

Original Research

A longitudinal study of UK pharmacists' resilience, burnout and wellbeing throughout the COVID-19 pandemic

Catherine Langran , Amina El-Beik , Louise Hughes , Efi Mantzourani , Kat Hall , Sarah Willis 

Received (first version): 11-Jul-2023

Accepted: 08-Aug-2024

Published online: 18-Aug-2024

Abstract

Background: The COVID-19 pandemic significantly increased pressure on healthcare services globally. However, the impact of this prolonged and ever-changing pressure on pharmacist wellbeing, burnout and resilience is unexplored. **Objective:** To explore the changes in resilience, burnout and wellbeing for pharmacists longitudinally from June 2020 to March 2021. **Methods:** An online survey was distributed via social media in June/July 2020. Any UK pharmacist in a patient facing role (community, GP and hospital) was eligible to participate. Pharmacists were asked to leave their email address at the end of the survey if they wished to participate in follow-up surveys, which were distributed in October/November 2020 and February/March 2021. Surveys included validated scales to explore resilience (CD-RISC 10), burnout (OLBI) and wellbeing (transformed SWEMWBS). Qualitative free text comments on challenges faced, positive changes in working practice, and support needed were collected. **Results:** 202 responses were collected in June/July 2020. Of 145 that consented to continue participation, 87 responded in October/November 2020 and 85 in February/March 2021. Mean scores in June/July 2020 showed lower than the population mean for pharmacist wellbeing (transformed SWEMWBS 21.5) and resilience (CDRISC-10 26.8) and high burnout (OLBI 40.4). There were no significant changes in scores over time, demonstrating sustained poor wellbeing, resilience and risk of burnout. In February/March 2021, those with more years since registration had higher wellbeing and resilience and lower burnout scores. Over the course of the study, pharmacists reported multiple causes of stress, including workload, patient demands, lack of protected breaks and poor local and national management. Support from colleagues was described to be the most useful resource to manage this stress. **Conclusion:** This study has illustrated the experience and impact of prolonged work within stressful situations for UK pharmacists.

Keywords: resilience; burnout; stress; pharmacy; covid-19; burnout; professional

INTRODUCTION

Since the beginning of the COVID-19 pandemic, pharmacists have played an instrumental role alongside fellow healthcare workers throughout unprecedented times. Pharmacists' workloads have increased rapidly with the addition of roles including delivering public health interventions, medicines supply interventions and actioning policy changes.¹ A UK Pharmacist wellbeing study undertaken in October/November 2020, found that 33% stated that their mental health was not good, and that 72% of respondents reported that their work had negatively impacted their mental health and wellbeing.²

In this study, the ABC-X model of stress and resilience³ has been utilised to explain how the adverse event of working

in a pandemic (A) was perceived by pharmacists (C), the resources used by pharmacist to manage their stress (B), the stress experienced (or not) by pharmacists (X) and the consequence this had on pharmacists: bonadaptation, return to baseline or pile-up (Figure 1). This "pile up" of stress may also be termed "burnout" and is depicted within the model as a multifactorial work-related stress syndrome that occurs due to chronic exposure to job stress. Burnout may be defined as a 'syndrome of emotional exhaustion, depersonalization, and a sense of low personal accomplishment that leads to decreased effectiveness at work'.⁴ Burnout in healthcare professionals can have serious consequences, for example, high levels of burnout are associated with increased incidence of medical errors and worse patient safety.⁵ High levels of burnout are also associated with high staff turnover.⁶

Resilience is defined as "bouncing back from adversity" and is thought to be a dynamic process, fluctuating as a response to internal and external factors.⁷ Resilience may be considered at the individual pharmacists' level and also at an organisational level. It has been suggested that for individuals to have high professional resiliency, a substantial amount of organisational support is required.⁸

The aim of this research was to longitudinally explore pharmacists' resilience, wellbeing and burnout during the COVID-19 pandemic. Following respondents through a 10-month period, allowed exploration of emerging patterns or shifts in attitudes and working practices, that can inform sustainable change.

Catherine LANGRAN*. EdD, Pharmacy Training Programme Facilitator, NHS-England, UK. Catherine.langran@nhs.net

Amina EL-BEIK. M Pharm, Foundation Trainee Pharmacist, GlaxoSmithKline & Day Lewis PLC, UK. aminaelbeik@gmail.com

Louise HUGHES. PhD, Senior Lecturer, Cardiff University, UK. HughesML@cardiff.ac.uk

Efi MANTZOURANI. PhD, Reader in Pharmacy Practice, Cardiff University, UK. MantzouraniE1@cardiff.ac.uk

Kat HALL. M Pharm, Head of School (Pharmacy), NHS-England, UK. Kat.hall@hee.nhs.uk

Sarah WILLIS. PhD, Senior Lecturer, University of Manchester, UK. sarah.willis@manchester.ac.uk



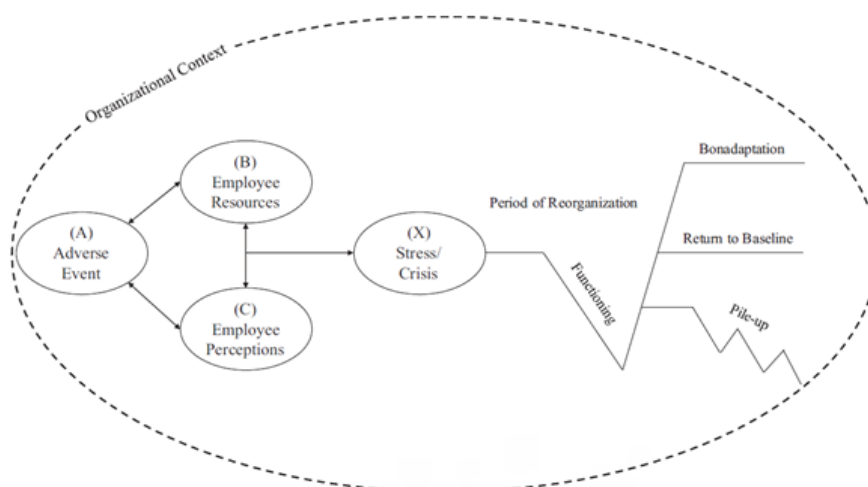


Figure 1. Contextualized ABC-X model of stress to inform the processes involved in the study of employee resilience.³

METHODS

Using a repeated-measures, longitudinal cohort study design, three rounds of data collection took place between June 2020 and March 2021. The first round of data collection was targeted at pharmacists practising in patient-facing roles in the UK and advertised using social media. Those who completed the initial round of data collection were asked for consent to be invited to take part in subsequent rounds of data collection, in October/November 2020 (round 2) and February/March 2021 (round 3).

