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Citation for final published version:

Robertson, Janet, Beyer, Steve , Emerson, Eric, Baines, Susannah and Hatton, Chris 2019. The association between employment and the health of people with intellectual disabilities: A systematic review. Journal of Applied Research in Intellectual Disabilities 32 (6) , pp. 1335-1348. 10.1111/jar.12632

Publishers page: http://dx.doi.org/10.1111/jar.12632

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# The association between employment and the health of people with intellectual disabilities: A systematic review

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Abstract

Background: There is strong evidence indicating that paid employment is generally good for the physical and mental health of the general population. This systematic review considers the association between employment and the health of people with intellectual disabilities.

Methods: Studies published from 1990 to 2018 were identified via electronic literature databases, email requests and cross-citations. Identified studies were reviewed narratively.

Results: Twelve studies were identified. Studies were generally consistent in reporting an association between being in paid employment and better physical or mental health status.

Conclusions: This review supports the view that the well-established association between employment and better health is similar for adults with and without intellectual disabilities. However, evidence establishing causality is lacking and further research to determine specific health benefits attributable to employment for people with intellectual disabilities and the causal pathways that operate is required.

K E Y WO R D S

employment, health, intellectual disabilities

## 1 | INTRODUC TION

There is strong evidence to show that paid employment is generally good for people's physical and mental health (NICE, 2015; van der Noordt, Ijzelenberg, Droomers, & Proper, 2014). Evidence demonstrates that having a job is associated with a greater sense of autonomy, improved self-reported well-being, reduced depression and anxiety symptoms, increased access to resources to cope with demands, enhanced social status and unique opportunities for personal development and mental health promotion (Modini et al., 2016). Findings from longitudinal studies suggest that employed persons, compared to unemployed persons, have lower anxiety, lower levels of depression, lower depressive affect, better mood, lower psychological distress, fewer psychological symptoms, higher perceived quality of life (QoL) (Hergenrather, Zeglin, McGuire-Kuletz, & Rhodes, 2015a) and better physical health (Hergenrather, Zeglin, McGuire-Kuletz, & Rhodes, 2015b). Whilst

establishing a clear causal direction in the relationship between employment and health is difficult due to health being potentially both a cause and a consequence of employment status, the latter two systematic reviews' focus on longitudinal studies provides stronger evidence for a causal link between being in employment and better health.

The benefits of work are most apparent when compared with the detrimental effects of becoming unemployed on physical and mental health, with almost all studies on the effect of unemployment on health concluding that unemployment is bad for your health (Norström, Virtanen, Hammarström, Gustafsson, & Janlert, 2014) and the detrimental mental health effects of unemployment being well-documented (Modini et al., 2016). Unemployment is also associated with increased rates of limiting long-term illness, mental illness and cardiovascular disease, an increase in overall mortality, in particular due to suicide (Milner, Page, & LaMontagne, 2013; Roelfs, Shor, Davidson, & Schwartz, 2011), much higher use of medication and much worse prognosis and recovery rates (Marmot Review, 2010).

Typical forms of activity and employment opportunities for people with intellectual disabilities include segregated day programs and sheltered workshops, and supported employment (SE) in competitive settings with typical wages and ongoing individualized support services (Owen et al., 2015). In view of the impact of employment on health and well-being, internationally policy concerning people with intellectual disabilities has been directed towards improving the employment opportunities of people with intellectual disabilities (Blamires, 2015; Siperstein, Heyman, & Stokes, 2014), with policy favouring community-based employment (Beyer, Brown, Akandi, & Rapley, 2010). It has been estimated that 65% of people with intellectual disabilities in England without a job would like one (Emerson, Malam, Davies, & Spencer, 2005). However, despite a succession of English Government initiatives relating to the employment of people with intellectual disabilities (Blamires, 2015) employment rates remain extremely low. The overall paid/self-employment rate for working-age adults with intellectual disabilities in England receiving long-term support from social care agencies was 5.7% in 2016/17 (NHS Digital, 2017). Similarly, in the United States, despite substantial investment to promote employment for people with intellectual disabilities, the employment rate showed no improvement over the period of a decade (Siperstein et al., 2014).

A review on the impact of SE on the socio-emotional well-being of people with intellectual disabilities found that overall outcomes for people with intellectual disabilities entering employment were positive, particularly in terms of QoL, well-being and autonomy (Jahoda, Kemp, Riddell, & Banks, 2008). Subsequent studies have also found that people with intellectual disabilities in employment report better QoL (Memisevic, Hadzic, Zecic, & Mujkanovic, 2016) and that QoL is higher for those in open employment compared to sheltered employment (Kober & Eggleton, 2005). A more inclusive setting (e.g., competitive/integrated employment) is also generally associated with higher levels of job satisfaction for people with intellectual disabilities (Akkerman, Janssen, Kef, & Meininger, 2016; Kocman & Weber, 2018). Conversely, people with intellectual and developmental disabilities who lack productivity more broadly describe a significant void in their life due to the absence of both meaningful activity and social connections (Lysaght, Petner-Arrey, Howell-Moneta, & Cobigo, 2017). Overall life satisfaction has been found to be lowest for people with developmental disabilities (60% of whom had intellectual disabilities) who were "idle" (non-student with no paid work, volunteer work or housework) or who only re-ported housework as an activity (Salkever, 2000).

