to lose people in life. But actually, that effect still, has a very, very adverse effect on people...

...if it's a younger person, I do feel that maybe that's taken a bit more seriously

Resistance; Culture

Attitudes to illness were seen to be biased towards physical over mental health problems with some participants calling for a change in the culture of health and social care:

08 MOT... "that kind of frustration with society and culture at large, because people do a lot to reinforce physical symptoms and pay more attention, and give more sympathy and positively reinforce, not consciously, but subconsciously, maybe positively reinforce symptoms. So maybe someone with a mental pain and anguish, but that wasn't acknowledged or that wasn't heard"

01 SOT... *"I think it's just culture. We just need to change culture, don't we? Which is mostly the hardest thing to change, and that will take time"*

Barriers to culture change and appropriate service developments were considered to be related to the relative anonymity of PTSD and MUPS care in contemporary health and social care and the prevailing biomedical culture in existing service provision:

02 PCC... "a wider recognition of the way we're working (trauma informed) and the extent of our skills and abilities to work with these patients, and I think what's happening is not on a formal basis, it's not written into the contract"

09 GP..."a lot of these patients are already under you're sort of more conventional psychiatric services and have often been quite heavily treated with antipsychotic medications without actually addressing the underlying problems...

...there is a definite overlap between our most challenging patient group and being under secondary care psychiatry services, so this to me the challenge is that how would a specialist MUPS/PTSD service fit in with the sort of conventional primary- secondary care framework that we've got"

Another issue was tiered care. It was considered that increasing complexity of work from primary care to secondary care, a concept underpinning services, was not born out by practitioner experience:

02 PCC... *"and this constant message of mild to moderate in primary mental health and severe in secondary mental health, that's just not evidenced on the ground and probably hasn't been. It would mean that primary mental health would remain mild to moderate and everything else literally would go to a secondary mental health service, which I understood was what was going to happen with the new trauma service, but that's thankfully not changed anything, thankfully"*

Although a professionals' grass roots driven change was sought, it was thought by some that change could only occur through senior management and by policy changes in health and social care:

01 SOT..."I suppose that the change I'd love to make, and I've tried to do it so many times, is that practitioners feel that they are able to change and that we don't have to carry on doing things the way that we've always done them, because actually it's not working"

02 PCC..."has to be much wider changing the working model that's going to have to come from obviously the NHS and the Welsh Government and wider, so it's not straightforward"

Family culture was considered an important source of resistance to change which could pass through the generations:

07 Physio: "you've got the parent's needs and managing the families' expectations and needs and that can be just as difficult"

08 MOT: "the relationships are so embedded in the carers role and it's almost like for anything to actually change, it's really traumatic the whole family would have to kind of break, everyone have to change, their identity, then change their roles and change their patterns, and you kind of know that's probably not gonna be able to happen...

... how's this child gonna grow up then, having had that sort of early trauma in their lives when they've been a young carer, and where they've seen that sort of physical and

psychological distress, and if there’s gonna be any sort of learned behaviour, you just see patterns repeating themselves within families as well”

Detriment; Embeddedness

It was observed that late diagnosis could lead to patient/ client problems becoming embedded and very difficult to treat, which could lead to more permanent symptoms and disability.

07 PT...”the progress I feels tends to be quite slow, and I think maybe due to the lack of diagnosis early on, by the time they get to me, it's a bit further down the line, and that's quite challenging as well, because some things are quite embedded...

... so although there's not a primary cause to their physical symptoms, you've had a lot of secondary changes, so secondary muscle weakness or shortening”

06 CPD...”generally, people have been passed around and end up being disabled. it's very difficult to change patterns of behaviour when people have had their symptoms for a very long time”

Detriment; Conflict

Whether to ‘compensate’: to intervene to provide immediate relief of symptoms or ‘rehabilitate’: to intervene for longer term relief, was a major source of conflict between professional and patient/client, perceived by some practitioners as originating from patient/ client resistance, which could result in complaints against the professional:

03 SOT... “When you try to explain it almost becomes if it's a concept that they don't want to take on board, for whatever reason, it seems to be no, you're wrong, you're incorrect, that isn't right, I don't believe you sort of sort of attitude. I think you also find is people know or feel they know their condition and their difficulties very well and there's no reasoning”

01 SOT...”very often a person will ring and complain when an OT assessment's being completed, where they don't agree with the outcome”

A minority of patients were perceived as oppositional and provocative, not wanting to engage with help offered by professionals:

06 CPD...”they can be very, very angry that they've been sent to see a psychologist because they think that if it's psychological, it means they're not being believed or it's all in their head. We end up often spending the first session trying to calm people down and *trying to explain, give a more biopsychosocial formulation to explain that their symptoms are very real"*

Some interactions led to 'heart sink' and 'stuckness' experiences for some practitioners:

03 SOT..."it can almost bring a bit of a oh no, not this symptom, not this presentation again. You've got to go through all this, you gotta do this hard work, this real frustration and reality is probably not going to get very far, provoke something quite strong, emotionally on times. I think just seeing the words medically unexplained or other terms that may be being used differently now rightly or wrongly, it's sometimes just gonna be like oh no, here we go again"

11 LP... "There's a feeling of being stuck, and it's like trying various ways of getting them unstuck, like when you helicopter over something and trying to get them outside that stucky feeling in the mud"

Detriment: Moral Distress

The inability to help some patients/clients could lead to moral distress for some practitioners, eliciting mixed emotions of alternating compassion and frustration:

05 CP... "uncertain that I'm sort of doing enough that I'm able to support or help. I do kind of swing between the two sides with regards to the kind of emotions that come up and the sort of thoughts and feelings there"

Service deficits could lead to practitioners' sense of underachievement:

01 SOT..."*I feel quite sad in a sense, because I feel that we don't always offer them the service that they need, often I feel quite limited, we're all in this profession because we want to make people better or we want to improve people's lives and experiences, and very often I come away from those cases, and I feel like I haven't achieved that"*

Absent care pathways could also add to practitioner distress and lack of job satisfaction:

08 MOT...''They can be complex to navigate because there is no pathway. that cognitive emotional load: am I doing the right thing it's not like, yeah, I feel confident, I've nailed that, there's not that sort of satisfaction, job satisfaction, clinical satisfaction that you've really got the best solution"

The role of Cartesian Dualism's mental-physical divide in service provision can lead to frustration:

06 CPD... "I'm frustrated for them, it's quite shocking that there's such little understanding about this relationship between the mind and body and how to help formulate an individual person's symptoms and explain to them why they're having them, and then there isn't that appropriate service to refer them to"

08 MOT..."institutions like the NHS, they are very much divided, you're in physical health, you're in mental health, so I think it's just that frustration"

Service provision gated by criterion was found to exclude people with comparable need which led to practitioner distress.

O8 MOT... "I suppose it's like we feel you can't just leave that individual or you can't just leave the clinicians working with that individual; we have to try and support in some way"

Practitioner feelings of inadequacy with feelings of guilt and shame was induced by some patients/ clients, and practitioners to consider that some patients/ clients cannot be helped:

06 CPD..."I think it's just frustration more than anything, you feel a bit inadequate, 'cause there are some people you have to accept that you can't help, you don't have the service models or don't have the skills to help, and that's hard to acknowledge"

11 LP... "sometimes it is these feelings of misery feeling of some have evoked those feelings of shame, in that it's like you feel you're not doing something useful with them"

Detriment; Suboptimal Care

Inappropriate care provision was considered to be associated with suboptimal outcomes for patients/ clients:

03 SOT... "if we're not assessing people right and fully understanding PTSD correctly, are we giving people the right support packages to support them to live with that condition, and with the medically unexplained symptoms bit, I think the biggest thing for me is, and it's probably with the PTSD as well, we're not quite getting it right in what services supporting those individuals"

10 TSW...''I think sometimes my experience of frustration for the individual is that they're given medication and sometimes the medication could cause more side effects"

Some participants suggested care provision that did not address patient/ client needs could lead to increased service demand, add to waiting lists, promote repeat attendance to services and persistence of symptoms:

06 CPD...”we've got so many patients that are just re-presenting all over the hospital having unnecessary investigations”

02 PCC... “they've carried these things through life with them for years, often decades, but they've often been in and out of mental health services and no change, and predominantly just pharmacological approach”

Social care practitioners identified service gaps that led to use of compensatory interventions rather than restorative interventions, which could lead to short term outcomes:

10 TSW...’‘I think there is a lack in service provision so it can be that we're using services as a sticking plaster”

01 SOT...”*I don't think that we use enough different approaches with people with MUPS, that is frustrating because I see lots of people who still compensate because it meets the short-term outcome”*

It was suggested by some participants that patients/ client heterogeneity was not recognised in Practice, and a one size fits all approach provided by health and social care services could mismatch patient/ client need. Co-producing services was considered a way forward:

06 CPD...”it's really unhelpful, we have counsellors who think one size fits all, or we can just do a bit of CBT with these patients, these, are a very heterogeneous group of patients, everyone’s an individual. so individual formulation is needed to guide what your treatment is”

03 SOT... “we may go away and develop a whole service thinking that we're developing it correctly, but actually the individuals may not wish to have a service like, we might make it's possibly about involving those individuals with any future changes”

Insufficient time was linked to inefficient care that seemed to foster dependence rather than recovery:

10 TSW...”I think one of the biggest impacts or one of the biggest things not giving people the time and then we become too prescriptive, and people become more dependent”

Detriment; Patient Journey

The patient journey was perceived as haphazard and protracted by some participants. Patients/ clients were observed as passing around the care system, searching for a diagnosis or explanation:

07 PT... "when I've looked back on patients' records one service has seen them for this and another service has seen them for this and that's come back clear and that one's come back clear and another service investigated this and that comes quite clear and they keep presenting, probably back to the GP and or in the A&E"

10 TSW... "People have lots of negativity when they come into our service because of the fact they've been going round and round and round. Going from one GP to another and being test, sent for tests and coming back with no diagnosis, it's that revolving door side of things"

4.4.6 Amelioration

The third overarching theme, Amelioration: to make better, was a common ideal amongst participants and sought at all system levels from patient/client to service and organisation. The main subthemes underpinning amelioration are coherence and enablement (fig 4.3).

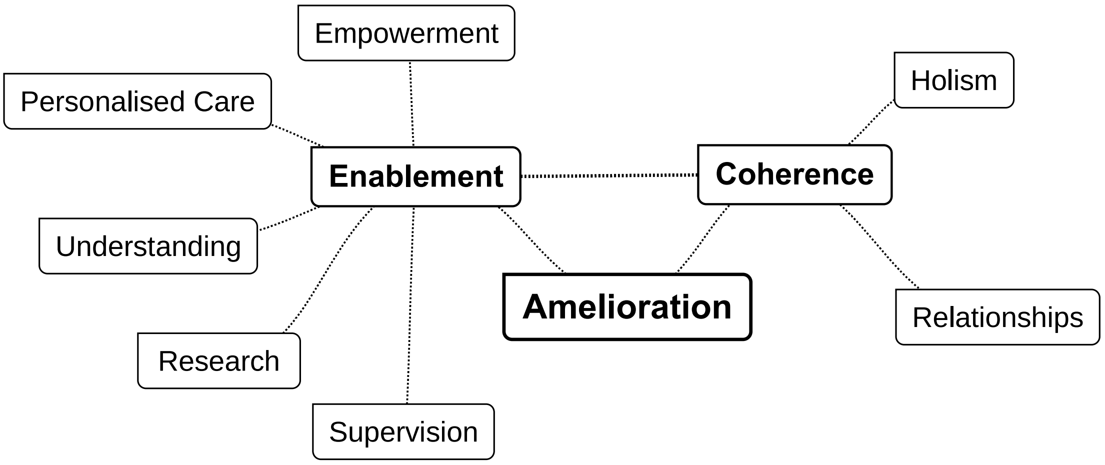


Figure 7 Amelioration Thematic Map

Coherence; Holism

Holism, defined as system parts understood by their contribution to the whole, and considers any subject an integrated system. Fragmentation of healthcare was identified by participants who suggested better integration of health and social care service provision. Barriers to integration identified including hierarchy, territory, and split funding:

01 SOT... "More seamless working joined up working, stop the preciousness between health and social care, have pooled funding, so there is no hierarchy, and that you just work together because that would make a difference. And that's not just health and social care, but that's the specialisms such as physical health, mental health, health, social care, Third Sector, private; we all need to work together for the good of the person"

11 LP "I think 'that the system itself has to be more integrated and that funds have to be more integrated because the patient comes as a whole going through their journey from one service to another, and services tend to think about their budgets, and if the funds continue to be split, then it's very difficult to think how these services could be organised. So, I think that there has to be more integrated funds for integrated care"

A holistic approach was deemed essential by participants to improve outcomes for patients/ clients. The development of a holistic, integrated care approach was suggested to require collaboration between professionals:

11 LP... "what I would like to see is that we work more collaboratively with primary care, secondary care and mental health to offer the patients what they benefit from most"

10 TSW... "I do definitely feel that there's a need for a holistic approach, it's about really understanding a person's feelings, emotions there needs to be that collaborative approach to support individuals with MUPS, and post-traumatic stress because each works hand in hand it's very key that we try and empower people to find solutions for themselves. So, it's about identifying what is causing the issues"

Some practitioners recognised the impact of co-morbidity and duality in current service provision, and complex, heterogeneous presentations in practice. In response, a multidisciplinary team approach to better support patients/clients and practitioners was suggested:

08 MOT… "I think, there's frustration there as an occupational therapist it's a philosophy OTs aren't split up into a physical being and a psychological being, we see the individual as a whole, and that whole impacts on people's occupational performance. A dedicated service absolutely moving away from splitting people into kind of a physical being and a sort of psychiatric being far more integrated team"

For rehabilitation, formulation was found to best work in MDT settings where practitioners could share information and also learn from each other:

06 CPD... "you can look at the brain scan, look at all the medical information, look at the OT information, the physio information; bring it all together into a psychological formulation. I used to sit in their acute MDT every week and formulate the cases for them, to help guide them to what rehabilitation and intervention models people needed, that works very effectively, and it up-skilled everybody in that team"

07 PT "specific service for these patients a medically unexplained service, which is made up of psychologists, physios, OT's probably a psychiatrist as well, so a full-on integrated MDT"

The need for care pathways was highlighted. Although some referral processes were identified for PTSD, no formal pathways for MUPS were identified:

06 CPD "then those that have clear symptoms of PTSD, there's a pathway to access specialist intervention for PTSD, so we'd refer them into that service in mental health, we don't have care pathways for these patients (MUPS). It's quite shocking"

Coherence; Relationships

The second theme for coherence is positive relationships and building trust. Mistrust due to traumatic relationships had been suggested as the basis for conflict and pejorative labelling between patient/ client and practitioner. Re-building trust can bring benefits to patient/ client and practitioner alike:

02 PCC... "A privilege to have people feel able to trust someone enough to share, often for the very first time, the full extent of their trauma"

Practitioners described benefits from providing the appropriate time and space to forge trust and positive relationships with patients/ clients:

11 LP... "you have to have protected time to see these patients on a regular basis even if it is once every two or once every three weeks, but you need to develop that relationship, that trusting relationship, and to gradually give them time to move on"

05 CPM... "I think I'm privileged to have the opportunity to give them a space to be heard...that's not always possible in other areas of the healthcare system, and so that's an advantage in the sense that I'm able to develop that relationship with somebody and be able to understand their experience a bit more, and obviously understanding can promote that kind of positive outcome really in the kind of long run"

Forming positive relationships and trust was associated with empathy and mentalising:

06 CPD... 'I'm used to people with very disinhibited behaviours, so I don't take anything personally, it's not very pleasant, but I just feel for the patients quite often because they have been through lots of medical colleagues and nursing colleagues who are immensely frustrated by these patients"

02 PCC 'I'm saddened that they've carried these things through life with them for years, often decades'

Mentalising was also a process utilised to understand patient/ client experience:

06 CPD... "I would say generally, but I mean our training is we, we, we try to understand where the patients coming from and, and to put ourselves in the patient's shoes"

04 GP... "If I give you the example of several of the drug addicts that I know I deal with...knowing or getting to grips with their stories, so you can understand the traumas that have led them to where they are...