The timing of each round of data collection represented different circumstances of the COVID-19 pandemic in the UK, in terms of the number of reported COVID-19 cases, hospital admissions, deaths, lockdown restrictions and introduction of the COVID-19 vaccination.⁹ (appendix 1) The first survey (open 8th June- 17th July 2020), corresponded with the UK coming out of the first wave of COVID-19 cases, although many lockdown restrictions were still imposed.⁹ The second survey (open 27th October - 24th November 2020) was positioned around the beginning of a second lockdown, with tiered regional restrictions, and increasing numbers of hospital COVID-19 admissions. The third survey (open 23rd February - 26th March 2021) represented the tail-end of the highest wave of COVID-19 hospital admissions, a sharp rise in first dose vaccinations given and the end of the third lockdown restrictions.

Data Collection

The online surveys was hosted on JISC Online Surveys[®]. The survey comprised four sections. The first section contained three validated measures of resilience, burnout and wellbeing: Connor Davidson Resilience Scale[®] (CD-RISC 10), Oldenburg Burnout Inventory[®] (OLBI), and Short Warwick Edinburgh Mental Well-Being Scale[®] (SWEMWBS), respectively.¹⁰⁻¹² The second section comprised four open questions, which provided scope for the respondents to describe what they found most challenging at work, any positive changes in their working practice, what they would consider to be the most useful to support them at work, and any further comments they wished

to give. The third section asked for their demographics, such as sector in which they practise, years qualified as pharmacist, gender and carer responsibilities. The final section of the first survey asked participants if they consented to being contacted again to participate in the follow-up surveys (round two and three).

Surveys two and three were also hosted on JISC Online Surveys[®], and participants entered a unique identifier so that their responses from each round could be matched. Participants re-completed sections one and two (validated scales and free text questions), and only completed section 3 if their demographics (such as work setting) had changed since their previous survey completion.

Analysis of qualitative data

Free text comments were exported to Microsoft Excel to complete inductive and deductive thematic analysis according to the ABC-X model of stress (figure 1). Initial inductive analysis was undertaken to code the responses. These codes were then grouped together according to the ABC-X model, to give four key themes: stressors, perceptions, resources and organisational factors. To minimise bias, inductive codes for all three rounds were assigned by an independent researcher who had not been involved in the data collection. After the codes were assigned and grouped, a different researcher from the core study team checked codes and theme grouping, any differences were discussed and agreed. Content analysis was undertaken to quantify the mentions per participant (mpp) of key concepts, enabling comparisons of frequency between each round of data collection.

Analysis of quantitative data

Quantitative responses from Jisc Online Surveys[®] were exported into IBM SPSS Statistics for Windows[®], version 25, for inferential and descriptive analysis. Likert type questions and background information questions were handled as categorical data and summarised using proportions and frequency counts.



RESULTS

A total of 202 pharmacists responded to round 1. Of the 145 respondents that consented to be contacted for follow-up rounds, 88 responded to round 2 and 86 to round 3 (Table 1). Demographics for respondents is presented in table 2 and

the number of year registered as a pharmacist in table 3. To assess non-respondent bias, scores of initial demographics were compared. There were no significant differences between those who responded to all 3 rounds and those who did not, in terms of scores or initial demographics ($p>0.05$).

Table 1. Response rates for the three survey rounds

Survey round/date	Number of responses	Excluded	Final number for analysis	Notes re exclusions
1: June/July 2020	202	3	199	2 not patient facing; 1 not in UK
2: October/November 2020	88/145 (61%)	1	87	Change of role meant no longer patient-facing
3: February/March 2021	86/145 (59%)	4	82	2 excluded from round 1 responded to round 3; 1 had change of role and no longer patient facing; 1 submitted two responses so only the first was retained.

Table 2. Demographic information of participants, showing number who completed each question at each survey point. Note that demographics were assumed to be unchanged from round 1 unless the participant indicated otherwise.

	June/July 2020 (n=199)	October/November 2020 (n=87)	February/March 2021 (n=82)
	Number (%)	Number (%)	Number (%)
Location of main job	(n=195)	(n=87)	(n=80)
England	141 (72%)	63 (72%)	60 (75%)
Wales	38 (20%)	15 (17%)	14 (18%)
Northern Ireland	8 (4%)	4 (5%)	4 (5%)
Scotland	8 (4%)	5 (6%)	2 (3%)
Sector	(n=197)	(n=86)	(n=78)
Community	56 (28%)	18 (21%)	17 (22%)
GP practice	10 (5%)	3 (4%)	2 (3%)
Hospital	111 (56%)	55 (64%)	50 (64%)
Other*	13 (7%)	7 (8%)	5 (6%)
Split role*	7 (4%)	3 (4%)	4 (5%)
Employment status	(n=197)	(n=85)	(n=77)
Business owner	3 (2%)	1 (1%)	1 (1%)
Employee	186 (94%)	82 (97%)	74 (96%)
Self-employed	6 (3%)	2 (2%)	2 (3%)
Locum	2 (1%)	-	-
Working hours	(n=197)	(n=86)	(n=78)
Full time	133 (68%)	58 (67%)	50 (64%)
Part time	60 (30%)	24 (28%)	25 (32%)
Variable	2 (1%)	3 (4%)	2 (3%)
Other	2 (1%)	1 (1%)	1 (1%)
Gender***	(n=198)	(n=86)	(n=81)
Female	149 (75%)	66 (77%)	65 (80%)
Male	49 (25%)	20 (23%)	16 (20%)
Caring for dependents at home	(n=192)		
Yes	84 (44%)	-	-
No	108 (57%)	-	-

* 'other' and 'split' posts included roles in hospice / care-home / education / clinical commissioning groups / drug and alcohol teams / mental health crisis teams

*** assumption made that unchanged from June/July 2020 to February/March 2021



Table 3. Year of registration as pharmacist. Note that demographics were assumed to be unchanged from round 1 unless the participant indicated otherwise.