However, there are some mixed findings, with studies finding no association between employment status and overall life happiness (Blick, Litz, Thornhill, & Goreczny, 2016) or QoL (Verdugo, Jordán de

Urríes, Jenaro, Caballo, & Crespo, 2006) for people with intellectual disabilities. Indeed, for some people with intellectual disabilities in employment there may be a lack of perceived social acceptance (Jahoda et al., 2008), and for some, it may serve to highlight the limits of their competence and marginal social status (Jahoda et al., 2009). Those in integrated employment can feel lonely (Gascon, 2009), with some people with intellectual disabilities feeling alienated or left out from the rest of the workforce (Petrovski & Gleeson, 1997; Wistow & Schneider, 2003). Further, employment for people with intellectual disabilities can also be tenuous with high rates of job loss (Howarth, Mann, Zhou, McDermott, & Butkus, 2006; Jahoda et al., 2009; Lemaire & Mallik, 2008).

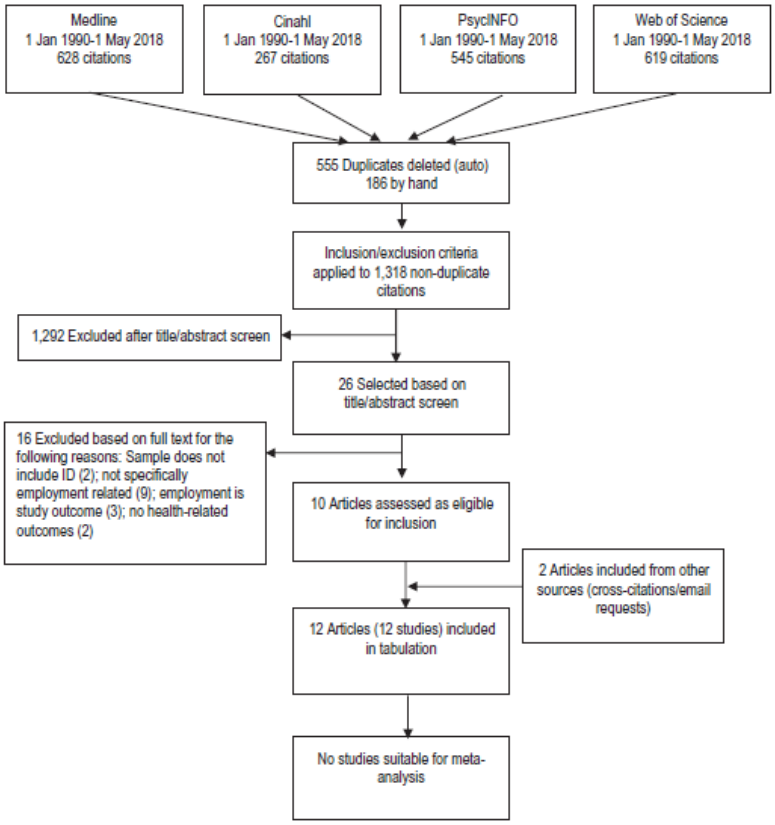
There is, then, some evidence that employment can promote the QoL, well-being and autonomy of people with intellectual dis-abilities, although it is important to be mindful of potential negative effects of employment (Gascon, 2009). Less attention has been paid to the issue of whether employment can promote the physical and mental health of people with intellectual disabilities. As yet, no review has addressed the question of whether or not the potential benefits of employment are translated into improved physical and mental health for people with intellectual disabilities. In this review, the present authors consider the association between employment and the physical and mental health (including challenging behaviour as an indicator of mental health) of people with intellectual disabilities. Employment is taken to mean paid employment (e.g., competitive employment, SE) and does not include sheltered workshops, day services (DS), and forms of occupation where no remuneration is received or remuneration is below the appropriate minimum wage. The aim of the review is to summarize existing international research, published in the English language, on the association between employment and outcomes for people with intellectual disabilities in relation to direct measures of physical or mental health, including challenging behaviour as an indicator of mental health.

## 2 | METHOD

The review was conducted in accordance with PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009). Electronic database searches were conducted using Medline, PsycINFO, and Cinahl (all on EBSCO) and Web of Science. In addition, a request for information on research relevant to the review was sent to the Intellectual Disability UK Research mailing list, the International Association for the Scientific Study of Intellectual and Developmental Disabilities (IASSIDD) Health Special Interest Research Group (July 2017), and members of the European Union of Supported Employment (EUSE; September 2017). In addition, the reference lists of studies meeting the inclusion criteria were searched (see Figure 1).