Empathy for the family and carers of patients/clients was considered important:

07 PT... "it's managing families' emotions around this and they're understanding as well, because quite often, I think as anyone if your loved one was struggling or hurting then you want to help them"

Enablement; Empowerment

Enablement is the second major theme underpinning amelioration. Empowerment of both patient/ client and practitioner through co-production of care was considered necessary for improved outcomes:

03 SOT… "it's possibly about involving those individuals with any future changes, or any changes so that we are creating the right sort of services they will want to engage in, there needs to be a level of making sure that we are going down the right route from their perspective as well"

Listening and validating patient/client experiences was considered an important part of care:

10 TSW... "that people really feel that they need to be heard, I think that is really, really important, that people do have the voice and control really, to be able to explain how they feel"

06 CPD...”quite often, I can see where the patient’s coming from, even when they are quite angry because of the experiences they've had, so most of the time we listen and we empathise, and actually just validate the emotions that people have and then people often come down and will engage with us in most cases”

Practitioners have described their own personal empowerment by empowering their patients/clients through their work:

02 PCC... “I gather feedback from every patient at the end of our time together and people will often say I felt you understood, and I felt you were really listening to me, and that just is what makes it worthwhile getting out of bed in the morning frankly, to be able to help people in that way, and I'm as deeply grateful to them as they say they are to me”

03 SOT… “I think I was one of the only people to ever have got any impact on that (client) so I think from that day it does evoke a bit of an emotional of I think I can help these people and we can do something better”

Practitioners indicated their own empowerment by adjusting current service provision, and creating new service developments in health and social care:

11 LP... “it's an area that I've been trying to develop (MUPS) and would like to make sure that we have a proper service for these patients because I think they're really not getting the treatments that they deserve”

06 CPD... “we've written this business case to get a specialist (MUPS) service so that we can dedicate the time to making sure people get the best evidence-based interventions...they can get in a timely way”

Involving psychologists in medical care and developing psychological MUPS services as new models of care was proposed:

06 CPD... *“So, it's a whole rethink around how we develop our models of health care as psychologists we take responsibility for this as well in coming together with our colleagues, it doesn't need a lot of psychologists, it needs the right psychologist in the right places in the district general hospitals...*

Risk management support for practitioners was sought to help distinguish between disease and MUPS:

04 GP... "some very good diagnosticians in the form of rheumatologists and neurologists, that one sometimes has to refer people to exclude other causes, when one was not 100% certain about the medically unexplained symptoms"

Enablement; Personalised Care

It was suggested that the provision of appropriate professional skill, assessment and time would better support personalised, tailored, and time for long-term care for patients/clients:

06 CPD... "they just need the right assessment with someone who has the right expertise to help properly assess them and formulate why they develop their condition and their symptoms and help them to then tailor that intervention to that individual"

11 LP... "so patients generally are in for a long stroll they're not somebody who's symptoms are going to go away very, very quickly, and I find these patients demanding of time"

For one participant, a personalised, trauma informed approach yielded good outcomes through telephone only, without face-to-face interaction:

02 PCC... *"interestingly, we've only worked over the telephone. I've never met her in person, I've never seen her face to face via video, we've only worked over the telephone, but again, she felt I was listening to her, and she felt she was truly being heard"*

Early diagnosis and intervention was thought to secure improved outcomes and trauma informed primary care was considered the best place for this to work:

06 SCP... "I think a lot of the patients we caught them early, you know we'd have a really good outcome, it'll save money to the health service in the long run. Better outcomes for patients, their families, society, and the health service if we rethink it"

Crisis prevention for patients/ clients with PTSD and MUPS had been highlighted and family/carer based early intervention was suggested to mitigate escalation to crisis:

08 MOT... "how can I support the family? How can I support the PA's or carers? How can I help the person understand what leads to things escalating, or symptoms getting worse and how can I look at preventing symptoms getting worse and how can I prevent things escalating"

Practitioners called for evidence-based guidelines and care pathways to help them manage this group of people:

06 CPD... "I'm interested in the scientific evidence based around what works. There isn't good evidence for randomised control trials for CBT with these patients one size does not fit all, there's loads of gaps in the research literature...

... developing evidence-based care pathways every patient should have a right to be able to access the right assessment information advice and support at the right time. And if we could do it, develop that in a timely way, evidence-based way"

Although local PTSD service provision was identified by some participants, local MUPS services in comparison, were minimal and without referral pathways. MUPS services models were identified outside of Practice areas, however, and practitioners identified the need for local service developments for complex PTSD and MUPS presentations:

03 SOT... "then I think from that there needs to be services more dedicated across both health and social care a specialism in that area a bit more of a dedicated team within our complex care team shift a little bit of the emphasis around the complex care"

09 GP... "I think in terms of the immediate locality, we basically need some form of clinic provision where we can make a referral, I think that change is important, and these people need some sort of specialist management to some extent, and often, secondary care psychiatry services, essentially, they haven't really got anywhere, if I'm honest, and cranking up their quetiapine or risperidone or some such, is not really the answer"

Very difficult to manage patients/ clients were, however, perceived to comprise a small minority who required a dedicated service and appropriate interventions:

06 CPD... 'there's a tiny minority of them, and those are probably the ones with the personality issues, who probably need to be referred into a different service model and probably need more intervention like the type of intervention they do with personality disorders, dialectical behaviour type therapy"

Although outcome-based care was established as government policy for social care, the need for higher level cultural and organisational changes, with leadership, to improve care was recognised:

01 SOT... "all of our forms now since the Social Services and Wellbeing Act, is actually based on what you want to achieve and why is it that you can't achieve that, so what are the barriers you know"

06 CPD... "it just needs to be a properly commissioned service, because I see considerable distress and suffering for patients who have these symptoms, better *outcomes for patients, their families, society, and erm, the health service if we rethink, our models of health care for these patients"*

Enablement; Understanding, Education and Training

Education in PTSD and MUPS was thought important by participants for individuals and teams across professions and services. A diversity of education and training needs were identified with an emphasis on awareness training:

06 CPD... "it's education, education, education. Everywhere on the relationship between mind and body and that needs to be done right across, it's really poor that our medical colleagues and our nursing colleagues through no fault of their own do not have the knowledge and the skills to explain to people how you actually get physical symptoms in the absence of actually having an illness, a medical condition"

03 SCOT... "it wasn't at training, but it was an away day, I came back with a greater awareness and one of my colleagues was there and I feel we've got a different awareness of it through that"

Some participants were formally trained in trauma and MUPS. In the absence of formal education and training, some practitioners were motivated to self-directed learning. Either way, training in PTSD and MUPS made the professional more confident in their practice:

02 PCC... "I've been, fortunate in having the background working with trauma and severe trauma and working with the military and trauma for many years, I've also had a Master of clinical and a research masters in psychological trauma, so I've got a really good basis for that, so I feel reasonably well equipped, but I learn literally every day and will always have to learn every day as all of us do. I do all that I reasonably can and every day brings new knowledge to me"

O1 SOT..."I don't feel like there's sufficient knowledge amongst other professionals. So, because I've had some experience of working with people and done my masters within that, I get frustrated when other professionals are still compensating and not looking at the bigger picture"

Education and training for MUPS was found less available than for PTSD. Training was sought by participants to improve practitioner confidence with diagnosis and patients/clients to understand their symptoms and interventions.

01 SOT... "I suppose to learn a lot more about the two conditions I need to be able to feel confident and competent, that when I'm assessing, I might find some of these symptoms *that I believe are possibly PTSD or MUPS I could actually feel more confident in what I believe is already to be the case"*

Education and training was found more beneficial when repeated within protected time:

04 GP... "there was a very good talk as part of the protected learning time, and I think if you look at things on a 3-year cycle, I think that was done in a very good way, so repeating that would be, I think, quite useful really"

In addition to practitioners identifying their personal educational and training needs, being able to use this knowledge for psychoeducation of their patients/ clients' supported interventions:

01 SOT... "they(clients) are helped to be educated on why they feel the way that they do, and actually the compensation will not make them feel any different. That pain will still be there, and that fatigue will still be there because the compensation doesn't work"

It was suggested that professional training in PTSD and MUPS should start early in undergraduate training as well as postgraduate settings:

09 GP... "I would actually start with the medical school curriculum. When I was at medical school, we were taught psychiatry very thoroughly, but there wasn't an awful lot about PTSD and MUPS...

... "having had various discussions in the past with...(a PTSD and MUPS informed GP), he sort of made me aware originally, as a GP registrar, of this type of presentation. I had come straight from a psychiatry placement in hospital, so it's sort of complemented my prior knowledge and actually made sense of some of the patients that I've seen in the hospital setting"

Training in evidence-based interventions was sought. Although EMDR was considered by some participants, others suggested awareness and training in a wider range of evidence-based interventions:

11 LP... "I think, for example, that I would benefit from learning EMDR techniques. Some specific techniques that have shown to be beneficial for patients with PTSD. There may be other treatments that work. It would be nice to be updated on what works"

02 PCC... "because it's not just a question of being trained in a model like in EMDR that does not necessarily give you the wider, deeper understanding of a whole range of trauma presentations and how best to address them"

More understanding of mind body connections and biological mechanisms were identified as learning needs by some participants:

08 MOT... “with the medically unexplained physical symptoms there's been far more sort of models of what's been happening on a kind of neurotransmitter level in the brain, and I'd love to understand that a little bit more clearly”

Enablement: Research

Calls for more research to develop the evidence base for effective interventions, especially to respond to patient/client heterogeneity:

06 CPD... “I'm interested in the scientific evidence based around what works there's loads of gaps in the research literature what's the evidence based around what works for different subtypes”

Practitioner led collaborative research was suggested with the use of innovative technologies:

06 CPD... “There must be so many ways in which we could develop the relationships we've already got with colleagues working in with expertise in technology look at how we develop treatments we've got research projects here looking at using virtual reality”

Enablement: Teamwork and Supervision

The benefit of peer supervision, to help understand ruptured therapeutic alliances and conflict between patient/ client and practitioners, was considered valuable, and part of the job, however, supervision was available to a minority of participants:

02 PCC... “I've got a very supportive team and hugely experienced and supportive clinical supervisor colleagues who have a deep understanding of these matters”

06 SCP... “if it brings up strong emotions for you, is the time where you need to go off and talk about it in supervision. Because when patients bring up strong emotions for you, it's usually about your own issue, so when that happens, I just go away and have usual peer supervision with a couple of other colleagues to talk about any emotions, because that would be my issue rather than the patients’ issue 'cause that's kind of how we trained to work”

4.5 Discussion

4.5.1 Main findings and comparison with the literature

Rich data was derived from eleven interviews with three overarching themes obtained from TA: ‘Making Sense’, questioned the utility of diagnostic processes in Practice, ‘Protraction’, considered factors that could impede practitioners’ ability to providing quality care, and ‘Amelioration’ identified unmet practitioner and service needs, and potential ways to address deficits to improve care for patients/clients with PTSD and MUPS.

The view of the utility of diagnosis varied between participants. Diagnosis of PTSD through validated measures was undertaken by a minority of participants, with most relying on historical diagnoses and other means, such as practitioner intuition and experience, and inference from certain pre-existing conditions such as drug and alcohol misuse. The diagnosis of PTSD was considered easier than for MUPS with PTSD perceived as an established condition in Practice. Although PTSD guidelines and screening tools have been developed, most participants did not refer to them for use in their Practice.

No guidelines or validated measures for MUPS were identified by participants. Although validated MUPS measure are available, in the absence of a universal MUPS classification system, validated screening tools apply to some functional somatic syndromes such as (Schmukler et al. 2019) and somatoform disorders. MUPS were usually diagnosed from various patient/ client cues, such as a history of repeated normal laboratory test results. Differentiating serious disease from MUPS was deemed a substantial risk of missing serious disease. Most practitioners, however, did not feel confident making a definitive MUPS diagnosis alone without the support of a specialist physician. Patients/ clients with PTSD, it is hypothesised, can have a high rate of disease co-morbidity due to allostatic load from chronic stress (McFarlane 2010) (Robertson et al. 2017).

Changes in terminology, such as FND replacing conversion disorder, caused misunderstanding for some practitioners, who called for more consistent terminology and coding. It was suggested that improved MUPS prevalence data could be derived, from more consistent coding, and better assist service developments. DSM and ICD revisions led to changes in somatoform and conversion disorder definitions, replaced in DSM-5 by somatic symptom disorder (SSD) and ICD-11 by bodily distress disorder (BDD). Advantages for the new concepts were to better support practitioners to identify persisting physical symptoms that were distressing to patients/ clients whether explained by disease or not and reduce stigma of mental health labels (Lowe et al. 2021).

Routine diagnosis in medicine has been described as a process to select the most probable cause of a patient's condition and was considered an art as well as a science (Eddy and Clanton 1982). Diagnostic processes usually lead to a disease label that could have positive and negative consequences for an individual's identity, societal acceptance, and access to care (Sims et al. 2021).

Simultaneous analytical and intuitive reasoning has been proposed as the natural process of diagnosis, which can be influenced by practitioner experience and familiarity with the patient/ client and their problems (Norman et al. 2009). A systematic review and meta-analysis of general medical practitioners' (GP) diagnosis of early cancer (Smith et al. 2020), indicated four-fold pooled odds increase in diagnosis when gut feelings were included in patient assessment. This intuitive process was associated with pattern recognition, experience, and empathy.

The terms PTSD/ CPTSD, and trauma/ complex trauma were used interchangeably by participants. Traumatic experience was considered to present to practice in numerous ways, with PTSD considered part of a spectrum. PTSD symptom heterogeneity was demonstrated by analysis of DSM-5 PTSD symptom combinations, which estimated 636,120 ways to have PTSD (Galatzer-Levy and Bryant 2013). MUPS comprise a heterogeneous group of symptoms and conditions (Brown 2007). Investigating heterogeneity of illness behaviours in 224 patients with MUPS, cluster analysis identified two distinct illness behaviour groups: high and low. Higher health anxiety was found in the high illness behaviour group with increased illness behaviour in men, and more doctor visits in women (Weiss et al. 2016).

The over diagnosis or under diagnosis of PTSD in practice has been debated (Tully et al. 2021). The potential for overdiagnosis of PTSD was suggested to be through the process of 'concept creep', by the 'conflation of stress with trauma and the conflation of trauma with PTSD' Underdiagnosis rather than overdiagnosis of PTSD in Practice, however, was suggested to occur, with less than half adults with confirmed PTSD not seeking care, possibly due to avoidance symptoms and stigma. A systematic review examining diagnosis of PTSD in secondary care mental health services supported underdiagnosis of PTSD (Zammit et al. 2018).

PTSD and MUPS were considered separately by most participants although the overlap between the two conditions was acknowledged in Practice. A PTSD diagnosis, however, was not regarded as an indicator of a potential MUPS diagnosis and vice versa, although the PTSD NICE guideline recommends a practitioner to consider a PTSD diagnosis if a patient presented with ill-defined physical symptoms.

The process of diagnosis alone was found insufficient by some participants to capture the complexity and heterogeneity of PTSD and MUPS presentations. Some healthcare professionals described the routine use of psychological formulation as a standardised assessment process. Formulation incorporates disease diagnoses into a wider range of information gathered around an individual to generate a biopsychosocial hypothesis to inform individualised/ tailored care. In a cross-sectional study on case formulation in clinical practice, (Hartley et al. 2016), suggested practitioner formulation skill related to higher psychological mindedness and lower levels of avoidant attachment styles. It has been argued that psychological formulation as a more holistic process, could replace diagnosis for functional psychiatric conditions, although both diagnosis and formulation would be required in the presence of disease (Grant and Gadsby 2018).

Social Care practitioners describe an outcomes-based approach in their work. Directed by national policy, the aim is to support a person’s path to wellbeing irrespective of diagnostic label. This approach seemed to work well for clients with disease diagnoses, which usually had service provision, however, difficulties were experienced with clients who had PTSD and MUPS. Practitioners suggested both conditions were misunderstood in social care, with a lack of appropriate service facility when compared to disease service provision. Practitioners considered a better recognition of PTSD and MUPS in social care, would better enable clients to achieve their wellbeing goals and secure appropriate interventions. Measures of social care outcome could possibly assess the disparity identified in this study for PTSD and MUPS (Netten et al. 2012).

In a cross-sectional cohort study, which compared somatisation rates between ICD-11 PTSD and CPTSD, somatisation was associated with CPTSD more than PTSD (Astill Wright et al. 2021). The association was linked to the severity of core PTSD symptoms and not factors relating to problems of self-regulation. A comparison between ICD-11, CPTSD and borderline personality disorder (BPD) revealed overlap of self-dysregulation with some differences of emphasis between conditions (Felding et al. 2021), CPTSD was associated with stable, persisting negative self-perceptions and interpersonal avoidance behaviour, and BPD by comparison, with unstable positive and negative self-perceptions.

CPTSD and BPD were considered to differ only by the presence of core PTSD symptoms, and although both conditions could be diagnosed co-morbidly, CPTSD diagnosis would prevail over BPD. In a review comparing BPD and CPTSD, BPD was found to occur more often when CPTSD was diagnosed than CPTSD occurs when BPD was diagnosed (Ford and Courtois 2021). Overall, it was considered PTSD, CPTSD and BPD represented a continuum of stress responses, with dissociation as a common co-factor. Both CPTSD and

BPD had high MUPS co-morbidity, although FND's were more commonly associated with BPD (Hall and Moran 2019).

Although a history of childhood trauma was acknowledged in the development of PTSD and MUPS, concerns were raised by practitioners about the lack of awareness and provision of care for older people with both conditions. An investigation into patterns of ICD-11 PTSD co-morbidity in adults aged over 60 years, indicated that although psychiatric co-morbidity reduced in older adults, ICD-11 PTSD remained highly co-morbid with other internalising distress disorders, particularly BPD, major depressive disorder and generalised anxiety disorder (Fox et al. 2020). A systematic review of somatoform disorders and MUPS comparing older age populations with younger age groups, suggested MUPS were common in later life, with prevalence rates declining after the age of 65 (Hilderink et al. 2013).

In a review of BPD and ageing, BPD prevalence was found to decrease with age and presented differently compared to younger people, particularly with more attenuated symptoms. Symptom instability continued however, which included anger when patient needs were perceived as not being met, volatile interpersonal relationships and somatic complaints (D'Agostino et al. 2022).

Concerns were expressed about the vicarious effects on children from parents with PTSD and MUPS. A historical review of the literature on the intergenerational transmission of trauma, suggested PTSD in a parent was the main moderator of second-generation effects. Other important factors were parenting characteristics and biological processes (Lehrner and Yehuda 2018). In a systematic review of somatic symptoms in children with a chronically ill family members, increased somatisation was found in children if parents suffered from chronic illness (Elliott et al. 2020). Examining familial aggregation of irritable bowel syndrome (IBS) in a retrospective study, several independent variables predicted a child's experience of somatic symptoms both gastrointestinal (GI) and non-GI. The mother's symptom characteristics and the child's tendency to catastrophise were considered important factors in somatisation (van Tilburg et al. 2015).