	June/July 2020 (n=199)	October/November 2020 (n=87)	February/March 2021 (n=82)
Year of registration as pharmacist	(n=197)	(n=87)	(n=82)
Range	1979-2020	1979-2019	1979-2019
Median	2006	2007	2005
Mode	2016	2013	2017
Before 1970	-	-	-
1970-79	2 (1%)	1 (1%)	1 (1%)
1980-89	26 (13%)	10 (11%)	9 (11%)
1990-99	44 (22%)	18 (21%)	21 (26%)
2000-09	50 (25%)	26 (30%)	27 (33%)
2010-15	38 (19%)	16 (18%)	12 (15%)
2016 or later	37 (19%)	17 (20%)	13 (16%)

Scores were calculated for the three validated scales used in the survey (table 4). As the short form of WEMWBS was used, scores were transformed in accordance with the WEMWBS instructions to allow comparison with other studies using the full version.¹² OLBI comprises two subscales; disengagement and exhaustion,¹¹ and these are presented alongside the overall score.

Longitudinal analysis of scores

Sixty-six individuals completed all 3 surveys. ANOVA with repeated measures analysis was undertaken on these data based on the 3 timepoints. Mean scores for SWEMWBS (n=64, p=0.708), CD-RISC-10 (n=65, p=0.259), OLBI total score (n=61, p=0.328), OLBI exhaustion subscale (n=63, p=0.161) and OLBI disengagement subscale (n=62, p=0.550) did not show any statistically significant change across the study period (n=66, p>0.05).

Paired comparisons of scores

Of the original 199 eligible respondents, 103 also completed round 2 and / or round 3. A Wilcoxon signed-rank test was used to compare an individual's scores for rounds 1 and 2, 2 and 3 and 1 and 3 as the data was not normally distributed. Although median scores for wellbeing and resilience decreased

between rounds 1, 2 and 3, the only significant difference was for transformed SWEMWBS between round 1 and round 2 (Z=-2.074, p=0.038), median score round 1 (22.35) and round 2 (21.54). For burnout there was a statistically significant difference in total OLBI score between round 1 and round 2 (Wilcoxon signed-rank, Z=-2.408, p=0.016), median score round 1 (39) and round 2 (41) and for exhaustion sub-scale score between round 1 and round 2 (Wilcoxon signed-rank, Z=-2.773, p=0.006), median score round 1 (21) and round 2 (22).

Comparative differences

Wellbeing: no significant differences were found in relation to gender, sector or experience. In round 3, participants who had registered as pharmacists in 1999 or earlier, had significantly higher wellbeing than those registered in 2010-2015 (p=0.019).

Resilience: differences were found in round 1 in relation to gender (males were more resilient, p=0.048, Mann Whitney 2-tailed) and sector (those in split roles had higher resilience than those in community (p=0.024), GP surgery (p=0.01) or hospital (p=0.015) sectors (Mann Whitney 2-tailed) but numbers were very small for split / GP surgery and CIs were wide. No differences were found in round 2 or round 3. In round 3 (but not earlier rounds), a difference (Mann Whitney

Table 4. Scores for the three scales at each survey round: SWEMWBS measured wellbeing, CD-RISC-10 resilience and OLBI burnout.

	June/July 2020	June/July 2020	October/November 2020	October/November 2020	February/March 2021	February/March 2021
	Range	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)
Transformed SWEMWBS (n=198 / n=87 / n=82)	7-32.55	21.5 (SD=3.4)	16.36-29.31	21.3 (SD=2.8)	14.08-29.31	21.43 (SD=3.0)
CD-RISC-10 (n=198 / n=88 / n=82)	0-40	26.8 (SD=6.5)	10-40	25.9 (SD=6.4)	4-39	25.9 (SD=6.6)
Oldenburg Burnout Inventory (n=191 / n=84 / n=82)	20-60	40.4 (SD=7.4)	25-59	41.0 (SD=6.2)	26-63	40.3 (SD=8.2)
OLBI disengagement (n=194 / n=86 / n=82)	9-31	19.3 (SD= 4.2)	11-28	19.1 (SD=3.3)	11-32	19.0 (SD=4.3)
OLBI exhaustion (n=195 / n=85 / n=82)	10-31	21.1 (SD=4.0)	9-31	21.9 (SD=3.7)	9-31	21.3 (SD=4.6)



2-tailed) was found in relation to experience; those registered in 1999 or earlier had significantly higher resilience than those registered in 2000-2009 ($p=0.046$) or 2010-2015 ($p=0.034$).

Burnout: Community pharmacists had higher burnout and disengagement scores in round 1 compared with hospital pharmacists ($p=0.008$ and $p<0.0005$, 2-tailed unpaired t-test) but by round 2 and 3 there were no longer any significant differences. In terms of experience, those registered in 1999 or earlier had lower total burnout, exhaustion and disengagement scores in round 3 than the other groups (table 5).

Qualitative Analysis of free-text comments

Within each theme (stressors, perceptions, resources and organisational), content analysis of key concepts/codes

demonstrated the prevalence and change between each round of data collection (table 6)

Stressors

A number of different stressors were described by participants, including the work environment, increased workload, negative patient attitudes and external stressors.