Word search terms relating to employment and health were collated by examining terms occurring in existing systematic reviews relating to employment and physical or mental health in the general population (Hergenrather et al., 2015a, 2015b; Modini et al., 2016) and other relevant literature reviews (Beyer & Robinson, 2009; Kocman & Weber, 2018; Lysaght, Cobigo, & Hamilton, 2012). Word search terms were used to identify relevant MeSH/Cinahl headings and Index terms in PsycINFO. Three blocks of search terms were developed and combined with the Boolean operator "and": (a) terms for employment; (b) terms for physical or mental health; and (c) terms for intellectual disabilities which have been used in previous systematic reviews (e.g., Robertson, Baines, Emerson, & Hatton, 2018, Robertson, Baines, Emerson, & Hatton, 2017). Searches were initially run in June 2017 and subsequently updated in May 2018. An example of a database specific search strategy (Medline) is given in Appendix 1.

**FIGURE 1** Flow chart of study identification




## 2.1 | Inclusion/exclusion criteria

Articles were required to meet all the following inclusion criteria: peer reviewed; English language full text; published from 1990 to 2018; quantitative research, qualitative research, evaluation or audit; samples where 75% or more have intellectual disabilities or mixed samples where results are disaggregated for people with intellectual disabilities; study has participants aged 18 years or more; includes quantitative or qualitative data regarding the association between paid employment (as the independent variable) and the physical or mental health (including challenging behaviour) of people with intellectual disabilities (as the dependent variable). The following exclusion criteria were applied: not peer reviewed or peer review status unclear; any study employing any research de-sign with a sample size of <10 for participants in employment (i.e., excluding controls not in employment); reviews, letters, commentaries, editorials, meeting or conference abstracts; studies on conditions where intellectual disabilities cannot be assumed (e.g., cerebral palsy) where results not disaggregated for people with intellectual disabilities; studies on specific syndromes associated with intellectual disabilities with the exception of Down syndrome, which is the most common genetic cause of intellectual disabilities (Sherman, Allen, Bean, & Freeman, 2007); studies where reported outcomes are not direct indicators of physical or mental health, for example, general morale, self-esteem, QoL (unless specific health-related QoL domain reported), suboptimal mood, loneliness, independence, social inclusion, sense of identity; studies on forms of occupation where no remuneration is received; studies on sheltered workshops or forms of day service provision.

Initially, titles and abstracts were used to exclude studies which were obviously not within scope (first author). A random sample of 20% of all search results (264 articles) was assessed by a second reviewer. There were three instances of disagreement, and in all cases, articles were not ultimately included in the final review (overall agreement 98.9%; Kappa 0.818).

**TABLE 1** Summary of studies regarding the association between employment and health (see bottom of table for list of abbreviations)

| MMAT type and rating[a] | First author and year | Country | Focus | Design | Key sample features |
|---|---|---|---|---|---|
| MM** | Banks 2010 | Scotland | Job breakdown and psychological well-being | Longitudinal. Semi-structured interviews time 1 (entered employment for at least 3 hr a week within the previous 3 months) and time 2 (9–12 months later) | People with intellectual disabilities who had secured supported employment (SE) in the previous 3 months |
| QNR** | Beyer 2010 | Wales | Comparison of quality of life (QoL) outcomes for people with intellectual disabilities in SE, day services (DS) and employment enterprises (EE) | Interviews to collect questionnaire and scale data | Adults with intellectual disabilities in SE, EE, DS or non-disabled co-workers (ND) of those in SE |
| QNR*** | Emerson 2014 | UK | Perceptions of neighbourhood quality, social and civic participation and the self-rated health of adults with intellectual disabilities | Secondary analysis of cross-sectional data from Understanding Society | People with intellectual disabilities living in general households |
| QNR**** | Emerson 2008 | England | Socio-economic disadvantage and self-rated health of adults with intellectual disabilities | Cross-sectional survey | Adults with mild/moderate intellectual disabilities, 26% in paid employment |
| QNR**** | Emerson 2018a | UK | Association between employment status and health in people with intellectual disabilities and people with borderline intellectual functioning (BIF) | Secondary analysis (cross-sectional analyses) of population-based cohort study | Children born during 1 week in the UK in 1970, identified as having intellectual disabilities or BIF |
| QNR**** | Emerson 2018b | UK | Association between non-standard employment (NSE), job insecurity and health among adults with and without intellectual impairments | Secondary analysis (cross-sectional analyses) of population-based cohort study | Children born during 1 week in the UK in 1970, identified as having intellectual disabilities or BIF |