Although considered a small percentage of encounters, most practitioners reported some difficulty with patients/clients who presented with capricious moods, engaged variably with services, and conflicted with practitioners. Discordant patient/ client attitudes and behaviours were linked by practitioners to childhood trauma, inter-personal relationship difficulties, and to possible personality disorders. Additionally, conflict was related to previous adverse patient/ client experiences in health and social care services. In social care, two main support options to improve outcomes: compensation and rehabilitation, frequently led to practitioner and client disagreement and sometimes to complaints against the practitioner. Often, the client wanted immediate symptomatic relief through a compensation procedure, often mismatching longer-term, symptom relief, through a rehabilitative approach suggested by the practitioner.

Psychological resistance defined as patient/ client opposition to psychological therapy was identified by most participants, which can rupture the therapeutic relationships between practitioner and patient/client. This can lead to persisting maladaptive interactions and reduced therapeutic effectiveness (Ackerman and Hilsenroth 2003). In a meta-analytic review of the relative importance of the therapeutic alliance: defined as the collective bond between therapist and patient, the quality of therapeutic alliance was found to more important to positive outcomes than the intervention (Martin et al. 2000). Stuckness, a lack of change in the patient/ client despite interventions, was described by participants and can result in ruptured therapeutic alliances (Borsook et al. 2018). Some practitioners observed embedded symptoms and secondary physical changes in patient/clients who presented late to Practice and called for earlier diagnoses and interventions.

Conflict as a normal human experience and common in healthcare, was reviewed in the context of patient/ practitioner interactions in the care of people with cystic fibrosis. The main components of conflict, which tallied with practitioners reported experiences, were miscommunication, impaired trust, differing expectations, power imbalance, fear and helplessness, and team reactions including splitting (Lask 2003).

Various biases towards patients/clients by colleagues, including pejorative labelling and gaslighting, was described by some participants. A systematic review of implicit bias in healthcare professionals indicated similar held negative evaluations of people as the general population. Unconscious bias was considered complex, multifactorial and could influence practitioner/ patient relationships, diagnosis, treatment decisions and quality of care (FitzGerald and Hurst 2017). From a sociological perspective, medical gaslighting: the downplaying of a patients' symptoms, was considered as the *'continued privileging of biomedical expertise over the lived experience'* and was considered an issue of social injustice. Gaslighting of women was identified with the word 'hysterical' exemplifying gender bias (Sebring 2021). A cross sectional study of stigmatising language in the electronic patient record in hospitals, identified diabetes, chronic pain and substance misuse disorders with pejorative journal notes (Himmelstein et al. 2022). Bias was found to decrease with practitioner experience and seniority.

The experience of 'heartsink' relationships with patients/clients was described by some practitioners. A review of 'heartsink patients' in general practice (O'Dowd 1988), considered the origins of this pejorative label, its impact and psychodynamic potential Although

‘Heartsink responses’ were later deemed the responsibility of the doctor and not the patient, the label was considered to reflect a coping strategy by the doctor and provided less derogatory labelling such as difficult/ problematic patient (Moscrop 2011). The term ‘heartsink’ was considered an intuitive, gut feeling response, and indicated unresolved unconscious feelings within the doctor-patient relationship.

Distress was evident to some extent in most participants, which was related to health and social care culture, service deficits and individual practitioner factors. Biomedical priorities of physical over mental health with dualistic separation of mental health from physical health services, and specialised fragmented care were major sources of concern. Resource deficits including insufficient time with patients/clients, lack of personalised care and absent pathways were also issues. Practitioners who worked by themselves as ‘uni-professionals’, were concerned about working outside their scope of practice and being unsupported in decision making. Antipathy towards patients/ clients and lack of understanding from colleagues were also distressing to some practitioners.

Moral distress was originally defined as *‘psychological distress from being in a situation in which one is constrained from acting on what one knows is right’* (Jameton 2017). This definition was modified to include situations *‘when a clinician makes a moral judgment about a case in which he or she is involved and an external constraint makes it difficult or impossible to act on that judgment, resulting in “painful feelings and/or psychological disequilibrium’. Moral distress was associated with burnout, blunting and interpersonal conflict’* (Fourie 2017).

Recognising the impact of moral distress on UK doctors, the British Medical Association (BMA) defined moral distress as *‘the feeling of unease stemming from situations where institutionally required behaviour does not align with moral principles. This can be as a result of a lack of power or agency, or structural limitations, such as insufficient staff, resources, training or time’.* The individual suffering from moral distress need not be the one who has acted or failed to act; moral distress can be caused by witnessing moral transgressions by others’.

The need for coherence in patient care and service delivery was recognised by most participants. The separation of health services from social services, mental health from physical health and boundaries between primary care and secondary care was perceived to conflict with practitioners’ work reality of complex, co-morbid and heterogeneous patient/ client presentations in Practice. The aspiration and strong desire expressed for more holistic care and integrated services is supported by extensive literature on integration of health and social care.

Despite systemic obstacles and restrictions arising from prevailing health and social care culture, professionals described their own personal involvement in local initiatives to improve patient care and service delivery. Empowerment of practitioners and patients/ clients, including co-production to improve health outcomes and services, and to develop new models of care for trauma, PTSD and MUPS, is supported by extensive literature.

Personalised, empathic, evidence-based care, delivered by multidisciplinary teams with appropriately trained staff, were standards identified by most practitioners, and supported by extensive literature. Culture change initiated at government and high organisational levels was suggested as necessary to facilitate better care for patient/ clients, whilst improving practitioner satisfaction. One participant argued that any proposed service developments required anticipation of local barriers to change such as competition from current services, and to modify existing systems rather than attempt at comprehensive, large-scale change.

Access to quality education and training in psychological trauma, PTSD and MUPS was sought by all participants. Needs varied between practitioners and included awareness training across health and social care, and training in interventions in such as EMDR. In the absence of appropriate formal education and training, some practitioners undertook self-directed learning both ad-hoc, and formal trauma training. Considerable benefits to patients/ clients and to participants own wellbeing and job satisfaction was described by knowledge and skill-based empowerment. Interest in research was expressed by some practitioners who recognised the need for evidence to support improvements in care. Supervision was provided for a minority of practitioners, who found the opportunity to reflect on therapeutic alliance ruptures beneficial to better practitioner self-understanding and patient/ client conflict management.

4.5.2 Strengths and limitations

A major strength in this study was recruitment of a diverse range of professional perspectives across health and social care, and participants represented a wide range of age groups and experience. The study was conducted online, convenient for busy health and social care professionals who could accommodate an interview within their working day. This was especially important during the Covid-19 pandemic and service winter pressures. Rich data was derived from the study, and findings could inform further research into PTSD and MUPS from health and social care professionals' perspectives.

There were a number of limitations. Participants were majority female, and the sample was not ethnically diverse. Participants were interested and knowledgeable about PTSD and MUPS, and their views may differ from colleagues who were less informed and interested about both conditions. Snowball sampling is subject to researcher bias and the qualitative methodology prevents generalisation of results.

4.5.3 Conclusion

This study balances the qualitative study on the patient journey in Chapter Three. Findings suggested some agreement between participants in both studies, especially on the need to provide personalised and effective care. The need for better understanding through education and training in PTSD and MUPS, was also shared. Conflict between patient/client and practitioner was examined from both perspectives with some insights gained into factors which may predispose to rifts in the therapeutic alliance. Exploration of systemic influences in modern medical and social care that could lead to maleficence and beneficence in this study, supported a dedicated, and humane professional culture in health and social care. Implications of findings in both qualitative studies for health and social care practice, and future research will be considered in Chapter Five.

5 Chapter Five: Discussion of the relationship between post-traumatic stress disorder and medically unexplained physical symptoms

5.1 Introduction

The relationship between post-traumatic stress disorder (PTSD) and medically unexplained physical symptoms (MUPS) was unclear. Furthermore, the impact of PTSD and MUPS on patients' care experiences, and on health and social care professionals who care for people with PTSD and MUPS, was not evident from the literature. The aims and objectives of this thesis were to address identified gaps in knowledge by estimating the co-morbid prevalence of PTSD and MUPS, and to explore health and social care experience from the perspectives of patients/clients and practitioners. This was achieved through a systematic review and meta-analysis, a qualitative study of the patient journey, and a qualitative study of professionals' work experiences. This chapter summarises the main findings from the three studies and discusses results in the context of the wider literature. Strengths and weaknesses are summarised, and implications for future practice and research are considered.

5.2 Summary of Main Findings

The systematic review and meta-analysis estimated approximately 81% of people with PTSD had MUPS, and 28% of people with MUPS had PTSD. Although methodological bias and considerable heterogeneity reduced the validity of both estimates, prevalence rates indicated a close association between the two conditions. The patient qualitative study described two overarching themes: 'uncertainty' and 'adaptation', and the professionals' qualitative study defined three overarching themes: 'making sense', 'protraction' and 'amelioration'.

There was considerable overlap in findings between the two qualitative studies. Uncertainty about diagnosis was shared by patient/clients and practitioners, and substantial burden of disease, illness and sickness was described in both studies. Substantive co-morbidity was experienced by the patient study, and clinical heterogeneity was identified in the practitioner study. Patients/clients described struggling to obtain appropriate care and practitioners described difficulties in providing effective care. A health system unequipped to manage PTSD and MUPS, with separation of mental from physical health problems were major issues identified in both studies. Problems associated with specialisation and fragmentation of care were described, as were service boundaries between primary care, secondary care, and health and social care. Absence of local service provision for MUPS, and a sparsity of local service provision for PTSD was recognised, together with lack of appropriate guidelines or care pathways. Inequalities caused by gender and age bias were reported, and the devastating impact of childhood trauma on adult physical, mental, and social health, emphasised the need for safeguarding.

Conflict between patients/clients and practitioners was an important issue reported in both qualitative studies. In social care, the wants of patients/clients for more immediate symptom relief through compensatory procedures only, could conflict with practitioner's need to also help the patient/client recover lost function through additional rehabilitation procedures, that is, to work towards remediation or restoration of patient/client function. Antipathy was also identified from both viewpoints, and negative emotions, such as anger and frustration, with pejorative labelling was recounted. Both patients and practitioners described distress from conflict with the qualitative studies providing perspectives from both viewpoints. Patients/clients and practitioners described distress from protraction of problems relating to PTSD and MUPS, and symptoms, which were possibly related to moral distress were expressed by some practitioners. Practitioners related late diagnosis of MUPS resulting in the development of embedded symptoms, with improvement deemed unlikely for some patients/clients. This suggested the need for earlier diagnosis and care.

Patients/clients and practitioners shared an enthusiasm to improve their understanding of PTSD and MUPS and develop therapeutic skills. Although many long-standing and seemingly intractable problems were identified, patients/clients and practitioners expressed a common compassion and resolve to find solutions, not only for themselves, but also for others suffering from PTSD and MUPS. Concerns extended from individual patients/clients to wider family and carers networks, and to future generations. There was recognition by practitioners of the suffering of many patients/clients, who appreciated many practitioners were trying to work to their patients/clients' best interests.

Professionals and patients/clients sought better understanding of PTSD and MUPS through awareness training, formal education, and development of appropriate skills. Empowerment through patient-client participation in shared decisions about care was sought, with the provision of personalised, biopsychosocial care, and access to supportive social networks. There was a strong aspiration to develop quality PTSD and MUPS care with evidence-based interventions, guidelines, and pathways. Most importantly, more time and resources for empathic, relationship-based care was sought by patients/clients and professionals alike.

5.3 Findings in comparison with the literature

The systematic review and meta-analysis of PTSD and MUPS prevalence in this thesis, indicated a high degree of co-morbidity between both conditions. However, this was conducted prior to implementation of the international classification of disease-11 (ICD-11), which describes two types of PTSD to include Complex PTSD (CPTSD), a new sibling form of PTSD. The high comorbid relationship between PTSD and MUPS indicated in this thesis, was supported by findings in a cross-sectional study which investigated CD-11 PTSD, CPTSD, and somatisation (Astill Wright et al. 2021). Findings indicated a high comorbid relationship between PTSD and somatisation, with higher somatisation rates associated with CPTSD,

The patient qualitative study sample comprised of help/research seeking participants, who may represent a more severe PTSD sample compared to the community population. Although the literature suggests similar prevalence rates for ICD-11 PTSD and CPTSD in the general population (Cloitre et al. 2019) CPTSD may be more common than PTSD in care seeking populations. In a study examining risk factors and co-morbidity between veterans meeting ICD-11 PTSD and CPTSD, veterans with CPTSD were found to report higher rates of childhood adversity and co-morbid mental health including dissociation (Murphy et al. 2021). Participants in the patient qualitative study in this thesis reported a high level of childhood trauma, dissociation and MUPS experiences, which could suggest the patient qualitative study represented a high proportion of CPTSD cases.

Participants in the patient qualitative study also described a range of severe dissociative experiences in addition to their PTSD and MUPS symptoms. The inter-relationship between PTSD, somatic symptoms and dissociation was explored through network analysis (Kratzer et al. 2021). Although, the dissociation construct was limited to two criteria from the DSM-5 PTSD dissociative subtype, and symptoms were derived from self-reports, findings indicated strongest connections across disorders to be physiological reactivation and PTSD, and derealisation and somatisation.

The patient qualitative study findings of comorbid relationships between PTSD, MUPS, dissociation, and emotional dysregulation, are similar to the Complex PTSD construct for severe childhood trauma by (Herman 1992). This similarity could suggest a high level of traumatisation in the patient qualitative study sample. The ICD-11 CPTSD construct differs from Herman’s model, however, as somatic symptoms, dissociation and MUPS are not included in core criteria. In a study of highly traumatised adults (Hyland et al. 2020) findings indicated dissociation could be either a risk factor or an outcome of CPTSD.

The systematic review and both qualitative studies indicated considerable mental and physical co-morbidity which is supported by the literature. An investigation into PTSD psychiatric comorbidities, based on the 2007 adult psychiatric morbidity survey (McManus et al. 2020) (Qassem et al. 2021) indicated up to 78.5 % comorbidity. In a cross-sectional retrospective study of a trauma exposed, nationally representative panel of adults (Karatzias et al 2019), ICD-11 PTSD and CPTSD diagnosis increased the likelihood of chronic physical illness and an alcohol use disorder (AUD), by a factor of two.

Difficulties with emotional regulation were described by participants in the thesis' patient qualitative study. A cross-sectional descriptive study of adults from general populations (Ho et al. 2021), ICD-11 PTSD and disorders of self-regulation (DSO) suggested symptoms were positively correlated with MUPS, and PTSD to disease possibly through biological mechanisms of chronic stress, and chronic pain.

Divergence and conflict between patients/clients and practitioners were a major theme in both qualitative studies. Participants in the patient study described a sense of harm from some relationships with professionals. This was felt to increase their distress, exacerbating their physical and mental symptoms, and making their conditions worse. Perceived antipathy from practitioners could encourage avoidance behaviours and trigger suicidal impulses. Aspects of reported antipathy included female gender bias, practitioner apathy and gaslighting.

Conflict between participant and clinician could also be primed by previous negative patient journey experiences, and conflict. Participants in the patient study described injuries and severe distress from childhood trauma, which was missed by practitioners and who felt dismissed and rejected in their health seeking encounters. A consequent lack of trust as adults in healthcare practitioners and other primary care givers, including family, was described. Participants, however, also described trusting relationships with practitioners who were empathic, understood their problems and were accepting of them.

Problems of early attachment were identified by practitioners in the qualitative study as a factor that could predispose to conflict and source of difficult encounters. Extensive literature supports the role of childhood trauma and problems of attachment on adult health and behaviour (Felitti et al. 2019) (Herzog and Schmahl 2018). The need to be accepted, to belong and feel certainty of attachment with others were regarded as important human characteristics fundamental to motivation. Interpersonal rejection could threaten a person's need to belong (Staebler et al 2011). Rejection sensitivity (RS) has been defined as *'the disposition to anxiously expect, readily perceive and intensely react to rejection'* (Downey et al. 2004). In this model, the experience of prolonged rejection by significant attachment figures could lead to expectations of rejection in relationships, with a lower threshold for anger.

Although considered a minority, practitioners described some patients/clients attending practice sessions to ‘just vent their anger’ and not participate in their care plans. Resistance to care, ‘irrational’ decision making about interventions and antagonistic behaviour was also described by practitioners. A study into group psychotherapy (Peters and Grunebaum 1977) defined the pejorative concept of ‘help rejecting, complainers’, used to describe behaviour encountered by therapists.

Personality type disorders were suspected by some practitioners as a reason for conflict and anger in practice encounters. Characteristics of DSO related to CPTSD and borderline personality disorder (BDP), could relate to propensity for conflict. Examination of RS in BDP (Staebler et al. 2011), suggested a high correlation between RS and BPD. In a study of patients with somatoform pain disorder (SPD), (Nacak et al. 2021), findings indicated patients with SPD had higher RS. A cross- sectional survey of adult survivors of trauma investigating the psycho-social variables and PTD, (Jittayuthd and Karl 2022), suggested vulnerable attachment styles, rejection and low social support were associated with PTSD.