Work Environment

Pharmacists mentioned working environment as a stressor in all three rounds of data collection, with this being most frequently mentioned in round 1 (table 6). This included social distancing requirements with colleagues, adaptations to pharmacy layouts/workflow, infection control measures, working from home, and challenging or negative work atmosphere.

Table 5. Burnout scores for round 3 on basis of year of registration (Mann Whitney 2-tailed)

	2016-2020	2010-2015	2000-2009	1999 or earlier
OLBI total mean (95% CI)	43.62 (38.8-43.4)	44.17 (39.6-48.7)	40.81 (37.8-43.9)	36.83 (33.8-39.9)
p-value comparison with 1999 or earlier	0.019	0.005	0.032	-
OLBI exhaustion mean (95% CI)	22.46 (19.8-25.1)	23.33 (20.7-25.9)	21.78 (20.2-23.4)	19.63 (17.7-21.5)
p-value comparison with 1999 or earlier	0.051	0.012	0.041	-
OLBI disengagement mean (95% CI)	21.15 (18.5-23.8)	20.83 (18.6-23.1)	19.04 (17.3-20.8)	17.20 (15.9-18.5)
p-value comparison with 1999 or earlier	0.007	0.007	Not significant	-

Table 6. Content analysis of free-text qualitative comments

	Round 1 (June/July 2020)	Round 2 (October/November 2020)	Round 3 (February/March 2021)
Stressors			
Work environment	0.61 (n =117/195)	0.49 (n=43/87)	0.35 (n=28/80)
PPE	0.19 (n = 38/195)	0.07 (n=6/87)	0.02 (n=2/80)
Working from home	0.09 (n = 18/195)	0.1 (n=9/87)	0.08 (n= 6/80)
Supporting work colleagues	0.07 (n=14/195)	0.05 (n=4/87)	0.07 (n=6/80)
Negative work atmosphere	0.12 (n=23/195)	0.08 (n=7/87)	0.13 (n=10/80)
High workload	0.34 (n=66/195)	0.53 (n=46/87)	0.32 (n=26/80)
Poor patient attitudes	0.17 (n=33/195)	0.04 (n=3/87)	0 (n=0/80)
External stressors	0.06 (n=11/195)	0.05 (n=4/87)	0.06 (n=5/80)
Perceptions			
Concerns re risk of COVID-19	0.07 (n=14/195)	0.18 (n=18/87)	0.04 (n=3/80)
Enhanced skills	0.05 (n=10/195)	0.06 (n=5/87)	0.11 (n=9/80)
Positive working in MDT	0.14 (n=27/195)	0.09 (n=8/87)	0.06 (n=5/80)
Feeling of appreciation	0.06 (n=11/195)	0.05 (n=4/87)	0.13 (n=10/80)
No positives	0.22 (n=43/195)	0.37 (n=32/87)	0.1 (n=8/80)
Unable to switch off	0.03 (n=6/195)	0.1 (n=9/87)	0.06 (n=5/80)
Resources			
Flexible working	0.08 (n=16/195)	0.03 (n=3/87)	0.03 (n=2/80)
Supportive Intra-professional team	0.22 (n=43/195)	0.19 (n=17/87)	0.16 (n=13/80)
Organisational			
Lack of protected breaks	0.31 (n=61/195)	0.25 (n=22/87)	0.3 (n =24/80)
Lack of protected study time	0.02 (n=4/195)	0.07 (n=6/87)	0.09 (n=7/80)



Supportive local management	0.06 (n=12/195)	0.10 (n=9/87)	0.04 (n=3/80)
Poor local management	0.18 (n=35/195)	0.24 (n=21/87)	0.10 (n=8/80)
Being short staffed	0.17 (n=33/195)	0.34 (n=30/87)	0.4 (n=32/80)
Poor national management	0.1 (n=20/195)	0.07 (n=6/195)	0.06 (n=5/195)
Post stress trajectory			
Bon-adaption	0.03 (n=5/195)	0.10 (n=9/87)	0.16 (n= 13/80)
Burnout	0.07 (n=13/195)	0.22 (n=19/87)	0.29 (n=23/80)

Social distancing had a large effect on work related stress. This was reported as pharmacists struggling to communicate appropriately with patients and impacting on work support networks such as being unable to take breaks and lunch with colleagues.

In June/July 2020, participants working in community pharmacies mentioned the stress related to having too many patients inside the pharmacy or a queue of patients “out the door”. Pharmacists felt this stress was partially addressed by posters limiting the number of patients within the pharmacy.

Only having to deal with one or two customers in the shop at one time makes me feel less stressed. Female, Community pharmacist. Round 1

Implementing new infection control methods at work, such as wearing PPE, was a key stressor. Multiple respondents highlighted wearing PPE for extended periods of time made them feel extremely uncomfortable and claustrophobic, generating anxiety in some respondents. The numerous and lengthy steps involved in donning and doffing PPE resulted in some hospital pharmacists dreading working on wards. Community pharmacists highlighted in Round 1, the stress related with limited or inadequate supplies of PPE. Pharmacists also commented on the negative effect of wearing PPE when communicating with patients and colleagues. However, these practices became normalised by the time of data collection for round 3, as evidenced by the mentions per participant of PPE (table 6).

Stressors related to working from home included poor set ups, such as cramped spaces or lacking appropriate hardware or software. Working from home also meant that many individuals felt isolated and wanted to return to work due to the lack of socialisation at home. Respondents reported being extremely frustrated and helpless as they were unable to contribute to their team as much as they would like to. Additionally, working from home blurred the distinction between home life and work life meaning that many felt they couldn't escape work to have a rejuvenating break.