| Sample size | Age range (mean (*SD*); median) | % male | Relevant outcome measures | Results |
|---|---|---|---|---|
| 49 | 16–53 (31.2 (11.1); ns) | 61.2 | Self-report measure of depression and anxiety (adapted form of the Hospital Anxiety and Depression Scale (HADS)); themes from qualitative responses | By time 2, 13 of 49 jobs had broken down, 4 of whom secured another job so left out of quantitative analysis. No differences on HADS between participants who did and did not stay in employment. However, qualitative interviews with participants whose jobs were not sustained suggest the majority were left with reduced income, too much time on their hands, and some experienced feelings of failure and hopelessness |
| SE 17<br>EE 10 DS 10<br>ND 17 | SE<br>ns (34 (ns); ns);<br>EE<br>ns (39 (ns); ns);<br>DS<br>ns (42 (ns); *n*);<br>ND<br>ns (38 (ns); ns) | SE 76<br>EE 40<br>DS 90<br>ND 41 | Objective and subjective scores for health domain of Comprehensive Quality of Life Scale (intellectual disabilities or adult version) | Significant difference for objective health (mean (*SD*) scores: SE 13.2 (1.8), EE 11.2 (2.4), DS 10.1 (2.3), ND co-workers 14.2 (0.8)). No significant difference across groups for subjective health. Overall, supported employees reported better health than people with intellectual disabilities in EE or DS |
| 299 with intellectual disabilities [b] | 16–49 (ns (ns); ns) | 38 | Self-rated health; recoded into binary variable: "excellent/very good/good" versus "fair/poor" | More positive self-rated health was statistically uniquely associated with being employed for 16 or more hours per week (OR 4.31, 95% CI [1.64–11.31]) |
| 1,273 | 16–55+ (ns (ns); ns) | 58 | Self-rated health; recoded into binary variable "Not good" versus "fairly good/very good" | Significant difference in self-rated health for those in paid employment (very good 48%, fairly good 44%, not good 9%) versus unemployed (41%, 41% and 18%). For those not in paid employment "Not good versus fairly good/very good" OR 1.31, 95% CI not stated, $p < 0.001$ (by gender interaction with stronger association for women) |
| 15,453 (intellectual disabilities 426, BIF 2,108, non-intellectual disabilities 12,919) | Analyses at age 26, 30, 34, 38, 42 (mental health measure n/a at age 38) | ns | Binary measure of self-reported health ("excellent/very good/good" vs. "fair/poor/very poor"). Malaise Inventory for measure of mental health | People with intellectual disabilities and BIF had markedly lower employment rates and poorer health than other participants at all waves of data collection. Prevalence of both poor self-rated health and mental health was greater in every analysis across age and participant groups for economically inactive participants and participants in part-time employment compared to participants in full-time employment (statistically significant in 51 of the 54 comparisons). For all three groups, the prevalence of poor health increased with number of exposures to economic inactivity |
| 15,453 (intellectual disabilities 426, BIF 2,108, non-intellectual disabilities 12,919) | Analyses at age 30, 34 and 42 | ns | Binary measure of self-reported health ("excellent/very good/good" vs. "fair/poor/very poor"). Malaise Inventory for measure of mental health | At all three ages and for both health indicators cohort members in all three groups were more likely to have poorer health status if exposed to NSE or job insecurity. In general, those who transitioned out of economic inactivity to either NSE or standard employment had significantly better general and mental health than those who remained economically inactive. In all analyses, transitioning from NSE to economic inactivity was associated with significantly poorer health (when compared to remaining in NSE), whilst there were no significant differences in health status between those transitioning from NSE to standard employment (when compared to remaining in NSE) |

| MMAT type and rating[a] | First author and year | Country | Focus | Design | Key sample features |
|---|---|---|---|---|---|
| QNR**** | Foley 2014 | Australia | Relationship between post-school day occupations of people with Down syndrome and change in behaviour | Longitudinal. Questionnaires completed in 2009 and 2011; questionnaire completed 2004 used to adjust for prior behaviour | Young people with Down syndrome from population-based database covering Western Australia who were in the same post-school day occupation from 2009 to 2011 |
| QNR*** | Haider 2014 | Australia | Factors associated with polypharmacy in a statewide representative population of adults with intellectual disabilities | Population-based cross-sectional survey | People with intellectual disabilities on statewide administrative database |
| QNR** | Jiranek 1990 | Australia | Psychological well-being in competitive employment, sheltered employment or unemployment | Interviews to collect questionnaire and scale data | People with borderline or mild intellectual disabilities in competitive employment, sheltered employment, or unemployment for at least 3 months plus ND comparison group |
| QNR*** | Lunsky 2011 | Canada | Life events and hospital emergency department (ED) use | Standardized form including life events in past 12 months completed by staff as part of agency protocol following behavioural crisis event | People with intellectual disabilities who had experienced at least one behavioural crisis |
| QNR*** | Mc-Glinchey 2013 | Ireland | Association between employment status and health, loneliness, social activities and depression | First wave of longitudinal study; data from interviews (proxy if necessary) | People with intellectual disabilities receiving or eligible to receive services. 6.6% in paid employment, 7.4% attended day service but perceived themselves as employed, 12% sheltered employment, 73.5% unemployed. |
| QNR*** | Stephens 2005 | USA | Adaptive skills and challenging behaviours whilst following individuals through movement across types of employment | Longitudinal: two consecutive points in time (1997 and 1998) | People with intellectual disabilities receiving services. In 1997, unemployed 48.0%, competitive employment 6.6%, SE 13.0%, sheltered employment 32.4% |

*Note*: Abbreviations: BIF, borderline intellectual functioning; DS, day services; ED, emergency department; EE, employment enterprises; EI, economic inactivity; HADS, Hospital Anxiety and Depression Scale; ID, intellectual disabilities; ND, non-disabled; NSE, non-standard employment; OR, odds ratio; QoL, quality of life; SE, supported employment.

[a]MMAT, Mixed Methods Appraisal Tool; MM, mixed methods; QNR, quantitative non-randomized. MMAT Ratings: * 25% of criteria met, ** 50% of criteria met, *** 75% of criteria met, **** 100% of criteria met.