Some practitioners were trained in psychological care and were understanding of transferences and counter transferences in a patient client/practitioner relationship, seeking supervision when hostile personal feelings were aroused by patients/clients. However, supervision was available to a minority of professionals. Clinical supervision has been considered to benefit health and social care professionals, patients, and care providers. A mixed methods systematic review of clinical supervision (Martin et al. 2021), investigated the impact of supervision and found variable effects on healthcare organisational outcomes. The results of the review suggested the importance of both the quality of the process and supervisor to outcomes.

Practitioners in the qualitative study identified the need for and benefits of supervision when working with patients/clients with PTSD and MUPS, although access was variable. In a rapid evidence review on the enablers and barriers to supervision (Rothwell et al. 2021), enabling factors included flexible time and appropriate space, supervision based on mutual trust and cultural understanding between supervisor and professional. Barriers to effective supervision included lack of facility, lack of trust and barriers from employing organisations.

Trauma and MUPS informed practitioners were better able to manage conflict, if it arose, and were comfortable managing patients/clients with PTSD and MUPS. Trauma informed and trained practitioners observed difficulties encountered by colleagues who were less informed about PTSD and MUPS. The psychodynamics of consulting is determined by both patient/client and the professional leading the consultation (Goldberg 2019). Conflict and responses to provocation could be explained by the personality characteristics of both parties including attachment styles.

In the patients' qualitative study, some patients/clients identified anger originating from themselves from their PTSD, and perceived antipathic responses from some professionals towards them. In the professionals' qualitative study, practitioners perceived anger from some patients/clients, although practitioners themselves described frustration with some patients/clients, but not anger. Practitioners did, however, describe some upset and antipathy evoked by patients/clients in colleagues. Professionals who participated in the qualitative study perhaps had a greater interest and insight into PTSD and MUPS than other practitioners, and as a consequence might be more understanding. Practitioners, similar to patients, could suffer the same PTSD and MUPS related symptoms and vulnerable personality characteristics as patients/clients (Bahadirli and Sagaltici 2021).

Practitioners in the qualitative study described unpredictable emotional responses from patients/clients, and erratic patterns of engagement with care; some patients/clients seemed avoidant and others more forthright. This could be related to DSO characteristics of CPTSD and BPD. Both CPTSD and BPD have symptoms of DSO, MUPS and dissociation (Giourou et al. 2018), are associated with interpersonal trauma in children and adults. Similarities between BDP and CPTSD suggested the two conditions could be the same (Felding et al. 2021). A latent class analysis of CPTSD and BPD indicated however, the two conditions were distinctive and concordant with separate ICD-11 categorisation (Cloitre et al. 2014). Importantly, differences in DSO characteristics were identified. BPD was characterised by significant fear of abandonment, unstable interpersonal relationships, and impulsivity, including suicidality and self-injury. CPTSD was characterised by negative self-ideation, and avoidance of relationships with alienation.

Such differences in DSO characteristics in CPTSD and BPD, could help explain differences in patient/client responses to practitioners described in the qualitative study and have implications for care plans, such as ‘end of therapy sessions’, a time of conflict for people with BPD who have a high sense of abandonment. Additionally, socially avoidant patterns of behaviour linked to PTSD could impact on care pathway development and service provision, given the risk of avoidance and disengagement from care services as identified in the practitioner study.

Some practitioners in the qualitative study who care for patients/clients with PTSD and MUPS, described symptoms of moral distress, which included guilt and shame, with loss of work satisfaction and sense of achievement. Moral Distress, defined as '*a negative emotional response to constraints put on a practitioner to follow the correct moral course of action'*, can undermine the professional's integrity, induce anger, reduce job satisfaction and quality of care provided (Kherbache et al. 2021). In a systematic review of moral distress and correlates (Lamiani et al. 2017), 71% of studies were from nursing, indicated moral distress could negatively impact on practitioner wellbeing and job retention. Burnout and vicarious trauma could also contribute to distress (Epstein et al. 2020).

Practitioners in the qualitative study related their distress to system constraints and deficits when trying to care for people with PTSD and MUPS. Several predisposing factors to distress were identified by practitioners, which included service deficits for MUPS, lack of support in risk management between MUPS and serious disease. Additionally, working outside of multidisciplinary teams and the professional's scope of practice, and lack of knowledge about PTSD and MUPS.

Practitioners in the qualitative study, who were trained in trauma, PTSD and MUPS, did not find patients/clients challenging and reported good outcomes and positive relationships. Recognition was given to the distress in colleague untrained in PTSD and MUPS and those who avoided emotional aspects of medical care. Although education and skill training for all practitioners was suggested, PTSD and MUPS informed practitioners observed resistance in some colleagues to train in PTSD and MUPS. Most practitioners described service constraints causing frustration and distress and felt helpless to make changes due to prevailing organisational hierarchy and culture (Mannion and Davies 2018)

Distress particularly relating to MUPS care provision was described by practitioners. For some, the management of patients/clients with PTSD was more straightforward than for MUPS. This was attributed to more familiarity with PTSD, which was associated with formal categorisation and service provision, unlike MUPS which did not have a universal diagnosis and classification. System deficits and lack of skill managing MUPS also contributed to practitioner distress (Yon et al. 2017). Participants who were MUPS informed, suggested most practitioners were not generally equipped to effectively manage patients/clients with MUPS. A qualitative study investigating patients views of MUPS (Nunes et al. 2013), indicated professionals' frustration and insecurity, and patient dissatisfaction with care. Patients mostly consulted for reassurance about their symptoms, and generally wanted an empathic therapeutic relationship, not medication that was usually dispensed.

Patients/clients and professionals in the qualitative studies, described a lack of awareness and understanding of MUPS, some a lack of interest in MUPS, and avoidance/pejorative labelling by some professionals due to previous conflicts. Practitioners and patients/clients described a lack of time and continuity of care to develop therapeutic relationships, and patients described insufficient time for therapy, wanting more sessions with an empathic professional they could trust. A focus on delivering evidence-based care for categorical disease, together with time and resource constraints, could preclude the therapeutic alliance and a psychodynamic approach in routine practice. Furthermore, psychological factors such as RS and attachment style, and symptoms of PTSD and DSO, could negatively influence psychodynamics of the consultation.

Patients and professionals in the qualitative studies found the absence of a medical diagnostic label and pejorative attitudes to MUPS by some practitioners, could restrict access to appropriate care for MUPS. Resistance to the validity of MUPS diagnoses by some practitioners, however, was reciprocated by patients/clients who also rejected a MUPS label and pursued disease diagnoses for their symptoms. In a qualitative study of neurology outpatients, which explored MUPS from a sociological perspective (Nettleton et al. 2005), living without a medical diagnosis or medical explanation was investigated. Patients were distressed from their ‘symptom illegitimacy’ and ‘contested conditions’ and living with uncertainty, resisting psychological interpretation of their symptoms. The perception of living in a ‘diagnostic limbo’, identified by Nettleton, was observed to compel patients to pursue ‘information work’ and find their own explanations about their condition. Findings supported patient/client descriptions of their experiences in the patient qualitative study.

In the practitioner’s qualitative study, resistance to care was described when short term ‘compensatory’ measures were insisted by patients/clients over more restorative interventions recommended by the practitioners. ‘Heartsink’ experiences were described by practitioners at perceived ‘unreasonable’ attitudes to more rehabilitative approaches. Social care practitioners work to a wellbeing- outcome model of care and suggested a MUPS/PTSD diagnosis would enhance care provision. In another study, (Nettleton 2006), investigated the notion of patients/clients wanting ‘permission to be ill’ if they had MUPS, and the absence of disease diagnosis was suggested to deprive patients of a sick role (Glenton 2003). Findings from the patient qualitative study are comparable to Glenton 2003 study, who were concerned about charges of malingering and being given pejorative labels.

Patients/clients and practitioners in the qualitative studies suggested that a diagnosis could improve their health and social care experiences comparable to patients with disease. This was supported by (Aronowitz 2001), who suggested a diagnostic label could legitimise a patient’s condition, and improve their access to information, social support, and appropriate care. As suggested by patients in the thesis qualitative study, therapeutic relationships with practitioners were considered of great importance. It was suggested (Salmon 2000), diagnosis was not the main priority in care, it was validation of a patient's condition by professionals and family that was most valued:

'One is not allowed to be anomalously 'ill'. Society does not readily give people permission to be ill in the absence of an 'accepted' abnormal pathology or physiology. Furthermore 'other people' and indeed society more generally is uncomfortable with, and indeed even fearful of such anomalies. (Comaroff, 1982).

Care inequalities due to an absent formal classification and diagnosis for MUPS, was identified in the patient and practitioner qualitative studies. A critical document analysis of the research literature explored the classification of medically unexplained symptoms (Rasmussen 2020). MUPS were described a 'junk draw diagnosis': *'Rather than a 'wastebasket', I propose that we instead think about it as a 'junk drawer'. A junk drawer is an ordering device whose function is the containment of things we want to keep but have nowhere else to put'.*

In contrast to disease classification, the 'junk draw' concept depicts the lack of unitary classification for MUPS and lack of utility of MUPS diagnoses in health care. It was proposed that a standardised MUPS classification would be help a population of patients fit with the biomedical paradigm.

Difficulties with PTSD and MUPS diagnosis in practice was identified in both qualitative studies. The patient study identified distress and the potential for iatrogenic harm through mislabelling and misinterpretation of symptoms. For practitioners, the distinction between MUPS and serious disease, such as cancer, was a concern, which could refrain the practitioner from making a positive diagnosis of MUPS. Importantly, MUPS and PTSD were considered as separate conditions. In addition, concerns were raised by practitioners about MUPS risk management, and conflict with patients/clients by attributing psychological or psychiatric causation to MUPS rather than providing disease explanations.

Diagnostic uncertainty relating to PTSD, MUPS and disease was a source of distress for several participants in the patient qualitative study. Living without a disease diagnostic label exacerbated PTSD symptoms for a participant when their diagnosis of multiple sclerosis was revoked and not replaced with any clear disease diagnosis, despite debilitating physical symptoms. For another participant, symptoms of interstitial cystitis/bladder pain syndrome (IC/BPS) considered as MUPS or originating from PTSD was reported as distressing.

The need for a disease explanation rather than a psychiatric or psychological explanation of somatic symptoms was described in the patient qualitative study. The strength of avoidance of mental attribution for MUPS and need for a disease label is illustrated in the development of NICE guidelines for chronic fatigue syndrome/myeloencephalitis (CFS/ME). A judicial review followed publication of the first CFS\ME NICE Guideline (NICE 2007). An over- emphasis on a psycho-social approach that '*prejudiced a biomedical interpretation preferred by the CFS/ME communities'*; a psychosocial perspective of CFS/ME was *'somatisation and psychiatric'*, whereas a biomedical interpretation of CFS/ME was *'neurological and medical'*. As such, lived experience preference was for CFS/ME to be categorised as a neurological disorder, indexed in ICD-10 as Post- Viral Fatigue Syndrome.

The approach to the second NICE Guideline (NICE 2021), for which the title was reversed to ME/CFS was concordant with aspirations by patients/clients and practitioners in the thesis qualitative studies, although the process has led to challenge as not being evidence based (Flottorp et al. 2022) The second guideline incorporated qualitative research findings, and increased patient representation in development of the guideline, with an emphasis on person centred, tailored and empathic care, and cautioned against a 'one size fits all' approach.

Contemporary medical nosology could contribute to negative experiences in the patient journey. With the exception of PTSD and adjustment disorder, the atheoretical and agnostic position of mental illness classification since DSM-III had been criticised by Nemiah for ending causality for all other mental disorders (van der Kolk et al. 1996): *'DSM-III...almost abandoned psychodynamic understanding...the traditional concept of hysteria as a disorder with both sensorimotor and mental manifestations has been split apart by assigning the mental symptoms of hysteria... to the dissociative disorders and by allocating the sensorimotor symptoms to the different category of somatoform disorders'*. For patients and clinicians alike, Nemiah identified a gap between medical nosology, lived experience and clinical practice: '*As a consequence, modern clinicians... are placed in the paradoxical position of having to affirm that individuals manifesting (these) symptoms are suffering from separate illnesses- a diagnostic dissociation... Indeed, what we have now put asunder, perhaps mother nature meant to be together'*.

The high level of co-morbidity associated with PTSD and MUPS, and heterogeneity of presentations, described in both qualitative studies supports biopsychosocial formulation and the development of personalised, tailored care advocated by some professionals. The notion of 'unexplained' in MUPS has been challenged by development of several explanatory models for persisting physical symptoms (Malterud and Aamland 2019). The concept of allostatic load does not distinguish between mental or physical causation (Guidi et al. 2021), and may provide a non-dualist explanation, and less stigmatised account of MUPS symptoms. Models of inflammation (Song et al. 2018) and immune system dysfunction (Neigh and Ali 2016) and HPA axis dysregulation in distress, link PTSD, MUPS and disease, could validate patient/clients MUPS symptom experiences.

Providing biopsychosocial explanatory models for PTSD/MUPS and disease, may help patients/clients make sense of their symptoms without stigma. Making sense of PTSD and MUPS experiences was valued by participants in the patient and practitioner qualitative studies, with some undertaking self-funded, formal trauma education and training.

Although an extensive literature supports patient/client and practitioner aspirations for biopsychosocial, cross-boundary and personalised care, meeting complex need in prevailing healthcare systems has been considered a cliche:

'It is a platitude that health and care services are under pressure. There is a consensus for more funding and changes in how services are delivered. Yet there are those who wonder if this will ever be enough...will health services ever cope with the volumes of people queuing for ten-minute GP appointments or six sessions of counselling? Even if they can cope with increasing patient volumes, will services be able to deliver humane and compassionate care rather than simply technical competent care? While they might address individual health problems, will services be able to offer effective help for people with profound challenges, whom services around the world have often struggled to support'? (Collins, 2019 Kings fund)

Suggestions for development of evidence-based guidelines for MUPS and care pathways for PTSD and MUPS were made by professionals and patients in the qualitative studies. Participants could not identify local pathways, although several models exist. The national psychological therapy service (iapt) in England (IAPT 2014) provides care pathways for people with PTSD and MUPS, although both conditions are managed separately by mental health practitioners. In a review of the management of MUPS by IAPT (Geraghty and Scott 2020), seven core issues were identified, which included unproven treatment rationales, biases in treatment promotion and a significant risk of misdiagnosis and inappropriate treatment. The uniform application of CBT to patients who did not want a psychological label, was considered to increase the risk of defaulted clinical appointments. Additionally, a focus on anxiety and depression outcomes as a measure of MUPS improvement was suggested to increase the risk of missing red flag physical symptoms indicative of serious disease.

In the practitioner qualitative study, some participants in secondary care services described working to a biopsychosocial, individual formulation approach, which was believed to be the correct approach for complex, and heterogeneous presentations. A primary care counsellor described a personalised, trauma informed approach that did not require diagnosis, whilst a medical practitioner in primary care described diagnosis as essential to formulate a treatment plan.

In the qualitative study, secondary and social care practitioners suggested the development of PTSD and MUPS services be delivered by a dedicated multidisciplinary team (MDT) model. This involved professionals with PTSD, MUPS and disease expertise, however, some practitioners described MDTs without PTSD and/or MUPS expertise, needing to refer patients/clients to available services, which were not frequently available. Furthermore, an instance of MDTs not having continuity of membership was described, which impaired continuity of care and efficient team function. Primary care practitioners suggested local service developments for PTSD and MUPS they could refer in to, with caveats about potential resistance and competition from biomedical PTSD services. It was cautioned developments were more likely to succeed by extension of current services, rather than introducing totally new approaches.

One practitioner in primary care challenged the presumption of tiered care finding increasing numbers of complex PTSD and MUPS cases in primary care, which was resourced for less complex presentations, and which did not meet the needs of the client population. Some professionals who recognised deficits in local PTSD and MUPS care service provision developed their own adaptations to work across service and professional boundaries, Participants described trying to develop new MUPS services with some difficulty. One professional highlighted disparity in the recognition and funding and for PCS compared to MUPS, which was viewed as unfair given the extent of unmet needs for MUPS which had been around for a long time before PCS.

Acknowledging the increase in complexity of health and social care needs associated with longer life expectancy, whilst continuing resource constraints, there is extensive literature on health and social care integration. In a systematic review on the values of integrated care, values and behaviours driving integration were The most frequently identified values are collaboration, co-ordination, transparency, empowerment, comprehensiveness, co-production, with shared responsibility and accountability (Zonneveld et al. 2018). In a systematic review of UK and international evidence (Baxter et al. 2018), results suggested models of integrated care could improve patient satisfaction, perceived quality of care and access, however, improved access might increase pressures on services and ability to cope with extra demand. Additionally, the effects on service costs were not determined.

Some patients in the qualitative study had undertaken trauma training and sought better access to trauma informed professionals and continuity of care. Professionals wanted better access and training in evidence-based interventions for PTSD and MUPS, including eye movement desensitisation reprocessing therapy (EMDR), and dialectical interpersonal therapy. Practitioners also wanted updates on best practice and interventions.

Concerns were expressed by professionals about the lack of access to effective interventions for PTSD. A valid and reliable distinction between ICD-11 PTSD and CPTSD, has led to questions about clinical utility and effective interventions for CPTSD. No clinical trials for evaluating interventions for CPTSD had been identified (Karatzias and Cloitre 2019). In their review of interventions for CPTSD current limits of available evidence-based treatments indicated a flexible multi-modular approach to care was most appropriate at present.