It's harder to deal with difficult phone calls to patients when working at home, it's harder to leave the stress behind at work and I realise I would often talk it out with colleagues. Female, GP pharmacist Round 1

A consistent concept throughout the study, as participants noted, was the extra stress of not just managing themselves but also supporting their colleagues in the immediate pharmacy team, who were stressed or burned out. It was highlighted that

all the different members of staff surrounding the respondents were uniquely affected by the COVID pandemic and had their own personal pressures; however, these would often seep into work resulting in a negative work environment. This negative atmosphere had improved by round 3 (table 6), which pharmacists linked to a feeling of hope associated with the uptake of the COVID-19 vaccine and talks of exiting lockdown strategies.

I felt more optimistic [sic] about 2021/22 - in particular a belief that things will return to near normal. Male, Hospital pharmacist. Round 3

Workload

Longitudinally, there were consistently frequent mentions of high workloads as a key stressor for participants (table 6). Reasons for the high workload varied throughout the three rounds and the issue was multifaceted. In round 1 this was most frequently due to increased numbers of patients requesting prescriptions in a community and GP settings. In round 2, it was mostly commonly related to treating large numbers of COVID-19 patients in a hospital setting. In round 3, delivering COVID-19 vaccinations were the most frequently mentioned workload pressure.

Pharmacists also reported an uneven spread of the workload. For example, those without carer responsibilities or underlying health conditions, felt like they were often asked to do more or cover colleague's workload. Respondents also noted issues with being short staffed due to staff being off sick with COVID-19, self-isolation and stress. Covering staff absence and the general lack of staff within healthcare resulted in those that were working having a larger list of demands placed on them. This high workload could not be finished in a normal working day, requiring some participants to work overtime, including unpaid work.

It's exhausting in itself, in addition to covering a couple of wards a day to cover for sickness/absences and feel it is taking a toll on my mental and physical health. It's not sustainable long term. Female. Hospital pharmacist. Round 2

Patient factors

In round 1, pharmacists frequently described poor patient attitude as a key stressor (table 6). This included patients being aggressive, abusive or demanding, and refusing to comply with mask wearing or social distancing guidance. This was reported across all sectors but was most commonly reported by community pharmacists and was felt to be exacerbated



by lack of recognition or understanding from patients of the community pharmacists' clinical roles.

Trying to change patient attitudes towards healthcare and actually tell patients what our actual roles are. We don't just stick a label on a box, we are clinicians and we have a significant part to play in primary care. Male, Community pharmacist Round 1

In round 2, hospital pharmacists mentioned the emotional impact of poor patient outcomes and seeing patients die under their care. Additionally, in round 3, GP and hospital pharmacists explained the pressure of managing patients whose health had deteriorated due to not accessing health care earlier during the COVID-19 pandemic.

Dealing with increased pressure of having more non covid patients that are really ill as a result of not seeking help earlier. Female, Hospital Pharmacist Round 3

External stressors

Whilst work-life was a large stressor for pharmacists, it is important to note how external stressors and home life affected pharmacists' stress levels. This was consistent longitudinally (table 6) and included dealing with personal illness (due to COVID-19 and other causes), not being able to switch off from work, carer responsibilities, home schooling and restrictions seeing family and friends due to COVID-19 social distancing guidance.

Managing childcare with no family support. No flexibility from work. No school. No nursery. Home schooling and working. Jealousy of friends on furlough or working from home. Wish I could do the same. Wish I didn't have to come to work in a dangerous place. Female, Hospital Pharmacist. Round 1

Perceptions

The codes for pharmacists' perceptions were categorised into: COVID-19 risk, and positive and negative attitudes towards working during the COVID-19 pandemic.

COVID-19 risk

Throughout all three rounds, pharmacists stated that they had concerns regarding the risk of COVID, particularly to their own self, but also the risk of spreading it to their family (table 6). Pharmacists concerns regarding the risk of COVID was highest during October 2020, and pharmacist were most concerns about the impact of a second peak of COVID-19 cases. There was also "fear of variants" and concerns about the "rate of change". Overall, pharmacists felt apprehensive about the uncertainty of the trajectory of the pandemic.

It's hard because we don't know when it [COVID-19 pandemic] will end. Female. Community Pharmacist, Round 1

Positive attitudes

Despite the stress associated with COVID-19 pandemic, some pharmacists saw this as an opportunity for personal development, to do more clinical work and enhance their skills. This was particularly notable in June/July 2020 and February/

March 2021 (table 6) and was described by pharmacists to reflect their training to cover new roles such as intensive care (June 2020), clinical trials (October 2020) and vaccination centres (Feb 2021). Hospital pharmacists described being able to network with wider members of the multi-disciplinary team (MDT) in these new roles, demonstrate their wide variety of expertise, and break down traditional healthcare hierarchies. Many pharmacists felt their contribution and work during the COVID-19 pandemic was "extremely rewarding".

We have achieved great things. So I do feel that I am contributing significantly to society and to the health of our population. That has given us all a lift. Male, CCG pharmacist. Round 3

Pharmacists reported a feeling of appreciation and having their work acknowledged by both the public, colleagues and managers in all three rounds, with the highest at round 3 (table 6). This made pharmacists "feel good" about themselves and their profession, consequently leading to a more positive working environment. Pharmacists described recognition of their contribution to the COVID-19 pandemic, for example with the setting up of vaccination centres and helping with the early COVID-19 advice.

I feel more valued in my work and I feel needed.....which has given me more purpose in my work. Male, Community Pharmacist. Round 3

Negative attitudes

In all three rounds, the most prominent negative perception was when the respondents were asked "how has your working practice changed in a positive way?", was multiple responses stating: "no positives", "nothing" or "unsure". These negative feelings were most prominent in June/July 2020.

In all three rounds, participants described how they struggled to switch off after work and were "unable to properly relax". However, this was most prominent in October/November 2020 and February/March 2021 (table 6). With the shift to working from home many felt their "work seeped into their personal life" and that they "couldn't escape work" which disrupted their sleep and added to the build-up of stress.