[b]1.2% of the unweighted age-restricted sample.

[c]Figure includes some participants who were subsequently excluded from analyses.

| Sample size | Age range (mean (*SD*); median) | % male | Relevant outcome measures | Results |
|---|---|---|---|---|
| 103 | 10–24 (17.2 (4.3); ns)[a] | 56.8[c] | Behavioural and emotional problems measured using the Developmental Behaviour Checklist (DBC). Main outcome change in behavioural problems 2009–2011 | Those in open employment experienced a decline in range, intensity and overall behaviour problems after adjusting for known confounding variables. Those in sheltered employment also experienced a decline but this was less marked than for those in open employment. Those in day recreation programs experienced an increase in range, intensity and overall behaviour problems. In comparison with those in open employment, those in day recreation programs experienced significant worsening in behaviour both in the unadjusted (effect size − 0.14, 95% CI [−0.24, −0.05]) and adjusted models (effect size − 0.15, 95% CI [−0.29, −0.01]) |
| 897 | 18–82 (41.6 (ns); 41) | 55.5 | Polypharmacy: use of 5 or more prescribed medicines in past 2 weeks | Polypharmacy rates were as follows: employed 9.1%, 95% CI [3.6–21.1], unemployed 24.3%, 95% CI [19.9–29.3], crude OR 3.51, 95% CI [1.67–7.40], adjusted OR 2.72, 95% CI [1.26–5.87] (adjusted for age, sex and severity of intellectual disabilities) |
| 44 intellectual disabilities 29 ND | 20–25 (ns (ns); ns) | 56.8 | Rosenberg's Depressive Affect Scale (high score = higher depressive affect) | Those competitively employed showed lower depressive affect. Those with intellectual disabilities in competitive employment had similar depressive affect to ND unemployed. Scores were as follows: intellectual disabilities competitive employment 1.3 (0.7); sheltered employment 1.6 (1.2), unemployed 1.9 (0.9). ND employed 0.3 (0.8), unemployed 1.2 (1.9). However, ANOVA showed no significant effect by intellectual disabilities group for depressive affect |
| 746 | 10–82 (36.3 (14.4); ns) | 62.5 | Visit or no visit to ED | Being unemployed for more than 1 month occurred at a higher rate in the group that visited ED (15.4%) relative to the group that did not visit ED (3.2%), absolute risk increase 0.37, 95% CI [0.21, 0.51]. This was the second largest absolute risk increase after drug or alcohol problem (0.38, 95% CI [0.19, 0.56]. Laid off or fired from work was not significant |
| 753 | 41–65 (ns (ns); ns) | 45 | Self-rated health (excellent, very good, good, fair and poor) and doctor's diagnosis of depression (yes/no) | Employment status significantly associated with health status when no other variables were controlled for (fair/poor health: paid employment 8.3%, sheltered employment 10.8%, "perceived employment" 7.7% and unemployment 14.7%). Those in sheltered or perceived employment and those unemployed more likely to have a doctor's diagnosis of depression than those in paid employment. When age, level of intellectual disabilities, gender, type of residence and level of education were controlled for employment status was not significantly related to self-reported health status or diagnosis of depression |
| 2,760 | 16–65 (ns (ns); ns) | 55.8 | Abusive or sexually inappropriate challenging behaviour variables adapted from Behavior Development Survey | Whilst greater employment integration was strongly associated with greater adaptive skills, challenging behaviours appeared not to be related to moves to more or less integrative employment. There were, however, insufficient cases for inappropriate sexual behaviours and the two sub-factors analysed were possibly weak measures |

Those retained for further screening were those for which relevance could not be assessed without accessing full text or those that were chosen as potentially within scope. These studies were screened by the first and last author and discussed until consensus was reached on whether or not they met the inclusion criteria. All relevant studies were included in the review regardless of methodological quality. Study data were extracted from full-text articles and entered into an Excel database with regard to authors, year, country, main focus of study, study design, sample source, key sample features, sample size, sample age range (mean, SD and median), sample living situation, percentage of sample male, measures employed and main findings.

## 2.2 | Quality assessment/risk of bias

Study quality was assessed using the Mixed Methods Appraisal Tool (MMAT), which was designed for the appraisal stage of systematic reviews that include qualitative, quantitative and mixed-methods (MM) studies and allows reviewers to concomitantly appraise most common types of study methodology and design (Pluye et al., 2011). In the MMAT, primary studies (or MM study components) are rated in relation to four specific methodological quality criteria depending on study type: qualitative; quantitative randomized controlled (trials); quantitative non-randomized; or quantitative descriptive studies. The number of the criteria met is reported in the form of an asterix (*) for each criterion met. The MMAT is an efficient tool, but reliability needs further improvement, particularly for two items relating to qualitative studies including the sentence "appropriate consideration" (Souto et al., 2015).