Persisting physical symptom and ME/CFS services responded to challenges of post covid syndrome (Harenwall et al. 2021), to provide biopsychosocial, evidence-based approaches to care, which de-medicalised and re-framed symptoms, with patient/client involvement. In other MUPS services, (Luyten and Fonagy 2020) adaptions of dynamic interpersonal therapy a psychodynamic therapy, has been applied to patients/clients with post covid syndrome and functional somatic symptoms. Key adaptions are epistemic trust in the therapeutic alliance, embodied mentalising and working with affect.

The majority of participants in both qualitative studies supported capability building in PTSD and MUPS. Awareness training, better understanding of both conditions and therapeutic skills development in PTSD and MUPS across health and social care was sought by patients/clients and practitioners.

Participants in the patient qualitative study described re-traumatisation by their health and care experiences. Benefits of trauma informed care could, however, be lost if the organisations are not developed appropriately and re-traumatise patients (Reeves 2015) (Grossman et al. 2021).

Although enormous benefit to health and wellbeing is derived from the biomedical episteme, PTSD and MUPS care is not integral with disease care. Patients/clients and practitioners identified funding deficits for PTSD and MUPS, including split funding of health and social care, which re-enforces current structure and function. To move forward and improve service provision for patients/clients and professionals, a change in health and social care culture was suggested by participants. This was recognised, however, as probably the most difficult challenge of all.

5.4 Strengths and limitations

To the author's knowledge, the systematic review and meta-analysis of PTSD and MUPS was the most comprehensive review undertaken, which provided the first pooled estimate of absolute risk for both conditions. There were several limitations. The majority of studies were cross-sectional preventing causal inferences, and accuracy of the pooled estimate was reduced by the high risk of bias and considerable heterogeneity. Furthermore, the search was conducted seven years ago, which means recent studies were not included, and DSM-5/ICD-11 research was not considered.

A main strength of the patient journey qualitative study was recruitment from a national database of individuals consented to participate in PTSD research. PTSD diagnoses were confirmed by the clinician administered PTSD scale (CAPS), a gold standard measure of PTSD. MUPS were identified by a review of answers to PHQ-15 questions and functional somatic symptoms, in the context of the self -reported medical history. Rich data was obtained and researcher bias in theme identification was mitigated by second coding of 10% of transcripts.

Limitations of the patient qualitative study were that participants were identified from one database only and were not ethnically diverse. Participants who had self-selected for research may represent a more severe range of PTSD and MUPS experiences compared to the general population. The Interview questions may have been subject to researcher bias, and participant self-report bias could have included social desirability bias. Many experiences reported related to past experiences extending to childhood trauma and may be subject to recall bias. Additionally, participants may have been subject to cognitive bias associated with PTSD. The lack of generalisability and transferability inherent in qualitative methodology, limited interpretation of results.

A major strength of the professionals' qualitative study was recruitment of a diverse range of professional perspectives across health and social care, which included a wide span of age groups. The study was conducted online, which may have supported recruitment into the study by improved access to participants during the Covid-19 pandemic and service winter pressures. Rich data was obtained and researcher bias in theme selection was mitigated by second coding of 10% of transcripts.

Limitations of the practitioner qualitative study include that a small convenience sample may not have represented all potential professional views, and some participants found audio interviews difficult due to lack of visual feedback. PTSD and MUPS diagnoses were based on practitioner knowledge and expertise. Participants were majority female, and the sample was not ethnically diverse. Participants were interested and knowledgeable about PTSD and MUPS, and their views may have differed from colleagues who were less informed and less interested in both conditions. Interview questions may have been subject to researcher bias, and snowball sampling could be subject to researcher selection bias. The lack of generalisability and transferability inherent in qualitative methodology, limited interpretation of results.

Although both qualitative studies had limitations and their results are not generalisable or transferable, themes derived from thematic analysis suggested areas for future research and consideration for practice.

5.5 Implications for future research

Accurate prevalence data of PTSD and MUPS, including comorbidity is important for service development and resource allocation. Limitations of studies identified through the systematic review and meta-analysis suggested a need for further research into the relationship between PTSD and MUPS. Investigations into ICD-11, PTSD/CPTSD and DSM-5 PTSD, and the three broad categories of persisting physical symptoms (PPS), bodily distress disorder (BDD)/somatic symptom disorder (SSD), and functional somatic symptoms (FSS), could ascertain prevalence and causal direction in large prospective studies.

The themes identified in both qualitative studies could be clarified by further quantitative and qualitative research. The co-morbid relationships between PTSD/CPTSD/BPD with PPS, mental health, disease, and dissociation, could be explored in large, prospective population studies, and by more ethnically diverse qualitative studies than conducted in this thesis.

Factors predisposing to patient/client/practitioner conflict and moral distress could be explored in large qualitative and quantitative studies across health and social care. PTSD and CPTSD/BPD/PPS experiences and psychological attributes could be investigated in professionals and patients/clients.

Education and training requirements in PTSD and MUPS for patients/clients and practitioners, could be investigated through qualitative and quantitative methods including surveys and focus groups. Service deficits and unmet need for patients/clients and professionals identified in the qualitative studies, suggest the need for health services research to determine appropriate service models that are effective at improving the quality of care for people with PTSD and MUPS, to support better outcomes and improve service efficiency and effectiveness. Organisational barriers to developing trauma/PTSD and somatic symptom informed care could also be investigated. Preliminary network analysis could be conducted to help determine research priorities.

5.6 Implications for health and social care practice

Although there are limitations in the three studies, results suggested a substantive comorbid relationship between PTSD and MUPS, and considerable co-morbidity with physical and mental health conditions, and dissociation.

PTSD and MUPS can present as a spectrum of complex presentations in health and social care, requiring personalised and tailored care, rather than a one-size fits all approach. Cross boundary integrated care may require service re-configurations, new local service developments and care pathways. Stable MDTs with continuity of relationships within the team, which can provide integrated care for co-morbid conditions, including disease could be a way forward to meeting complex need. Practical diagnostic and outcome measures, which can adapt to different patient/client populations, could inform service developments. There is currently a lack of evidence-based interventions for CPTSD and MUPS, with a need for further research into effective interventions. Differentiating between PTSD, MUPS and serious disease requires access to appropriately qualified professionals for risk management.

Attachment history, personality traits, and CPTSD/BPD DSO characteristics could influence consultation style, service provision and intervention requirements. Understanding and mitigating conflict, with access to supervision for practitioners is an important aspect of practice development. Importantly, acknowledging and validating patients/clients' experiences of PTSD and MUPS, is required as for any other patient/client illness. Better awareness of practitioner burnout, vicarious traumatisation and moral distress, including predisposing factors and preventative measures, are also required. Relationship based, empathic care, which includes the psychodynamic aspect of patient/client/practitioner interactions, together with evidence-based practice, may facilitate better outcomes.

The strong desire by patients/clients and practitioners for a better understanding of PTSD and MUPS across health and social care, including awareness and skill training, may require resourcing and high-level organisational support. Empowerment of practitioners and patients/clients through participation in the development of care and new service models, and barriers to integration needs to be better understood. A greater awareness of the chronic nature of PTSD and MUPS, which can occur across the lifespan is required, with greater awareness and support for the elderly, families and carers.

The global emergence of post covid syndrome/long covid, terms for post SARS-CoV-2 (Covid-19) infection (Raveendran et al. 2021), which can be associated with PTSD (Crook et al. 2021), may provide more acceptable biopsychosocial service models of care for PTSD, MUPS and disease, and possibly mitigate mental illness stigma. Understanding gained from Post covid syndrome/long covid could provide a mind/brain/body explanatory model for disease and MUPS and help overcome historic mind-body duality. As eloquently described;

‘Complex and undifferentiated presentations will doubtless persist and require skill and judgement to investigate appropriately and to constructively manage uncertainty. Crucially, this approach must leave room for an evolving evidence base because ‘unexplained does not mean ‘unexplainable’(Davidson and Menkes 2021).

5.7 Conclusion

The relationship between PTSD and MUPS was investigated through a systematic review and meta-analysis, and two qualitative studies, which explored the impact of both conditions from the perspectives of patients/clients and professionals. Although there were limitations to all three studies, results supported a close relationship between PTSD and MUPS. Findings in this thesis, suggested the process of diagnosis was insufficient for the complex problems which often presented to health and social care practitioners, and formulation within a biopsychosocial model of care has been promoted.

The devastating impact of childhood trauma on adult health was identified, and the need for safeguarding of paramount importance. PTSD and MUPS occur across the lifespan and services should accommodate need for people of all ages, including the elderly. A greater awareness and understanding of the many people languishing with PTSD and MUPS in health and social care is needed, with support for more empathic relationships, and the psychodynamic dimensions of care provided alongside evidence-based care. Findings provided some insights to help inform future research, and support the development of effective, evidence-based education and service developments. Importantly, the need to mitigate conflict and improve the safety and wellbeing of patients/clients, and professionals alike was recognised.

Examination of the wider literature suggests that problems associated with PTSD and MUPS have been documented over the millennia, albeit with different interpretations and terminology. Less for patients/clients with PTSD and more with MUPS, marginalisation seems to continue in modern health and social care. Better understanding of barriers to change at all levels, across health and social care, will be required to help address service deficits for both conditions. Culture change in organisations, services, families, and professional groups, however, was perceived as possibly the greatest challenge to improving the wellbeing of people with PTSD and MUPS in health and social care.

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Appendices

Appendix A: Historic terms for trauma related conditions (traumadissociation.com)

Historical terms for trauma related conditions
Ancient texts; Iliad of Homer and The Odyssey; soldiers traumatized by war.
Shakespeare's King Henry IV, written in 1598, the character of Hotspur suffers from post-traumatic nightmares.
Post-Traumatic Neurosis; term used in Britain for over two hundred years.
1761*: "Nostalgia"* PTSD-like symptoms among soldiers, Austrian physician Josef Leopold.
1860: *Railroad Spinal Syndrome* by the English surgeon Frederick Erichsen for people traumatized by railway accidents. Clevenger later proposes the name *Erichsen's Disease* in 1889.
1870: *Soldier's Heart;* Dr Arthur Myers. *"Irritable heart "*: PTSD in soldiers during the U.S. Civil War.
1871: *Da Costa Syndrome*; Jacob Mendes da Costa, an army surgeon, U.S. Civil War. *"Effort syndrome"* also diagnosis in soldiers.
1878: *Psychic trauma* is a term proposed by Eulenberg for emotional shock leading to concussion of the brain.
1882: *Concussion of the Spine* John Eric Erichsen: *"Nervous shock"*.
1882: *"Névrose Traumatique"* and *"Hystérie Traumatique"* (Traumatic Neurosis and Traumatic Hysteria) Jean-Martin Charcot, post- traumatic symptoms.
1883: John Putnam: "Railroad Spine Syndrome" =*Hysterical Neuroses?*
1885: *Nervous shock* and *Functional Disorder;* surgeon Henry Page.
1885-1889: *Traumatic Neurosis;* Hermann Oppenheim, German neurologist; PTSD symptoms. This began the use of word *trauma* in psychiatry, rather than solely in surgery.
1899-1902: Boer War. Irritable heart is renamed *disordered action of the heart* (DAH) and is frequently diagnosed.
1914-1918: *Combat stress* is studied, World War I.
1915: Charles Myers: *"shell-shock"* in medical literature World War I: *"disorderly action of the heart", "neurocirculatory asthenia"*, and *"neurasthenia"* are used.

1941 World War II: Kardiner: *battle neurosis, battle fatigue, combat exhaustion* and *shell shock* are the same as each other, and the same condition as *traumatic neuroses* in peacetime.
1948: *Acute situational maladjustment* is the PTSD-like diagnosis introduced in the World Health Organization's ICD-6 diagnostic manual, more specific names listed are Abnormal excitability under minor stress, *Combat fatigue* and *Operational fatigue.*
1952: *Gross Response Syndrome* is a PTSD-like diagnosis included in the American DSM-I psychiatric manual.
1954: *Concentration camp syndrome* is described, involving a mix of PTSD symptoms with physical and intellectual decline: *Survivor syndrome,* by Niederland, based on symptoms of concentration camp survivors.
1962: *Battered Child Syndrome* is used to describe post-traumatic symptoms in children.
1968: *Adjustment reaction of adult life* is included in the DSM-II psychiatric manual, a disorder that covers both PTSD and Adjustment Disorders.
Early 1970s: *Post-Vietnam syndrome, Rape Trauma Syndrome*, *Abused Child Syndrome, Battered Women Syndrome* (BWS) are among the variants of PTSD described.
1977: Trauma-based disorders are called *Acute reaction to stress*, ICD-9 manual, *Catastrophic stress, Exhaustion delirium* and *Combat fatigue.*
1980: *Post-traumatic Stress Disorder* becomes a separate diagnosis with the publication of the American Psychiatric Association's DSM-III psychiatric manual.
1992: *Complex PTSD* is proposed by Judith Herman and renamed to *Disorders of Extreme Stress Not Otherwise Specified* (DESNOS) by the DSM-IV workgroup, who ultimately reject it as a diagnosis.
1995: *Compassion fatigue=Secondary Traumatic Stress-Disorder;* Charles Figley, PTSD-like symptoms in professionals helping those with PTSD.

Appendix B: Objective and outcome studies for participants with post-traumatic stress disorder and medically unexplained physical symptoms

Appendix B1: Objective and outcome summaries for studies of participants with medically unexplained physical symptoms who have post-traumatic stress disorder

Author(s)	Year	Study objectives	Main study findings
Asmundson et al.	2000	To compare people with Chronic Pain, who had Post Traumatic Stress Disorder (PTSD)/ Anxiety related fear and avoidance behaviour, with people who were minimisers/ adaptative copers.	People with PTSD and chronic pain (71.4%) were classified as 'dysfunctional' due to fear and avoidance compared to minimisers/adaptive copers with Chronic Pain (21.3%).
Chung et al.	2010	To examine the relationship between Chronic Idiopathic Urticaria (Valancius et al.) (Valancius et al.) and PTSD, psychiatric co-morbidity and other personality traits.	Patients with CIU were 1.8% more likely to have PTSD than controls. Also, more likely to have psychiatric co-morbidity associated with a PTSD diagnosis. No association found between CIU severity and PTSD.
Ciccone et al.	2005	To investigate the relationship between women with Fibromyalgia Syndrome (FMS) history of sexual and/or physical abuse.	Women reporting rape were 3.1 times more likely to have FMS. PTSD was more prevalent in the FMS group with a history of rape trauma.
Cohen et al.	2006	To estimate the prevalence of PTSD in people with Irritable Bowel Syndrome (IBS) (Welsh et al.).	7.8% of people with IBS met the diagnostic criteria for PTSD, similar to general population prevalence.

Appendix B1 (continued).

Author(s)	Year	Study objectives	Main study findings
Cohen et al.	2002	To estimate the prevalence of PTSD in people with FMS To assess the influence of gender on PTSD and FMS.	The FMS sample had significantly higher PTSD rates compared to the general population. There were no significant differences between male and female FM patients with or without PTSD.
Eglington and Chung	2011	To estimate the prevalence of PTSD in people with Chronic Fatigue Syndrome (CFS).	PTSD rates were significantly higher in CFS population.
Gerber et al.	2012	To examine the relationship between Headache, PTSD and Intimate Partner Violence (IPV).	The development of PTSD was more important to Headache severity than IPV exposure.
Heim et al.	2009	To investigate the association between childhood trauma, adult Chronic Fatigue Syndrome (CFS) and neuroendocrine dysfunction.	Childhood abuse was predictive of PTSD in Chronically Fatigued adults. Decreased cortisol levels are associated with chronically fatigued adults.
Irwin et al.	1996	To examine the relationship between IBS and PTSD.	A high prevalence of PTSD in people with IBS (36%) was found. Co-morbid psychiatric disorders were more frequent in people with IBS and a trauma history, with or without PTSD.
Kjedgaard et al.	2014	To investigate people with Chronic Post Traumatic Headache (CPTH) to inform treatment strategies.	A high prevalence of PTSD was found in people with CPTH (31%).
McCall-Hosenfeld et al.	2014	To model somatic symptom development in female trauma survivors.	Somatic symptom severity due to interpersonal trauma was increased in both genders, although women had more severe somatic symptoms than men. PTSD was not associated with somatic symptom severity.
Natelson et al.	2001	To estimate the prevalence of PTSD in a sample of Gulf War veterans with Fatiguing Illness.	50% of participants with Chronic Fatigue had PTSD. PTSD rates were highest for help seeking veterans with Chronic fatigue.

Appendix B1 (continued).

Author(s)	Year	Study objectives	Main study findings
Otis et al.	2010	To examine the relationship between Chronic Pain and PTSD in US Veterans.	There was a high rate of co-morbidity (49%) between Chronic Pain and PTSD.
Outcalt et al.	2015	To explore the relationships between Chronic Pain, PTSD, and Depression.	PTSD and Major Depression are independently and strongly associated with Chronic Pain.
Ruiz-Parraga and Lopez-Martinez	2014	To examine the relationship between PTSD symptoms and Chronic Musculoskeletal Pain.	Chronic musculoskeletal pain and PTSD were highly co-morbid through possible shared vulnerability and mutual maintenance mechanisms.
Sherman et al.	2000	To examine the relationship between PTSD and Fibromyalgia.	People with Fibromyalgia and significant PTSD symptoms reported greater levels of pain, emotional distress, life interference, and disability than people without significant PTSD symptoms.
Taylor et al.	2003	To explore roles of Chronic Fatigue and Psychiatric Disorders.	The prevalence of current PTSD in people with Chronic Fatigue was higher (18%) compared to controls (5%). Participants with Chronic Fatigue had higher rates of current (66%) psychiatric diagnoses compared to controls.
Weiner et al.	2011	To investigate the relationships between Gulf War Illness (Sedgwick), PTSD, and Brain N-Acetyl Aspartate (NAA) concentrations.	There was a high prevalence of PTSD with GWI. There were no associated changes in brain NAA levels.