It's been an extremely difficult time. I find usually I am much better at coping with work related stress but at the moment, my inability to cope or switch off this stress response is affecting me more. Female Hospital Pharmacist. Round 1

Throughout all three rounds, participants talked about a lack of motivation for their job (table 6). Some participants described the build-up of pressure, long work hours, exhaustion and isolation as hugely influencing their motivation to "get up and go to work".

Finding the energy to come into work and put 100% into my daily tasks. I have no motivation to improve services, I just want to get through the day and go home. Female, Hospital pharmacist. Round 1

Resources

Pharmacists used a range of resources to deal with work-



related and COVID-19 stress. This included the ability to work flexibly, intra-professional support networks and supportive environments outside of work.

Flexible working

The most frequently mentioned resource to manage stress was the ability to work flexibly (table 6). Hospital pharmacist described changes in the working patterns to work shifts, for example three long days working, followed by 3 days off.

The long days were tiring, but I enjoying having a longer break to rest, recover and forget about work in-between. Male, hospital pharmacist. Round 2

Those working at home reported being more autonomous, having more free time as they were not having to commute and feeling safer as they were less exposed to COVID-19. The use of technology enabled pharmacists to work more productively and streamline processes.

Using Microsoft teams more for meetings is useful and means you can attend meetings from home and in the long term wont [sic] need to travel so much. It has caused us to look at how we manage chemotherapy assessment processes in clinic and which appts we can manage by telephone to reduce pt [patient] appts to hosp..... There will be benefits to patients and staff in the long run from how we have changed our processes. Female, Hospital pharmacist, Round 1

Intra-professional support

A resource utilised to manage stress, raised throughout the study, was the support participants were receiving from their colleagues. Pharmacists described "teams becoming closer" and an "increase in camaraderie". Pharmacists consistently felt supported by their colleagues (table 6).

Our team is closer and more confident about what we can achieve and overcome together" Male, Community Pharmacist, Round 2

Many of the participants also mentioned that although they could not socialise with family and friends due to COVID-19 restrictions, they enjoyed coming into work so they could socialise and talk to their colleagues. This was most prevalent in October 2020 (table 6), which coincided with one of the UK national COVID-19 lockdowns. Conversely, those pharmacists who were working from home reported struggling due to lack of socialising and informal chats with colleagues.

Networks and activities outside of work

During June/July 2020 and October/November 2020 respondents talked about how their relationships outside of work, such as with partners or friends, helped them to relax and unwind. Other respondents however, particularly those who were working from home did comment on how the close proximity with their partners caused tensions in their relationships.

In June/July 2020 a few participants talked about activities they were completing outside of work to help them de-stress. This varied from using mediation apps to regular exercise. This

helped to improve their wellbeing and allowed them to relax after work. However, this was mentioned alongside a frustration at the lack of shops, restaurants and leisure activities open due to the various COVID-19 lockdown restrictions.

Organisational

The key coded issues that affected pharmacists within their organisation were protected work breaks, local management and national guidance.

Work breaks

In all three rounds, community pharmacists reported wanting protected time to have a lunch break, to avoid interruption and get a respite from the work pressures. However, many community pharmacies stayed open for lunch preventing this, and in those where lunch breaks were initially allowed, this was then taken away once the initial panic subsided.

Bring back the closure over lunch so everyone gets a proper, uninterrupted break". Female, Community Pharmacist. Round 3.

Pharmacists also felt they had lost protected study time to complete professional development, training or education. The frequency of this being mentioned increased over the study time period (table 6). Participants found it unfair that they had to complete professional development in their own time.

Many reported wanting to take time off for holidays but not being able to, due to staff shortages and this was coupled with a frustration at not being able to travel during the COVID-19 lockdowns.

Local Management

Throughout the study, participants referenced management and managerial support as pivotal to their coping with work-related stress. Some pharmacists reported supportive managers, who regularly checked in on them with understanding and empathy for their stressful situations. Some managers proactively introduced support measures that were well received by the pharmacists, such as regularly reviewing their workload and wellbeing services.

I do have supportive managers and I think that is the most useful thing, so that you can talk through concerns and changes at work. Female, Hospital pharmacist, Round 1

However, poor management was more frequently mentioned (table 6). In hospital, pharmacists talked about frustration at poor communication and direction from managers.

Differing opinions, lack of clarity and lack of direction from senior team. Female, GP Pharmacist, Round 1

In community, pharmacists explained that managers continued to put pressures on them to meet the targets for paid services despite the increased COVID-19 related workload. With community pharmacists highlighting that even prior to the pandemic, the pressures placed upon them to meet targets were immense.

Constant communication with head office. Being told weekly



that we need to increase script items and OTC sales or there will be a 'discussion' about staffing hours. Male, Community pharmacist, Round 1

Staffing shortages were highlighted throughout the duration of the study as a key stressor, which increased over time (table 6). Pharmacists described staff shortages leading to additional pressures on the staff who were able to work, with some participants feeling concerned as they could not provide the same quality of care for patients and safety concerns.

Lack of staffing means I have to dispense and self check. I try to do this as safely as possible. Female, Community pharmacist, Round 3

Some pharmacists described how these were long-standing issues, with staff shortages before the pandemic, and the pandemic exacerbating this further.

The lack of staffing is horrendous. This was a problem before the pandemic and it's even worse now. Male, Community pharmacist, Round 2

National Guidance

A key stressor for pharmacists was understanding and implementing new and rapidly changing guidance from the government, in addition to their already high workload. This was most prevalent in round 2 (table 6). Many individuals suggested changes they wanted to see, such as a reformed NHS contract to abolishing prescription charges, and clear guidance.

It has felt NHS has abandoned pharmacists and done little to protect them versus GPs. Female, Community pharmacist Round 1

Post-Stress Trajectory

Pharmacists reported both bon-adaption and burnout as a result of working through the COVID-19 pandemic. As detailed in the themes above, some individuals did experience a positive work environment, feeling that they had been well supported during the pandemic and as such, had developed a good skillset on coping with crises.