Mixed Methods Appraisal Tool scores were entered into the Excel database. All extracted data in Excel were subsequently checked for accuracy and completeness by the last author. Whilst a third reviewer was available to resolve any disagreements, none arose. Results were collated, summarized and reported via a tabuation of key data, descriptive numerical summary of included studies (e.g., number with particular research designs) and a descriptive narrative summary of the results in relation to mental and physical health outcome measures. Due to variation in the methodology of included studies, meta-analysis was not appropriate.

# 3 | RESULTS

Electronic database searches identified a total of 2,059 records, with 1,318 remaining following the removal of 741 duplicate records. Following screening by title and abstract, 1,292 were excluded, leaving 26 for consideration of full text, of which 10 were included in the review along with two additional articles identified via other sources (cross-citations/email requests) giving a total of 12 articles (12 individual studies) (see Figure 1). Studies are summarized in Table 1 and described narratively below.

## 3.1 | Geographical spread and study design

All studies were from high-income Anglophone countries: three from the UK generally, plus one each from Scotland, Wales and England. There were three from Australia, and one each from Canada, Ireland and the USA. Nine of the studies were cross-sectional (three of which were based on secondary analysis of large-scale study data), and three were longitudinal.

## 3.2 | MMAT quality appraisal

Information on MMAT study types and scores is given in the first column of table 1. With the exception of one MM study, all studies, and the MM study quantitative component, fell within the MMAT category "quantitative non-randomized." Four studies met all MMAT criteria. Only two studies, and the quantitative component of the MM study, did not meet the QNR criterion one "Are participants recruited in a way that minimizes selection bias?". All studies met the criterion two "Are measurements appropriate?". Four studies, and the quantitative component of the MM study, did not meet criterion three "In the groups being compared are the participants comparable or do research control for differences between groups?" (e.g., did not control for level of intellectual disabilities or gender). Three studies did not meet criterion four "Are there complete outcome data/acceptable response rate?". The qualitative component of the MM study did not meet the criteria for appropriate consideration given to "how findings relate to the context" and "how findings relate to researchers' influences."

### 3.3 | Employment and physical health

#### 3.3.1 | Self-rated health

Most commonly, studies included self-rated health as an outcome measure. For people with intellectual disabilities living in general households in the UK, being employed for 16 or more hours per week was associated with more positive self-rated health (OR 4.31, 95% CI [1.64–11.31]) (Emerson, Hatton, Robertson, & Baines, 2014). For people with mild/moderate intellectual disabilities living in private households in the UK, those in paid employment had significantly better self-rated health than those who were unemployed (Emerson & Hatton, 2008). Those not in paid employment were more likely to have "not good" versus "fairly good/very good" self-rated health (OR 1.31, 95% CI not stated, $p < 0.001$; by gender interaction (stronger association for women)). However, hardship (OR 2.57, $p < 0.001$) was more strongly associated with health status than employment status. For people with intellectual disabilities aged 40 to <65 eligible to receive services in Ireland, employment status was significantly associated with self-rated health (fair/poor health: paid employment 8.3%, sheltered employment 10.8%, "perceived employment" 7.7% and unemployment 14.7%) (McGlinchey, McCallion, Burke, Carroll, & McCarron, 2013). However, this was not statistically significant once age, level of intellectual disabilities, gender, type of residence and level of education were controlled for.

Two studies were based on secondary analysis of data from a cohort born in 1970 in the UK with intellectual disabilities, borderline intellectual functioning (BIF) or no intellectual disability. Economically inactive participants had a greater prevalence of poor self-rated health compared to participants in full-time employment across age and participant groups, with prevalence increasing in a dose-dependent relationship with number of exposures to eco-nomic inactivity (EI; Emerson, Hatton, Baines, & Robertson, 2018a). Overall, the results suggest that the nature of the well-established association between employment and better health is similar for British adults with and without intellectual impairments although the magnitude of effect sizes involved differed. The second analysis, based on data from the same cohort at ages 30, 34 and 42, found that cohort members with intellectual disabilities or BIF were more likely to be exposed to non-standard employment (NSE) and job insecurity than other cohort members (Emerson, Hatton, Baines, & Robertson, 2018b). At all three ages and for all three groups, those exposed to NSE or job insecurity were more likely to have poorer self-rated health status. In general, those who transitioned out of EI to either NSE or standard employment had significantly better self-rated health than those who remained economically inactive. The strength of this association was generally weaker for participants with intellectual impairments and for those transitioning into NSE (when compared to standard employment). However, the latter effect was more commonly seen among other participants rather than participants with intellectual impairments. In all analyses, transitioning from NSE to EI was associated with significantly poorer health (when compared to remaining in NSE), whilst there were no significant differences in health status between those transitioning from NSE to standard employment (when compared to remaining in NSE).