Appendix B2: Objective and outcome summaries for studies of participants with post-traumatic stress disorder who have medically unexplained physical symptoms

Author(s)	Year	Study objectives	Main study findings
Beckham et al.	1997	To investigate Chronic Pain and PTSD in Vietnam War veterans.	80% of help-seeking veterans with PTSD reported a Chronic Pain problem.
Uhac et al.	2003	To determine the prevalence of Temporomandibular Disorders (TMD) in patients with PTSD from War Stress.	PTSD was associated with TMD with increased symptom severity compared to controls in a war exposed population.

Appendix B3: Objective and outcome summaries for participants with co-morbid post-traumatic stress disorder and medically unexplained physical symptoms in a general population

Author(s)	Years	Study objectives	Main study findings
Escobar et al.	1998	To estimate the prevalence of co-morbid Abridged Somatisation and Psychiatric Conditions in Primary Care.	Abridged somatisation was predictive of co-morbid PTSD and major Depression.
Iorio et al.	2014	To investigate the association between IBS and PTSD in an urban African American population.	PTSD was independently associated with IBS.
Leibschutz et al.	2007	To estimate the prevalence of PTSD and co-morbid Chronic Pain and IBS.	Co-morbid PTSD prevalence was 12 % Chronic Pain and 18% IBS. People with PTSD reported more physical symptoms.
Park et al.	2012	To examine the psychiatric morbidities of community-dwelling people in Korea who had Chronic Pain.	The frequency of PTSD with Chronic Pain (6%) was higher than PTSD without Chronic Pain (0.5%).
Savas et al.	2009	To estimate the one-year prevalence of IBS and co-morbid Anxiety, Depression and PTSD in female veterans.	IBS symptoms in female veterans were highly associated with PTSD, Anxiety and Depression.

Appendix B4: Objective and outcome summaries for participants with post-traumatic stress disorder and medically unexplained physical symptoms in populations exposed to trauma

Author(s)	Years	Study objectives	Main study findings
Aragona et al.	2011	To investigate the role of Post-Migration Living Difficulties (PMLD), including Pre-Migratory Trauma (PMT) on PTSD and Somatisation.	Post-traumatic stress disorder (PTSD) was associated with Somatisation (30.7%) more than controls (6.4%).
Comellas et al.	2015	To examine patterns of Somatic Distress (SD) among war exposed, internally displaced persons (IDP).	SD scores were highly correlated with PTSD. Significant variables with SD were PTSD, Depression, Anxiety, and female gender. Serious injury, exposure to conflict and death of family members increased the risk of SD.
de Vries et al.	2002	To investigate the relationship between PTSD and Chronic Fatigue in peace keeping Veterans.	PTSD did not explain Chronic Fatigue. The majority reporting ill- health did not have PTSD.
Dobie et al.	2004	To identify self-reported health problems and functional impairment associated in female veterans with PTSD.	PTSD (21%) was associated with a range of self-reported health problems and functional impairments.
Donnell et al.	2012	To investigate the association between Post - Concussion Syndrome (PCS), Minor Traumatic Brain Injury (MTBI) and Psychiatric Conditions in Vietnam veterans.	The prevalence of co-morbid PCS with PTSD was higher in veterans (40%) than PCS and MTBI (32%). PCS symptoms were not solely due to concussion.
Graham et al.	2010	To investigate the associations between PTSD, irritable bowel syndrome (Welsh et al.), Anxiety and Depression in female veterans.	PTSD prevalence was higher in female veterans with IBS (51%) than without IBS (30.9%). IBS was also associated with Anxiety and Depression.

Appendix B4 (continued).

Author(s)	Years	Study objectives	Main study findings
Hapke et al.	2006	To study investigate trauma type, pre-existing psychiatric conditions and gender on PTSD prevalence.	The risk of PTSD was significantly increased by pre-existing somatoform disorders, anxiety and depression. Female gender was not a risk factor for PTSD. Female trauma type such as rape was a high risk for PTSD.
Hinton et al.	2006	To assess the relationship between Tinnitus and PTSD severity in Cambodian Refugees.	PTSD was highly associated with Tinnitus (87%) compared to people without Tinnitus (29%).
Humphreys et al.	2010	To investigate the association between PTSD, Chronic Pain, Intimate Partner Violence and lifetime exposure to trauma.	Chronic Pain was highly associated with PTSD, depression and multiple traumas.
Johnson et al.	2006	To examine the association between frequent non-cyclical mastalgia and psychiatric conditions.	Frequent non-cyclical mastalgia (FNCM) was strongly associated with PTSD (odds ratio (OR) 5.2). FNCM is strongly associated with IBS, Fibromyalgia and Pelvic Pain.
Kelsall et al.	2009	To identify comorbid conditions in Gulf War veterans with Multisymptom Illness (MSI).	MSI was highly associated with Chronic Fatigue. There was low co-morbidity between PTSD and MSI for actively deployed and non- deployed.
Labbate et al.	1998	To investigate the association between trauma exposure and Somatoform Disorders in Gulf War veterans.	Traumatic events were associated with both PTSD and somatoform disorders. Veterans who handled dead bodies had a 3-fold risk of a somatoform diagnosis.
LaFrance et al.	2013	To investigate: the relationship between traumatic brain injury (TBI), Psychogenic Non-Epileptic Seizures (PNES), and associated Psychiatric co-morbidities and functioning.	The combination of PNES and TBI increased risk of PTSD by 2.75, and Psychological Trauma by 3.35. TBI and PNES were significantly associated with Major Depressive Disorder (MDD).

Appendix B4 (continued).

Author(s)	Years	Study objectives	Main study findings
Morina et al.	2010	To examine the role of experiential avoidance on the prevalence of Somatic Distress (SD) and quality of life in civilian survivors of war.	SD was associated with greater psychological distress, experiential avoidance, and lower quality of life after accounting for the effects of PTSD and Major Depression.
Morosco et al.	2013	To investigate the relationship between PTSD and Chronic Pain.	Coping strategy influences the severity of pain in people with PTSD. Findings are consistent with Mutual Maintenance and Shared Vulnerability models of PTSD and Chronic Pain.
North et al.	2004	To examine Pre-Disaster and Post-Disaster rates of PTSD, Somatisation, Major Depression and Substance Abuse.	High prevalence of PTSD due to severe flooding, flood-related injury and repeat flood exposure over several months. 25% of people had new MUPS with the majority of MUPS present before the flood disaster.
Orsillo et al.	1996	To examine the relationship between War- Zone PTSD and other psychiatric disorders.	PTSD was associated with high rates of co-morbid psychiatric conditions, especially mood and anxiety disorders
Samelius et al.	2009	To assess the relationship between PTSD, Somatisation, and Abuse.	There was no association between PTSD and Somatisation in Abused women. PTSD was associated with higher levels of Abuse and a larger number of perpetrators compared to women with Somatisation.
Seng et al.	2014	To investigate the mental health of pregnant women with a history of Interpersonal Trauma exposure.	Approximately one third of PTSD cases were co-morbid with Major Depression Disorder and Affect Dysregulation. Approximately one quarter of PTSD cases were co-morbid with Somatisation and Dissociation Syndromes.
Trevino et al.	2014	To investigate biopsychosocial factors that predict the development of Chronic Pain after a Physical Injury.	People with chronic pain at 4 months post injury had significant PTSD, Anxiety and Depression.

Appendix B4 (continued).

Author(s)	Years	Study objectives	Main study findings
Villano et al.	2007	To estimate the prevalence of PTSD and Chronic Pain in a psychiatric outpatient facility.	Moderate rates People with PTSD and or Chronic Pain were more likely to report a history physical/sexual abuse. The low co-morbidity rate compared to other studies could be due to setting of non- treatment seeking participants for PTSD or Chronic Pain in a Psychiatric Outpatients.
White et al.	2010	To investigate the relationship between major Trauma History and the risk of IBS in female veterans.	PTSD and Depression were significantly more common in people with IBS. Sexual Assault was the most frequently reported trauma, and a broad range of lifetime traumas were associated with increased IBS risk.

Appendix C: Search strategy for the systematic review

#	Search term
1	Stress Disorders, Post-Traumatic/
2	post?traumatic stress disorder.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
3	PTSD.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
4	traumatic stress.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
5	combat stress.mp.
6	psychological trauma.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
7	1 or 2 or 3 or 4 or 5 or 6
8	Psychosomatic Medicine/
9	psychosomatic medicine.mp.
10	exp Somatoform Disorders/
11	somat$ disorder$.mp.
12	somat$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
13	medically unexplained symptom$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
14	medically unexplained physical symptom$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
15	MUS.mp.
16	MUPS.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
17	functional somatic symptom$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
18	functional spectrum.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]

19	bodily distress syndrome.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
20	bodily distress disorder$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
21	somati?ation symptom$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
22	somati?ation syndrome.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
23	idiopathic physical symptom$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
24	idiopathic somat$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
25	unexplained somatic complaint$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
26	chronic multi$symptom$ illness$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
27	overlapping syndrome$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
28	multiple somat$ symptom$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
29	multiple idiopathic physical symptom$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
30	polysymptom$ somat$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
31	Briquet$ syndrome.mp.
32	Brissaud?Marie syndrome.mp.
33	fat?file syndrome.mp.
34	psychogenic somat$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]

35	conversion disorder.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
36	hypochondri$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
37	hysterical conversion.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
38	dissociative symptom$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
39	neurasthenia.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
40	nervosism.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
41	Persian Gulf Syndrome/
42	gulf war syndrome.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
43	shell shock.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
44	soldiers heart.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
45	railway spine.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
46	fibromyalgia.mp.
47	Fatigue Syndrome, Chronic/
48	chronic fatigue syndrome.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
49	myelo?encephalitis.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
50	Irritable Bowel Syndrome/
51	irritable bowel syndrome.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
52	Cystitis, Interstitial/

53	interstitial cystitis.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
54	chronic pain syndrome.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
55	8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54
56	unexplained.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
57	atypical.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
58	functional.mp.
59	somato$.mp.
60	somatic.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
61	psychosomat$.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
62	hysterical.mp.
63	56 or 57 or 58 or 59 or 60 or 61 or 62
64	exp Somatosensory Disorders/
65	somatosensory disorders.mp.
66	exp Psychophysiologic Disorders/
67	psychogenic disorders.mp.
68	exp Neurologic Manifestations/
69	neurologic$ disorders.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
70	exp Sensation Disorders/
71	sensation disorders.mp.
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75	exp Muscular Diseases/
76	muscular diseases.mp.
77	muscular disorders.mp.
78	myofasc$ pain.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
79	Whiplash Injuries/
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81	paralys$.mp.
82	exp Respiratory System/
83	respirat$ disorders.mp.
84	exp Cardiovascular System/
85	cardiovascular disorder$.mp.
86	exp "signs and symptoms, digestive"/ or dyspepsia/
87	digestive disorders.mp.
88	exp Sexual Dysfunction, Physiological/
89	sexual dysfunction.mp.
90	exp Dermatology/
91	dermatolog$.mp.
92	exp Hypersensitivity/
93	hypersensitivity.mp.
94	allerg$.mp.
95	Multiple Chemical Sensitivity/
96	multiple chemical sensitivity.mp.
97	exp Pain/
98	pain.mp.
99	Sleep Disorders/
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101	64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100
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123	vaginismus.mp.
124	chronic pelvic pain.mp.
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130	102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 or 127 or 128 or 129
131	63 and 101
132	63 and 130
133	55 or 131 or 132
134	7 and 133

Appendix D: Measures of post-traumatic stress disorder and medically unexplained physical symptoms used in included studies

Appendix D1: Measures for participants with post-traumatic stress disorder in studies on medically unexplained physical symptoms

Author(s)	Year	MUPS measure	PTSD measure
Asmundson et al.	2000	Chronic pain, MPI SR, Valid self-report.	Modified PTSD symptom scale (MPSS), DSM III-R, validated self- report.
Chung et al.	2010	Chronic idiopathic urticaria, clinical scoring system European Association of Allergy and Clinical Immunology. Non-validated clinical guideline assessment.	Post- Traumatic diagnostic Scale (PDS), DSM-IV, The PDS is a 49-item validated self-report.
Ciccone et al.	2005	Fibromyalgia syndrome, brief pain survey, validated self-report.	PTSD Checklist (PCL), DSM-IV, Brief screening instrument. Validated self-report.
Cohen et al.	2006	Irritable bowel syndrome, Rome-II based, non-validated self-report.	Clinician administered PTSD scale (CAPS), DSM-IV. Validated interview.
Cohen et al.	2002	Fibromyalgia syndrome, American College rheumatology (ACR), validated clinical guideline assessment.	Clinician administered PTSD scale (CAPS), DSM-IV. Validated interview.
Eglington and Chung	2011	Chronic fatigue syndrome, Centre for Disease Control (CDC). Non-validated clinical guideline assessment.	Post-Traumatic diagnostic scale (PDS), DSM-IV. Validated self-report.
Gerber et al.	2012	Chronic headache. Non-validated clinical assessment.	Modified Breslau, DSM IV, Validated Self-report.
Heim et al.	2009	Chronic Fatigue Syndrome Non- validated clinical guideline assessment case definition.	Davidson trauma scale (Bichescu et al.), DSM-IV, Validated self-report.
Irwin et al.	1996	Irritable bowel syndrome. Non-validated clinical guideline assessment.	Structured clinical interview for DSM (SCID), DSM-III-R. Validated interview.

Appendix D1: (continued)

Author(s)	Year	MUPS measure	PTSD measure
Kjedgaard et al.	2014	Post- concussion syndrome. Rivermead post-concussion symptom questionnaire. Non-validated self-report.	Harvard Trauma Questionnaire (HTQ), DSM-IV, Validated Self Report, cross-cultural measure.
McCall et al.	2014	Chronic pain. Non-validated self-report.	Composite international diagnostic interview (CIDI) version 2, for DSM- IV and ICD-10. Validated interview.
Natelson et al.	2001	Chronic Fatigue. Non-validated case definition, self-report.	Mississippi scale for combat related PTSD (M-PTSD) for DSM-III validated for military self-report, Quick diagnostic interview scale (QDIS), DSM-III-R. Validated interview.
Otis et al.	2010	Chronic pain. McGill pain questionnaire, WHYMPI. Validated self-reports.	PTSD Check List- Military Version (PCL-Military), DSM-IV, Cut off score> 50. Validated self-report.
Outcalt et al.	2015	Chronic Pain. Brief pain inventory (BPI), validated self-report.	Primary Care PTSD Screen (PC-PTSD). PCL, DSM-IV, Validated Self-report.
Ruiz-Parraga and Lopez-Martinez	2014	Chronic pain, Non-validated clinical assessment.	Davidson trauma scale (Van Hoof et al.), DSM-IV. Validated self-report.
Sherman et al.	2000	Fibromyalgia syndrome. American college rheumatology (ACR). Validated Clinical Guideline Assessment.	Symptom Checklist 90, Revised (SCL 90-R) for CR-PTSD Crime related PTSD, DSM-IV, Validated self-report.
Taylor et al.	2003	Chronic fatigue syndrome. Screening questionnaire, validated self-reports.	Structured Clinical Interview for DSM-IV (SCID), DSM-IV, validated semi-structured Interview.
Weiner et al.	2011	Gulf war illness, CDC. Non-validated self-reports.	Structured clinical interview for DSM-IV (SCID), DSM-IV, validated semi-structured interview.

CDC=Centers for Disease Control and Prevention; DSM=*Diagnostic and Statistical Manual*; MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder; WHYMPI= West Haven-Yale Multidimensional Pain Inventory.

Appendix D2: Measures for participants with medically unexplained physical symptoms in studies of post-traumatic stress disorder

Author(s)	Year	MUPS measure	PTSD measure
Beckham et al.	1997	Chronic pain, Short form McGill pain questionnaire (SF-MPQ), Non-validated self-reports.	Davidson trauma scale (Van Hoof et al.), DSM-IV. Validated self-report.
Uhac et al.	2003	TMJ Dysfunction, Helkimo-anamnestic and clinical dysfunction index. Non-validated clinician assessment:	Harvard Trauma Questionnaire, DSM IV, Validated self-report cross-cultural measure.

DSM=*Diagnostic and Statistical Manual;* MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder.

Appendix D3: Measures for post-traumatic stress disorder and medically unexplained physical symptoms in general population studies

Author(s)	Year	MUPS measure	PTSD measure
Escobar et al.	1998	Somatisation. Composite international diagnostic interview (CIDI) (somatisation section). DSM-III. Validated Interview. (CIDI based on DIS).	Diagnostic Interview schedule (DIS), DSM-III, Validated Interview for use by lay people, community and epidemiological studies
Iorio et al.	2014	Irritable bowel syndrome. Rome-III based, Non-validated self-report.	Primary care PTSD screen (PC-PTSD), DSM-IV. Validated self- report.
Leibschutz et al.	2007	Chronic pain. The chronic pain definitional questionnaire. Non-validated self-report.	Composite International Diagnostic Interview (CIDI), DSM IV, Validated interview.
Park et al.	2012	Medically unexplained pain. Somatoform disorders section of the Korean CIDI 2.1, WHO,1997. Validated interview.	Korean composite international diagnostic interview (K-CIDI), DSM-IV, validated interview.
Savas et al.	2009	Irritable bowel syndrome (Welsh et al.). The bowel disorder questionnaire. Validated self-report.	The Mississippi scale for combat-related PTSD questionnaire. (M-PTSD), DSM-IV, Validated self- report for combat veterans.