COVID was a great opportunity to collaborate and learn lots of material in quick succession. It allowed us to think differently and implement services which were highly effective for the team/patients. It enabled my team to develop themselves and become more efficient. Female Community Pharmacist., Round 3

In contrast, due to the combination of the multitude of stressors, lack of sufficient resources and poor organisational systems, many pharmacists reported symptoms of burnout including exhaustion, low staff morale and low motivation. These participants reported being signed off from work with stress, considering or already having decided to leave the profession, or moving to a different company/trust or sector of pharmacy, where they felt they would be more supportive.

It's got to the point during the worst days during lockdown, that I've seriously considered leaving work mid-way through the day and never coming back to Pharmacy again. Female,

Community pharmacist, Round 1

DISCUSSION

This study explored changes in resilience, burnout and wellbeing for pharmacists longitudinally during the COVID-19 period, from June 2020 to March 2021. Three validated scales were used to analyse the individuals' wellbeing (SWEMWBS), resilience (CD-RISC) and burnout (OBI), triangulating quantitative with qualitative data to strengthen the findings and recommendations. We found qualitative data consistently supporting suggested trends from the quantitative data in terms of all three areas of mental wellbeing, resilience and physical and cognitive aspects present in exhaustion.

Overall pharmacists' mean SWEMWBS wellbeing scores were consistently lower than the UK population mean of 23.5;¹³ with scores across the study period of 21.6, 21.3 and 21.3 in rounds 1-3 respectively. These wellbeing scores were reinforced through the qualitative findings, with descriptions of poor morale, feelings of sadness and hopelessness. Pharmacists' mean CD-RISC resilience scores, also remained consistently below than the population mean of 31.78,¹⁴ with scores of 26.9, 25.9 and 25.9 in rounds 1-3 respectively. This was further supported by the qualitative data, with participants describing a lack of personal and institutional coping mechanisms to support their resilience. Pharmacists' mean OBI scores for burnout by remained higher than the population mean of 34.4;¹⁵ with score of 40.4, 41, 40.3 in rounds 1-3 respectively. The qualitative data described pharmacist exhaustion, disengagement, lack of motivation and consideration of leaving the profession.

Stressors

The main stressors identified within this study were workload, PPE and patient attitudes. Increased and unpredictable workloads were shown across pharmacy sectors during the COVID-19 pandemic^{16,17} contributing to pharmacists' stress. This is of concern as increased workload, rushing and interruptions has been shown to increase the likelihood of errors and impacts patient safety.^{18,19} Wearing of PPE has been shown to impair communication with patients and colleagues, and can lead to discomfort and thermal stress over prolonged periods²⁰. The lack or variable provision of PPE has also been shown to be a source of stress.²¹

Pharmacists within this study mentioned the stress and upset caused by poor patient attitude, such as being abusive or rude. A UK study of 206 pharmacists, found that 89% reported inappropriate behaviour from patients or their carers related to drug shortages and rationing of over the counter medicines.²² Other COVID-19 pharmacist studies have reported verbal, physical abuse from patients and damage to the property.²³ Generally, it has been found that the public have a limited awareness of the roles that pharmacists undertaken, and that educating the public on the extensive and vital roles that pharmacists undertake, could improve patients attitudes, appreciation and better use of these services.²⁴



Pharmacists' Perceptions

Mixed attitudes towards working during the COVID-19 pandemic were described. Pharmacists felt positive surrounding up-skilling to manage the new demands during the COVID-19 pandemic. This supports the suggestion that during times of disaster within health system, pharmacists' traditional limitations on their roles are removed and their roles expand to help deal with the crisis.²⁵ As these hierarchies of roles break within the healthcare system it also allows pharmacists to utilise their skills to help with the pandemic response; an example of this is pharmacists roles in setting up vaccination centres.

Perceptions of recognition and gratitude by patients was shown to be variable. For some pharmacists a patient thanking them helped boost their attitudes towards their role and a more positive working environment. Whilst for others, the overlooking of pharmacists compared to other health care professionals lead to feelings of unfairness and frustration. This is also reflected in the literature, with studies demonstrate both pharmacists being more valued by patients,^{26,27} whilst other showing a lack of appreciation and acknowledgment of the vital role pharmacists during the COVID-19 pandemic.²⁸

Concerns regarding being infected with COVID-19, and in particular putting their family at risk, added to pharmacist stress. Other studies have shown this to be the highest cause of stress for healthcare professionals during the COVID-19 pandemic.²⁹ This was exacerbated by the lack of PPE (as mentioned above), and community pharmacies being one of the first healthcare providers to be exposed to COVID-19, and remaining open to the public throughout the pandemic.³⁰

Resources

There were a variety of different resources that pharmacists used to cope with the increased stressors present throughout the pandemic. Working from home was seen mostly seen as positive change for pharmacists with regards to their work/life balance, for example time saved commuting allowed them to spend more time with their family or undertaking leisure activities. However, this also came with its own set of challenges for some of the participants. Working from home meant that many individuals felt isolated, and some lost the distinction between home life and work life and were unable to switch off. Working from home has been shown to be both a protector and contributor to stress and mental wellbeing.³¹⁻³³

Having strong intra and inter-professional relations and a sense of camaraderie in the team was brought up by a number of respondents a positive resource to cope with the stressors. Literature has shown creating good interprofessional relations between healthcare professionals can result in better care and increased staff retention.³⁴

Organisational factors

This paper highlights the impact the organisation plays within resilience and an organisation's ability to improve or worsen employee wellbeing particularly during times of healthcare crisis such as a pandemic. This supports the

literature that pharmacies adapted reactively throughout the COVID-19 pandemic, such as changes to pharmacy medication prescribing and supply processes, and staff working patterns and practices.^{35,36} Whilst some pharmacists reported feeling supported and had empathetic managers, many more commented regarding poor management and organisational systems which were detrimental to their work related stress. Other studies have also demonstrated pharmacists frustration with local COVID-19 guidelines, lack of provision of PPE and lack of preparedness to deal with supply chain issues.²³ This supports the theory that organisational resilience is key in workforce resilience rather than just individual resilience.⁸