#### 3.3.2 | Other physical health outcomes

One study reports health-related QoL data for people with intellectual disabilities in Wales in SE, DS and employment enterprises (EE) (Beyer et al., 2010). Overall, supported employees reported better health than people with intellectual disabilities in EE or DS, and this was statistically significant for objective health QoL scores (mean (SD) scores: SE 13.2 (1.8), EE 11.2 (2.4), DS 10.1 (2.3), non-disabled (ND) co-workers 14.2 (0.8)), but not for subjective health QoL scores. One study on factors associated with polypharmacy in people with intellectual disabilities in Australia found that

polypharmacy was less likely in those who were employed (9.1%, 95% CI [3.6–21.1]) com-pared to those who were unemployed (24.3%, 95% CI [19.9–29.3]) when adjusted for age, sex and severity of intellectual disabilities (OR 2.72, 95% CI [1.26–5.87]) (Haider, Ansari, Vaughan, Matters, & Emerson, 2014). Finally, one Canadian study found that for people with intellectual disabilities who had experienced a behavioural crisis, being unemployed for more than 1 month was associated with use of an emergency department in response to crisis (absolute risk increase 0.37, 95% CI [0.21, 0.51]) (Lunsky & Elserafi, 2011). This was he second largest absolute risk increase after having a drug or alcohol problem (0.38, 95% CI [0.19, 0.56]). Being laid off or fired from work was not significant.

### 3.4 | Mental health

A range of mental health outcome measures were used, with the same measure being used across only two studies. These two studies were based on UK data from the same cohort (both also reported in the self-rated health section above) and looked at scores on the Malaise Inventory, with the results mirroring those for self-rated health reported above. Firstly, economically inactive participants had greater prevalence of poor mental health compared to participants in full-time employment, with prevalence increasing in a dose-dependent relationship with number of exposures to EI (Emerson et al., 2018a). Secondly, cohort members were more likely to have poorer mental health if exposed to NSE or job insecurity (Emerson et al., 2018b). In general, those who transitioned out of EI to either NSE or standard employment had significantly better mental health than those who remained economically inactive (Emerson et al., 2018b).

Three studies included outcomes related to depression. A study in Ireland found that those in paid employment were less likely to have a doctor's diagnosis of depression than those in sheltered employment, “perceived” employment or unemployment, although this was not significant once age, level of intellectual disabilities, gender, type of residence and level of education were controlled for (McGlinchey et al., 2013). An Australian study of a total of 44 people with intellectual disabilities found that scores on Rosenberg's Depressive Affect Scale indicated lower depressive affect for people with intellectual disabilities who were competitively employed than those in sheltered employment or unemployment, but this was not statistically significant (Jiranek & Kirby, 1990). One longitudinal study found no differences in scores on a measure of depression and anxiety for those who did and did not stay in SE (Banks, Jahoda, Dagnan, Kemp, & Williams, 2010). However, the study may have been underpowered with only nine people included in the “job breakdown” group. Further, the authors suggest that the scale used may have lacked sensitivity. Indeed, qualitative interviews with those who did experience job breakdown suggest some experienced feelings of failure and hopelessness. For example, comments included: “Ach, I'm bored shitless… I've just got too much time on my hands…”, “I didn't have a job to go to and I only had benefits … I felt really useless”, “[She was] quite broken up when she had to leave… just the suddenness of it. So she's been sort of down at times because she's sitting about doing nothing.”.

Two studies reported outcomes in relation to behaviour problems. A longitudinal study from Australia looked at changes in behaviour problems for young people with Down syndrome who remained in the same post-school day occupation for 2 years (Foley et al., 2014). Those in open employment experienced a decline in range, intensity and overall behaviour problems after adjusting for known confounding variables, whilst those in day recreation programs experienced significant worsening in behaviour. A longitudinal study in the USA found that whilst there was a strong relationship between level of integrative employment (competitive, supported, sheltered and none) and adaptive skills, this was not evident for two challenging behaviour scale factors analysed (Stephens, Collins, & Dodder, 2005). However, the authors were unable to use the total scale in

analyses and they note insufficient numbers of cases for one factor and suggest the two factors may have been weak measures.

## 4 | DISCUSSION

Despite the use of multiple methods of ascertainment, few studies on the association between employment and the health of people with intellectual disabilities were identified. However, the available studies are generally consistent in reporting an association between being in paid employment and better physical or mental health status. This association is demonstrated in all of the four studies receiving the highest possible MMAT score (Emerson & Hatton, 2008; Emerson et al., 2018a, 2018b; Foley et al., 2014). Where studies report non-significant findings, in some cases this may be because studies are underpowered with insufficient cases or use measures which may be insensitive to change (Banks et al., 2010; Stephens et al., 2005).

This review has included studies which consider health as an outcome of employment. However, it is also the case that health conditions can restrict opportunities for people with intellectual disabilities to participate in employment (Pikora et al., 2014). Additional support for a general association between health and employment comes from studies which identify health as a predictor of employment status for people with intellectual disabilities. Lower emotional and/or behavioural problems have been associated (Martorell, Gutierrez-Recacha, Pereda, & Ayuso-Mateos, 2008; McDermott, Martin, & Butkus, 1999; McInnes, Ozturk, McDermott, & Mann, 2010; Siperstein et al., 2014), as have absence of psychiatric symptoms (Martorell et al., 2008) and having fewer health problems (McDermott et al., 1999). Whilst some studies have found no association between health and/or mental health and employment outcomes (Faubion & Andrew, 2000; Moore, Feist-Price, & Alston, 2002; White & Weiner, 2004), in two of these studies receipt of employment-related services or training predicted employment (Moore et al., 2002; White & Weiner, 2004), suggesting that health-related barriers to obtaining employment may be addressed through appropriate service provision or training.