DSM=*Diagnostic and Statistical Manual;* MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder.

Appendix D4: Measures for post traumatic-stress disorder and medically unexplained symptoms in trauma exposed population studies

Author(s)	Year	MUPS measure	PTSD measure
Aragona et al.	2011	Somatisation. Bradford somatic inventory (BSI-21), Validated self-report, transcultural research.	Harvard trauma questionnaire, DSM-IV, Validated self-report. Cross-cultural measure.
Comellas et al.	2015	Somatic distress (SD), PHQ 15, Validated self-report.	Trauma Screening Questionnaire (TSQ), DSM-IV. Validated self- report for use with survivors of all types of traumatic stress. The TSQ is based on items from the PTSD symptom scale - (PSS-SR; Foa et al., 1993).
de Vries et al.	2002	Fatigue. Check list individual strengths (CIS). Validated self-Report.	Dutch self-rating inventory for PTSD, DSM-IV. Validated self-report.
Dobie et al.	2004	Somatic distress. Patient history questionnaire (PHQ). DSM-IV. Validated self-report.	PTSD checklist–civilian version (PCL-C), DSM IV. Validated self-report.
Donnell et al.	2012	Post-concussion syndrome (PCS), Validated self-report. DSM-IV and ICD-10.	Diagnostic interview schedule (DIS-III-A), DSM-III, Validated interview. For large scale surveys.
Graham et al.	2010	Irritable bowel syndrome. The bowel disorder questionnaire. Validated self-report.	The Mississippi scale for combat-related PTSD (M-PTSD). DSM-IV. Validated, reliable self-report for combat veterans.
Hapke et al.	2006	Somatoform disorder. M-CIDI, DSM-IV, Validated interview for population- based assessment.	German modified composite international diagnostic interview (CIDI), DSM-IV. Validated interview.
Hinton et al.	2006	Tinnitus. Validated interviews: 1) Tinnitus presence questionnaire. 2) Tinnitus flashback presence questionnaire. 3) Tinnitus flashback scale. CAPS flashback intensity scale.	Clinician administered PTSD scale (CAPS), DSM-IV, Validated interview.
Humphreys et al.	2010	Chronic pain. The brief pain inventory (BPI). Validated self-report.	The PTSD symptom scale. Self-report (PSS-SR), DSM -III-R. Validated self-report.
Johnson et al.	2006	Mastalgia. Validated self-report.	PTSD check list civilian version (PCL-C), DSM-IV, Validated self-report.

Appendix D4: (continued)

Author(s)	Year	MUPS measure	PTSD measure
Kelsall et al.	2009	Multi-symptom illness. Centres for disease control (CDC) Non-validated self-report.	Composite international diagnostic interview (CIDI), DSM-IV, Validated interview.
Labbate et al.	1998	Somatoform disorder, structured clinical interview for DSM III-R. Validated semi-structured interview.	Clinician administered PTSD scale (CAPS). DSM-III-R, Validated interview.
LaFrance et al.	2013	Psychogenic non-epileptic seizures Non-validated clinical assessment.	Semi-structured clinical interview, DSM-IV-TR, 2000. Non-validated interview.
Morina et al.	2010	Somatic distress (SD). Patient health questionnaire (PHQ). Validated self-report.	The Mini-international neuropsychiatric interview (Hours et al.). DSM-IV, ICD-10. Validated structured interview.
Morosco et al.	2013	Chronic pain. Non-validated clinical assessment.	PTSD Check list Civilian Version (PCL-C), DSM-IV, Validated self-report.
North et al.	2004	Somatisation, DSM-III-R Diagnostic interview schedule disaster supplement (DIS-III-R). Validated interview (NB: somatization section provided retrospective data of medically unexplained symptoms regardless of origin).	Diagnostic interview schedule/disaster supplement (DIS III-R). Validated interview.
Orsillo et al.	1996	Somatoform Disorder, DSM-III-R, SCID. Validated interview.	Structured Clinical Interview, DSM-III-R (SCID, Spitzer et al. 1989), or Clinician administered PTSD scale. Validated interviews and self-reports. Mississippi scale for combat related PTSD (Keane et al. 1988), Minnesota multiphasic personality inventory (MMPI-PK, Keane et al. 1988).
Samelius et al.	2009	Somatisation. SOMAT, DSM-IV criteria for somatisation disorder and comprises all the DSM-IV criteria of the somatisation disorder and somatisation symptoms. Non-validated self-report.	The traumatic event scale (TES), DSM-IV, Non-validated self-report questionnaire.

Appendix D4: (continued)

Author(s)	Year	MUPS measure	PTSD measure
Seng et al.	2014	Somatisation, validated interviews SLC-90.	National women’s study PTSD module, DSM-IV. Validated interview.
Trevino et al.	2014	Chronic pain, Brief pain inventory short form, Validated self-report.	PTSD checklist civilian (PCL-C), DSM-IV. Validated self-report.
Villano et al.	2007	Chronic pain, Brief pain inventory, Validated self-report	Mini international neuropsychiatric interview (Hours et al.), DSM-IV, Validated interview.
White et al.	2010	Irritable bowel syndrome: Bowel disorder questionnaire Validated self-report.	Mississippi scale for combat-related PTSD (M-PTSD), DSM-IV. Validated self-report.

DSM=*Diagnostic and Statistical Manual*; SLC=symptom checklist; MUPS=Medically unexplained physical symptoms; PTSD=Post-traumatic stress disorder.

Appendix E: Variable level complete data for study characteristics

	Complete data for 18 studies investigating prevalence of PTSD in studies of participants with MUPS: n (%)	**Complete data for 2 studies investigating prevalence of MUPS in studies of participants with PTSD in 2 studies: n (%)**	**Complete data for 5 studies investigating prevalence of PTSD and MUPS in studies of the general population: n (%)**	**Complete data for 22 studies investigating prevalence of PTSD and MUPS in studies of participants exposed to trauma in 22 studies: n (%)**
Age	16 (88.9)	2 (100.0)	3 (60.0)	19 (86.4)
%Female	18 (100.0)	1 (50.0)	5 (100.0)	22 (100.0)
Response rates	6 (33.3)	0 (0.0)	4 (80.0)	14 (63.6)
Majority ethnicity	11 (61.1)	1 (50.0)	4 (80.0)	13 (59.0)
Study designs	18 (100.0)	2 (100.0)	5 (100.0)	22 (100.0)
Study populations	18 (100.0)	2 (100.0)	5 (100.0)	22 (100.0)
Population subtypes	18 (100.0)	2 (100.0)	5 (100.0)	22 (100.0)
Study locations	18 (100.0)	2 (100.0)	5 (100.0)	22 (100.0)
DSM classification	18 (100.0)	2 (100.0)	5 (100.0)	22 (100.0)
PTSD measures	18 (100.0)	2 (100.0)	5 (100.0)	22 (100.0)
MUPS measures	18 (100.0)	2 (100.0)	5 (100.0)	22 (100.0)
LEC variables	16 (88.9)	2 (100.0)	0 (0.0)	21 (95.5)
LEC trauma-type variables	16 (88.9)	2 (100.0)	0 (0.0)	21 (95.5)

DSM=Diagnostic and Statistical Manual; LEC=Life Events Checklist; MUPS=medically unexplained physical symptoms; PTSD=post-traumatic stress disorder

Appendix F: Qualitative study cover letter for participants

Cardiff University
Prifysgol Caerdydd

Version1 6 April 2017

[redacted]

Dear

I hope you will consider taking part in this research project that is about post-traumatic stress disorder and medically unexplained physical symptoms, which is explained in the enclosed information sheet.

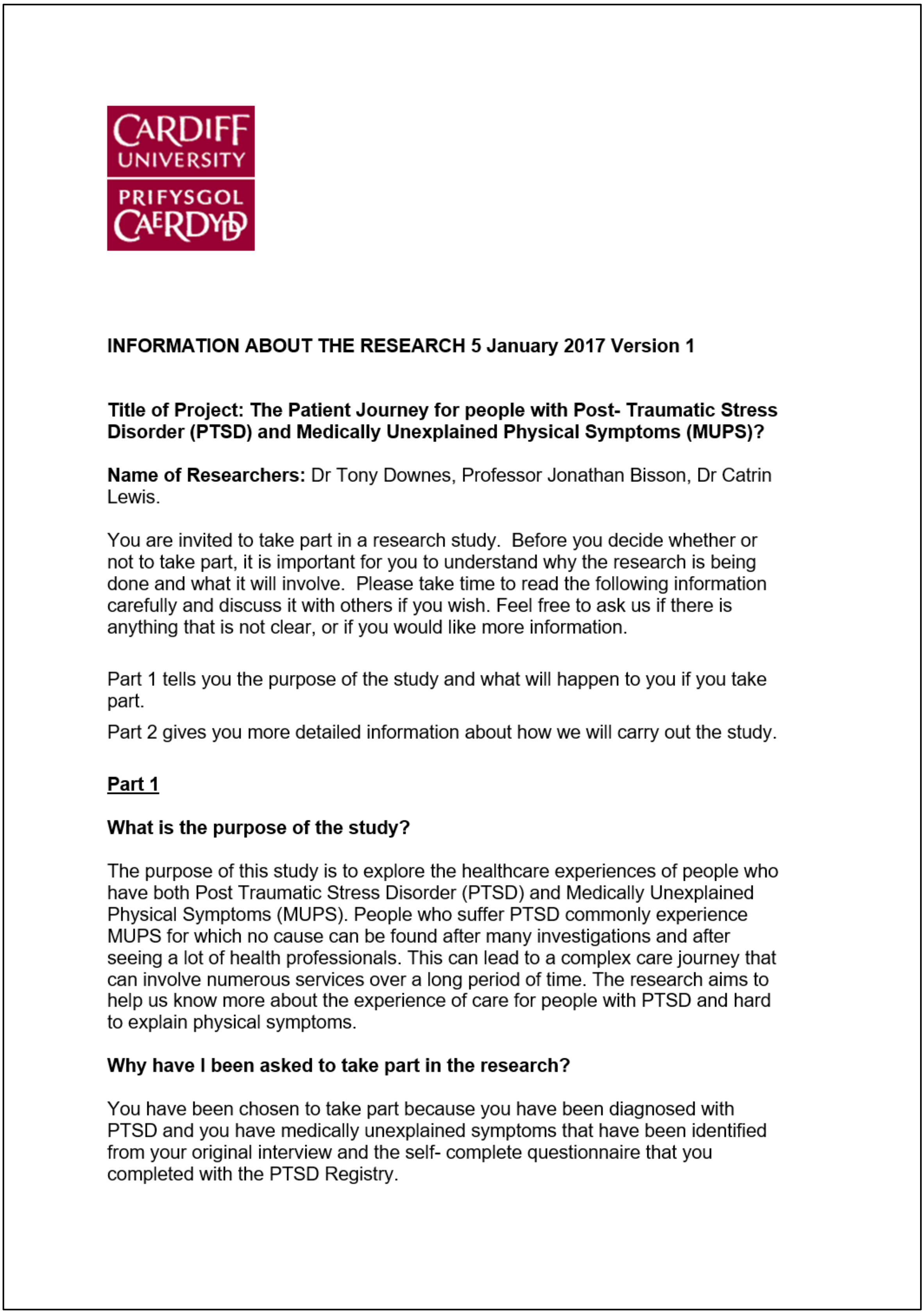
If you would like to take part please complete the enclosed ‘contact form’ and return it to me using the stamp addressed envelope provided. I will then get in touch with you directly.

Thank you for considering taking part in this research.

Yours sincerely

Dr Tony Downes
Chief Investigator
General Medical Practitioner

Appendix G: Qualitative study information for participants



CARDIFF
UNIVERSITY
PRIFYSGOL
CAERDYDD

INFORMATION ABOUT THE RESEARCH 5 January 2017 Version 1

Title of Project: The Patient Journey for people with Post- Traumatic Stress Disorder (PTSD) and Medically Unexplained Physical Symptoms (MUPS)?

Name of Researchers: Dr Tony Downes, Professor Jonathan Bisson, Dr Catrin Lewis.

You are invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Feel free to ask us if there is anything that is not clear, or if you would like more information.

Part 1 tells you the purpose of the study and what will happen to you if you take part.

Part 2 gives you more detailed information about how we will carry out the study.

Part 1

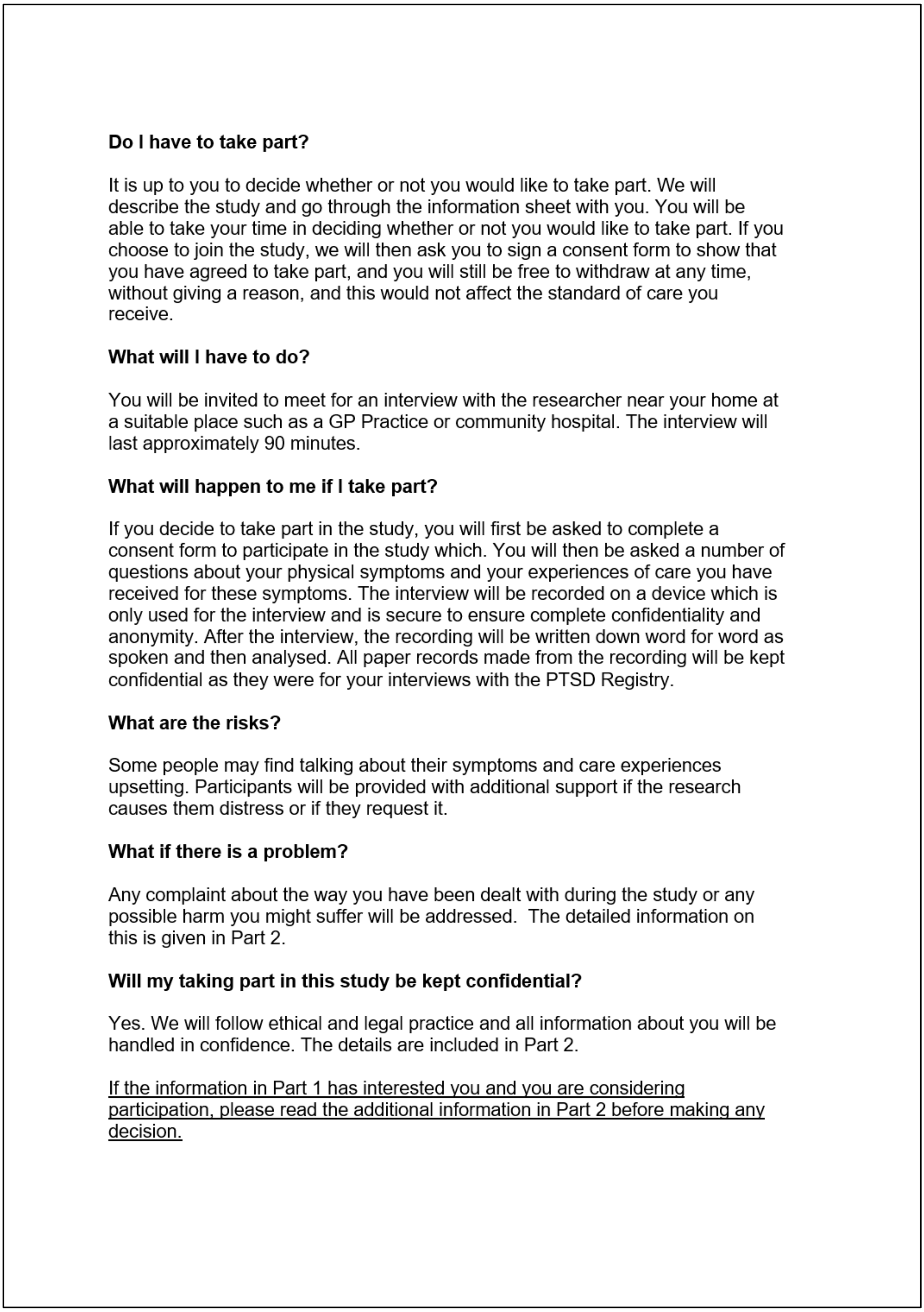
What is the purpose of the study?

The purpose of this study is to explore the healthcare experiences of people who have both Post Traumatic Stress Disorder (PTSD) and Medically Unexplained Physical Symptoms (MUPS). People who suffer PTSD commonly experience MUPS for which no cause can be found after many investigations and after seeing a lot of health professionals. This can lead to a complex care journey that can involve numerous services over a long period of time. The research aims to help us know more about the experience of care for people with PTSD and hard to explain physical symptoms.

Why have I been asked to take part in the research?

You have been chosen to take part because you have been diagnosed with PTSD and you have medically unexplained symptoms that have been identified from your original interview and the self- complete questionnaire that you completed with the PTSD Registry.

Appendix G (continued).



Do I have to take part?

It is up to you to decide whether or not you would like to take part. We will describe the study and go through the information sheet with you. You will be able to take your time in deciding whether or not you would like to take part. If you choose to join the study, we will then ask you to sign a consent form to show that you have agreed to take part, and you will still be free to withdraw at any time, without giving a reason, and this would not affect the standard of care you receive.

What will I have to do?

You will be invited to meet for an interview with the researcher near your home at a suitable place such as a GP Practice or community hospital. The interview will last approximately 90 minutes.

What will happen to me if I take part?

If you decide to take part in the study, you will first be asked to complete a consent form to participate in the study which. You will then be asked a number of questions about your physical symptoms and your experiences of care you have received for these symptoms. The interview will be recorded on a device which is only used for the interview and is secure to ensure complete confidentiality and anonymity. After the interview, the recording will be written down word for word as spoken and then analysed. All paper records made from the recording will be kept confidential as they were for your interviews with the PTSD Registry.

What are the risks?

Some people may find talking about their symptoms and care experiences upsetting. Participants will be provided with additional support if the research causes them distress or if they request it.

What if there is a problem?

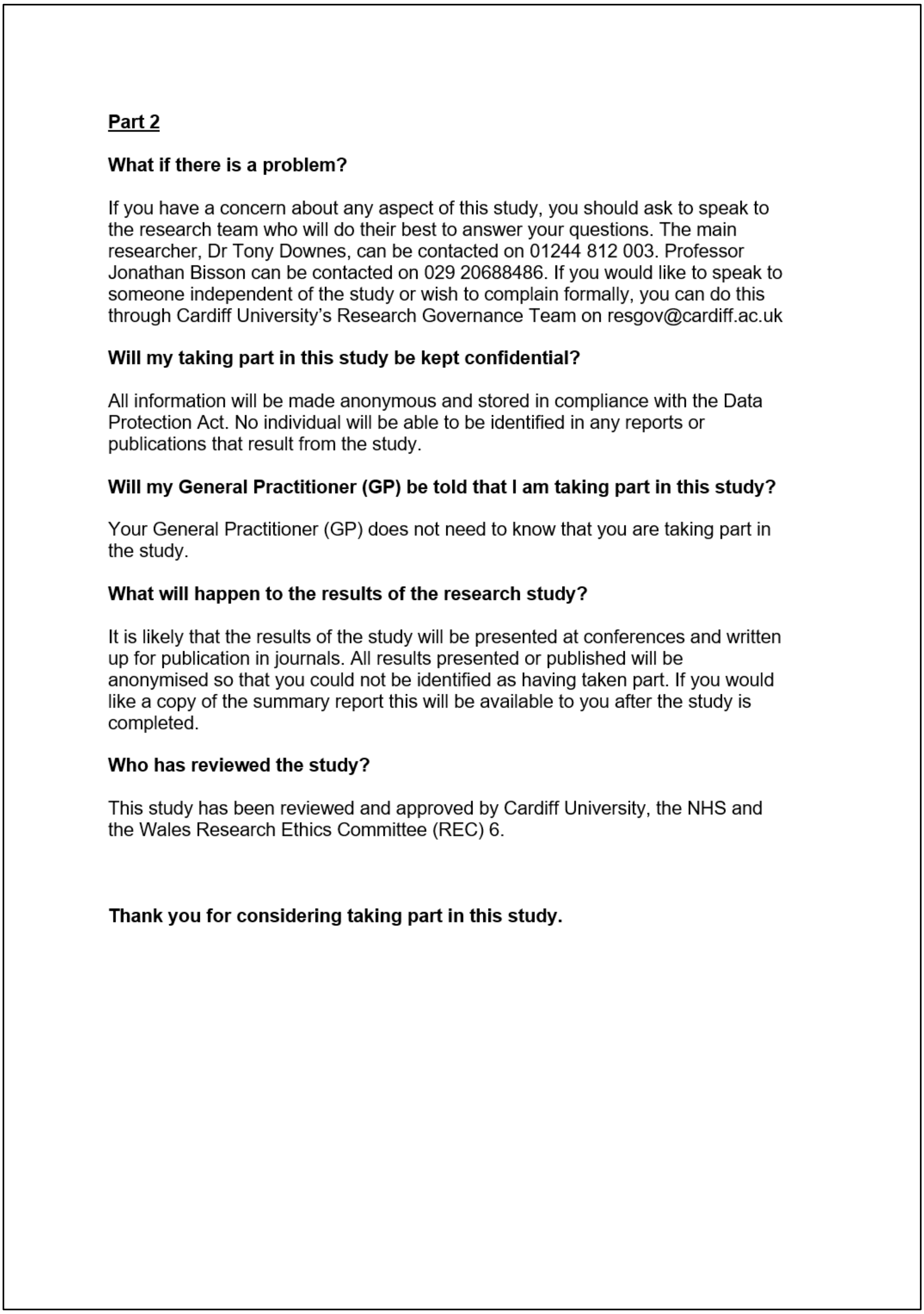
Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. The detailed information on this is given in Part 2.

Will my taking part in this study be kept confidential?

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence. The details are included in Part 2.

<u>If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.</u>

Appendix G (continued).



Part 2

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the research team who will do their best to answer your questions. The main researcher, Dr Tony Downes, can be contacted on 01244 812 003. Professor Jonathan Bisson can be contacted on 029 20688486. If you would like to speak to someone independent of the study or wish to complain formally, you can do this through Cardiff University's Research Governance Team on resgov@cardiff.ac.uk

Will my taking part in this study be kept confidential?

All information will be made anonymous and stored in compliance with the Data Protection Act. No individual will be able to be identified in any reports or publications that result from the study.

Will my General Practitioner (GP) be told that I am taking part in this study?

Your General Practitioner (GP) does not need to know that you are taking part in the study.

What will happen to the results of the research study?

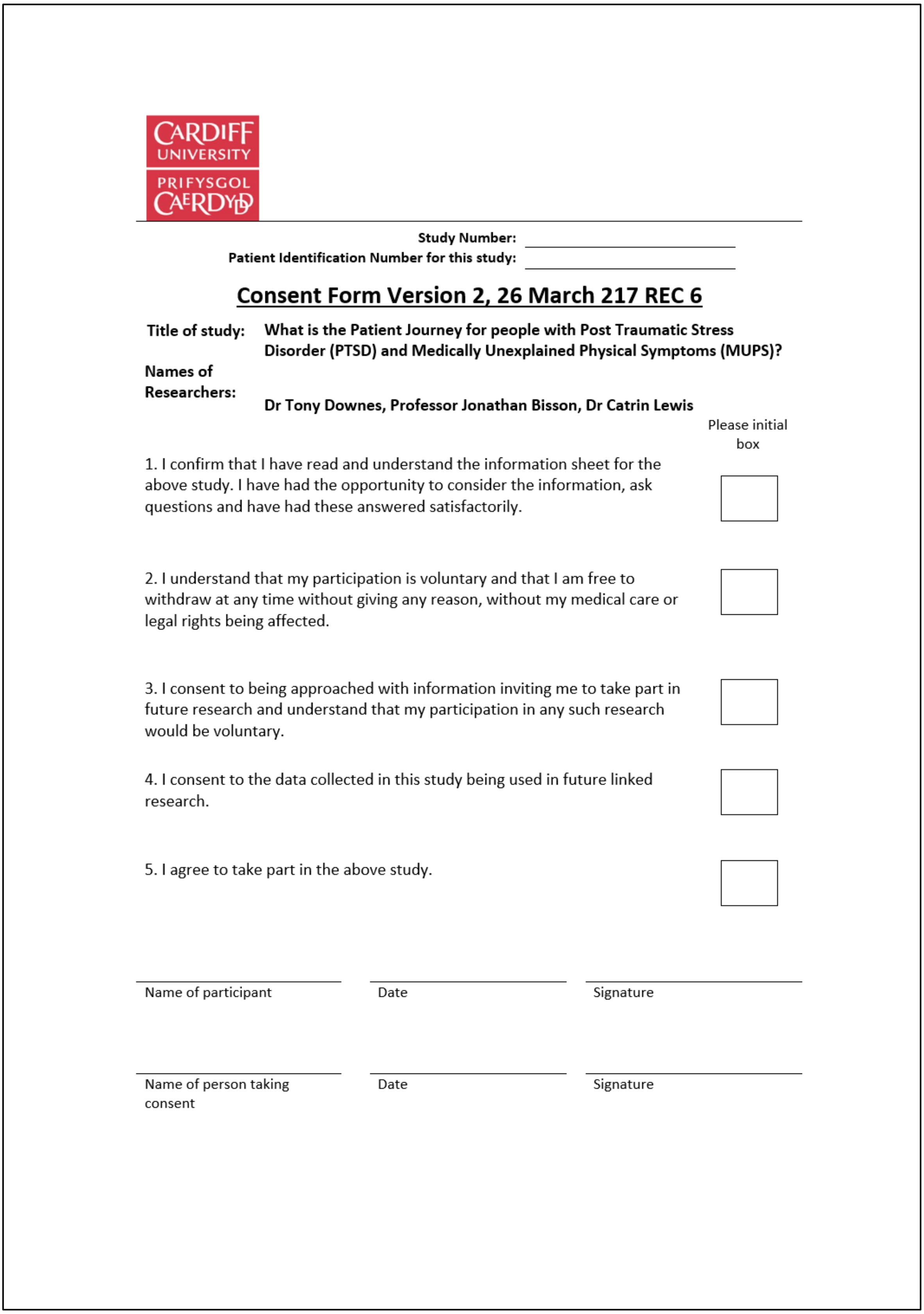
It is likely that the results of the study will be presented at conferences and written up for publication in journals. All results presented or published will be anonymised so that you could not be identified as having taken part. If you would like a copy of the summary report this will be available to you after the study is completed.

Who has reviewed the study?

This study has been reviewed and approved by Cardiff University, the NHS and the Wales Research Ethics Committee (REC) 6.

Thank you for considering taking part in this study.

Appendix H: Consent form for participation in qualitative study



Study Number: ____________________

Patient Identification Number for this study: ____________________

Consent Form Version 2, 26 March 217 REC 6

Title of study: **What is the Patient Journey for people with Post Traumatic Stress Disorder (PTSD) and Medically Unexplained Physical Symptoms (MUPS)?**

Names of Researchers: **Dr Tony Downes, Professor Jonathan Bisson, Dr Catrin Lewis**

Please initial box

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected. ☐

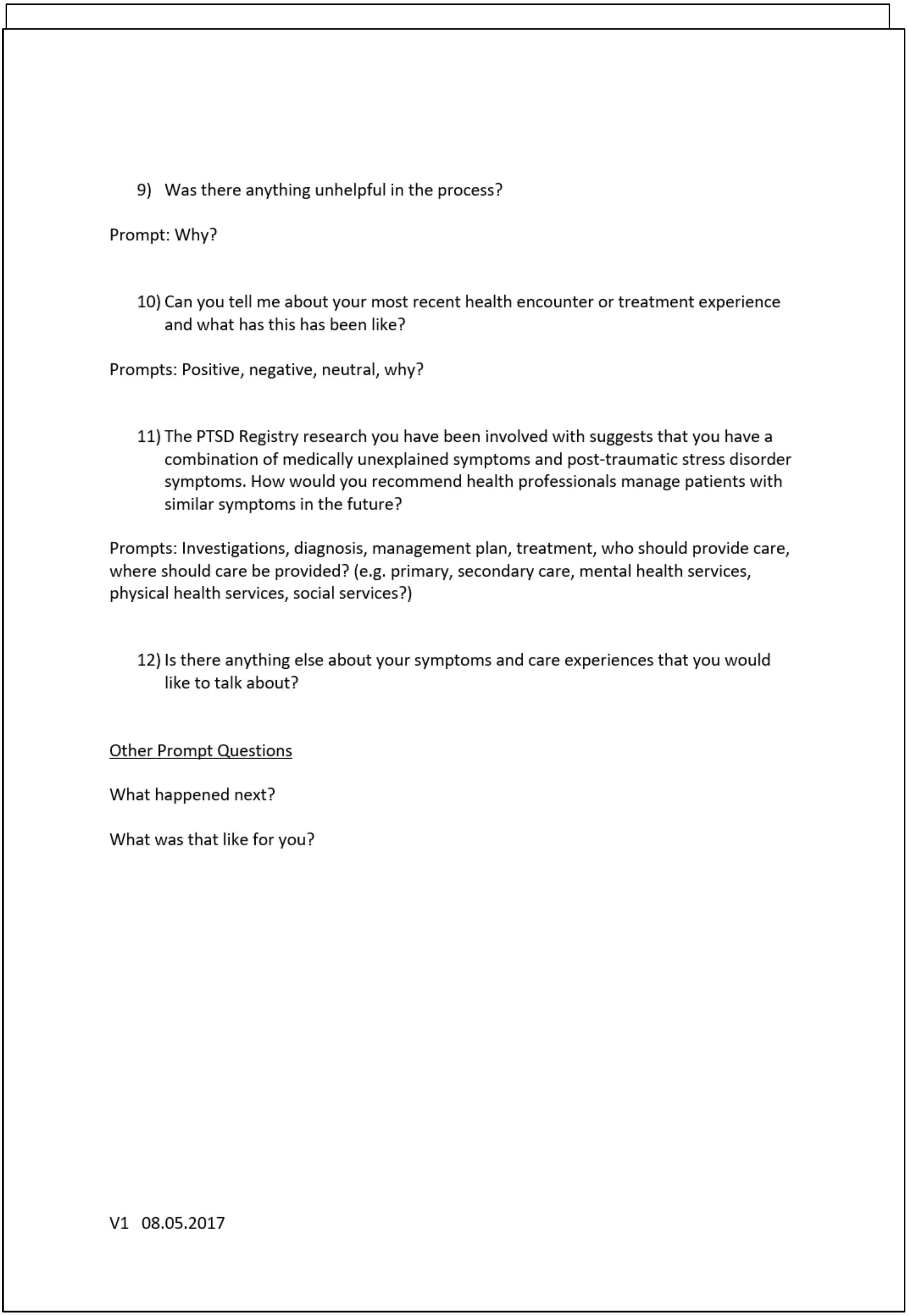
3. I consent to being approached with information inviting me to take part in future research and understand that my participation in any such research would be voluntary. ☐

4. I consent to the data collected in this study being used in future linked research. ☐

5. I agree to take part in the above study. ☐

Name of participant	Date	Signature
Name of person taking consent	Date	Signature

Appendix I: Semi-structured interview questions for qualitative study



9) Was there anything unhelpful in the process?

Prompt: Why?

10) Can you tell me about your most recent health encounter or treatment experience and what has this has been like?

Prompts: Positive, negative, neutral, why?

11) The PTSD Registry research you have been involved with suggests that you have a combination of medically unexplained symptoms and post-traumatic stress disorder symptoms. How would you recommend health professionals manage patients with similar symptoms in the future?

Prompts: Investigations, diagnosis, management plan, treatment, who should provide care, where should care be provided? (e.g. primary, secondary care, mental health services, physical health services, social services?)

12) Is there anything else about your symptoms and care experiences that you would like to talk about?

<u>Other Prompt Questions</u>

What happened next?

What was that like for you?

V1 08.05.2017

Appendix J: Professional Qualitative Study - Letter of Invitation

Invitation Letter (version 1.0) 08 May 2021

Dear

My name is Dr Anthony Downes, and I am contacting you from Cardiff University to invite you to participate in a qualitative research study that might be of interest to you:

What are the experiences of health and care professionals who manage patients/clients who may have Post-traumatic Stress Disorder (PTSD) and Medically Unexplained Physical Symptoms (MUPS)?

Please find attached a participant information sheet for further information about this study and a consent form.

Interviews will be conducted by audio call through Zoom or Microsoft Teams depending on your preference. The interview will last between approximately 30-45 minutes.

If you wish to discuss this research project further, please contact me by telephone

If you wish to participate in this study, please email me: DownesAJ@cardiff.ac.uk

Thank you for considering taking part in this study.

Dr Anthony Downes
General Medical Practitioner
Cardiff University.
Email: DownesAJ@cardiff.ac.uk

Appendix K: Professional Qualitative Study - Participant Information Sheet

Document 2 Participant Information Sheet (version 3.0) 23 August 2021

Participant Information Sheet

Title of Study: What are the experiences of Health and Social Care professionals who manage patients/clients who may have Post-traumatic Stress Disorder (PTSD) and Medically Unexplained Physical Symptoms (MUPS)?

You are being invited to take part in a research project. Before you decide whether or not to take part, you should understand why the research is being done and what it will involve. Please take time to read the following information and contact us if anything is not clear or if you would like more information.

What is the purpose of the research?

The purpose of this research is to understand the experiences of health and social care professionals who manage patients/clients who may have post-traumatic stress disorder (PTSD) and medically unexplained physical symptoms (MUPS). People with PTSD commonly experience MUPS and often present a considerable challenge to effective diagnosis and management in health and social care settings. This study complements another qualitative study which examined the patient journey experiences for people with PTSD and MUPS.

Who is being asked to take part?

You have been invited because you have expert knowledge or experience related to treating and caring for people who may have PTSD and MUPS.

What does participation in this study involve?

Due to the COVID-19 pandemic, the study will be conducted remotely via a Zoom or Microsoft Teams audio call.

Prior to the interview you will be able to ask any questions about this study. If you wish to proceed, you will be asked to complete a consent form stating that you agree to take part in the study. The consent will be taken verbally through a Zoom or Microsoft Teams audio call and the conversation will be recorded. The researcher will complete an electronic version of the consent form and email a copy of the completed consent form to you to keep along with this information sheet.

Appendix L: Professional Qualitative Study – Consent Form

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

Yes ☐ No ☐

, in line with Cardiff University's Yes ☐ No ☐

Yes ☐ No ☐

______________________________ ______________ ______________________________

______________________________ ______________ ______________________________