The majority of the studies in this review are cross-sectional, and as such, it is not possible to attribute causality. Even in the best-quality longitudinal study identified, the authors note that they cannot confirm the direction of the relationship between change in behaviour and day occupation (Foley et al., 2014). Indeed, the association between health and employment appears to be accounted for by two distinct processes; health selection (healthier people are more likely to gain and retain employment) and specific health benefits associated with employment (Avendano & Berkman, 2014; Bartley, 1994; Bartley, Ferrie, & Montgomery, 2006; van der Noordt et al., 2014; van Rijn, Robroek, Brouwer, & Burdorf, 2014). “Health selection” in relation to people with dis-abilities is likely to encompass discriminatory biases resulting from the barriers adults with disabilities face in securing and retaining employment (Equality & Human Rights Commission, 2017; Office for Disability Issues, 2011). For health benefits, for example, people with intellectual disabilities working in community jobs are less likely to be sedentary (Bodde, Seo, Frey, Puymbroeck, & Lohrmann, 2013).

Only one study in this review suggests possible mechanisms be-hind health benefits (reduced behavioural problems) associated with employment (Foley et al., 2013). The authors suggest improved behaviour could be attributed to factors such as modelling the positive behaviours of typically developing peers (in line with social learning theory) or the satisfaction of participation in a meaningful, main-stream occupation. Conversely, an increase in behavioural problems in those attending day recreation programs could be attributed to modelling undesirable behaviours of their peers, lack of choice-making opportunities, isolation and segregation from the community and lack of meaningful and challenging activities within the day recreation programs (Foley et al., 2013).

### 4.1 | Limitations

There are a number of limitations to this review. First, the studies included employ a disparate range of measures of physical or mental health, some of which may have limitations as direct measures of health status (e.g., health-related component of QoL (Beyer et al., 2010); Rosenberg's Depressive Affect Scale (Jiranek & Kirby, 1990)). Second, in some instances sample sizes are small, with one issue being the small number of people with intellectual dis-abilities in paid employment, with, for example, only 6.6% of 753 participants in one study being in paid employment (McGlinchey et al., 2013). Third, whilst multiple methods were used to identify studies, only one study was identified from the USA when it is apparent that there is certainly non-peer-reviewed information available. For example, a presentation based on National Core Indicators indicates that for 2012–2013, the reported health status of people with intellectual/developmental disabilities was "excellent" for 21.6% of those in integrated employment compared to 11.3% for those without an integrated job (Butterworth, Engler, Hiersteiner, & Fay, 2014). However, the only peer-reviewed publication identified in relation to this was an exploratory analysis of data for 2015–2016, which found that those who needed support for self-injurious behaviour were less likely to have a paid job in the community, although the analysis did not adjust for differences in personal characteristics between those who did and did not need support (Bradley et al., 2018). Finally, whilst in some studies the level of intellectual disabilities of participants is not stated, given the low employment rates of people with intellectual disabilities it is likely that the results mostly relate to people with less severe intellectual disabilities in employment.

## 5 | CONCLUSION

This review supports the view that the well-established association between employment and better health is similar for adults with and without intellectual impairments (Emerson et al., 2018a). In the UK, the consensus on pursuing a "welfare to work" agenda for people with dis-abilities generally (Department for Work and Pensions & Department of Health, 2017) has been underpinned in part by the rhetoric of better health and mortality outcomes associated with employment (Black, 2008). Whilst the causal pathways between employment and health have been reasonably well-established in the general population (Bartley, 1994; Janlert & Hammarström, 2009; Krug & Eberl, 2018), at present, there is insufficient evidence to determine causality in relation to the association between employment and health for people with intellectual disabilities. Further research to determine specific health benefits attributable to employment for people with intellectual disabilities is required, as well as research to elucidate the causal pathways that operate with reference to existing models on the relationship between (un)employment and health in the general population (e.g., Janlert & Hammarström, 2009, Paul & Moser, 2006). Such evidence would have important implications. Firstly, it would support the argument that health outcomes should become a driver for pursuing employment for people with intellectual disabilities as well as financial cost-benefit issues and an equality agenda. Secondly, it would support the argument that investment in employment support may be cost-effective in view of the higher lifetime cost for people with intellectual disabilities in relation to health care, mental health and other services that may be reduced through the protective effects of having a paid job. Internationally, policy should continue to be directed towards improving what are currently extremely low employment rates for people with intellectual disabilities, for example, via SE pro-grams. Whilst SE programs can be expensive, they can be cost-effective due to reducing cost for day activity services (Tholen, Hultkrantz, & Persson, 2017), cost-efficient regardless of severity and number of disabilities (Cimera, 1998) and lead to work in integrated settings for people traditionally thought of as unemployable due to the severity of their intellectual disabilities (Walsh, Lynch, & deLacey, 1994).

ACKNOWLEDGMENTS

This work was supported by Public Health England. However, the findings and views reported in this paper are those of the authors and should not be attributed to Public Health England.

CONFLICT OF INTEREST

The authors report no conflicts of interest.

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