Several pharmacists highlighted their thoughts on the UK's national management of the pandemic with many finding the Government's response poor and inadequate. Unlike the local management, no respondents commented on any positives relating to the national management. There were a variety of issues raised, from the lack clear guidance, to the need to increase the autonomy of pharmacists. Another study highlighted similar findings with healthcare professionals working within the NHS found that 88% of respondents were not happy with Britain's preparation of the pandemic.³⁷

Post Stress Trajectory

A large proportion of pharmacists described signs and symptoms of prolonged stress, emotional detachment, fatigue and burnout. This support findings in other pharmacy studies of increased reporting of stress, poor mental and physical health,³⁸ burnout,³⁹ emotional exhaustion, depression, and anxiety⁴⁰ and the significant negative effects of COVID-19 on pharmacist mental health and wellbeing.⁴¹ Some respondents mentioned considering leaving the profession. This is of serious concern, as this could further worsen pharmacist workload and stress, leading to potential detrimental impacts on patient care.⁴² With pharmacists being in shortage within the UK it is important to make every effort to retain pharmacists.⁴³

It must also be noted that, some individuals experienced bonadaption (a positive result to a crisis) but it was far fewer than burnout individuals. Bonadaption is not a well-documented phenomenon within studies particularly within the healthcare sphere as they tend to have more of a focus on burnout. This is one of the few papers that provided scope for pharmacists to talk about their bonadaption where applicable.

CONCLUSION

Whilst traditionally resilience has thought to be an individual skill, further research including this paper highlights the important role organisational resilience plays within the health system. Utilising the ABC-X model of stress we can contextualise the dynamic interconnectedness of resilience. This allows us to see the overarching role organisational resilience has to support or protect the wellbeing and resilience of pharmacists. This adds to the growing body of evidence that organisational resilience is key within the healthcare system and has a greater impact on wellbeing than individual resilience. This paper highlights the need to provide services to pharmacists to



protect their wellbeing, consequently having a beneficial result on the patients they treat too.

ACKNOWLEDGEMENT

We would like to acknowledge and thank Dr Karen Whitfield, for initiating a global community of practice for pharmacy workforce resilience. This community of practice brings together researchers and educators with shared interests in workforce wellbeing and resilience.⁴⁴

CONFLICTS OF INTEREST STATEMENT

There was no conflict of interests between the authors of this paper and the research participants.

FUNDING

This research was not funded.

AUTHORS CONTRIBUTION: Catherine Langran: conceptualisation, data curation, formal analysis, investigation, methodology, project administration; Amina El-Beik: formal analysis; Louise Hughes: conceptualisation, data curation, formal analysis, investigation, methodology; Efi Mantzourani: conceptualisation, data curation, formal analysis, investigation, methodology; Kat Hall: conceptualisation, data curation, formal analysis, investigation, methodology; Sarah Willis: conceptualisation, data curation, formal analysis, investigation, methodology

References

1. Goff DA, Ashiru-Oredope D, Cairns KA, et al. Global contributions of pharmacists during the COVID-19 pandemic. *Journal of the American College of Clinical Pharmacy*. 2020;3(8):1480-92. <https://pubmed.ncbi.nlm.nih.gov/33043280/>
2. RPS. Workforce Wellbeing Report; Royal Pharmaceutical Society & Pharmacist Support. 2020.
3. Conley KM, Clark MA, Griek OHV, et al. Looking backward, moving forward: Exploring theoretical foundations for understanding employee resilience. *Industrial and Organizational Psychology*. 2016;9(2):491-7.
4. De Hert S. Burnout in healthcare workers: prevalence, impact and preventative strategies. *Local and regional anesthesia*. 2020;13:171. <https://doi.org/10.2147/lra.s240564>
5. Hall LH, Johnson J, Watt I, et al. Healthcare staff wellbeing, burnout, and patient safety: a systematic review. *PLoS one*. 2016;11(7):e0159015. <https://doi.org/10.1371/journal.pone.0159015>
6. Scanlan JN, Still M. Job satisfaction, burnout and turnover intention in occupational therapists working in mental health. *Australian occupational therapy journal* 2013;60(5):310-8. <https://doi.org/10.1111/1440-1630.12067>
7. Robertson HD, Elliott AM, Burton C, et al. Resilience of primary healthcare professionals: a systematic review. *British Journal of General Practice* 2016;66(647):e423-e433. <https://doi.org/10.3399/bjgp16x685261>
8. Austin Z, Gregory P. Resilience in the time of pandemic: the experience of community pharmacists during COVID-19. *Research in Social and Administrative Pharmacy* 2021;17(1):1867-75. <https://doi.org/10.1016/j.sapharm.2020.05.027>
9. IfG. Timeline of UK government coronavirus lockdowns and restrictions. Institute for Government analysis: 2022.
10. Davidson JR. Connor-Davidson Resilience Scale (CD-RISC)© Manual. 2003.
11. Demerouti E, Bakker AB. The Oldenburg Burnout Inventory: A good alternative to measure burnout and engagement. *Handbook of stress and burnout in health care*. 2008;65:78.
12. Stewart-Brown S, Tennant A, Tennant R, et al. Internal construct validity of the Warwick-Edinburgh mental well-being scale (WEMWBS): a Rasch analysis using data from the Scottish health education population survey. *Health and quality of life outcomes*. 2009;7(1):1-8. [10.1186/1477-7525-7-15](https://doi.org/10.1186/1477-7525-7-15)
13. Ng Fat L, Scholes S, Boniface S, et al. Evaluating and establishing national norms for mental wellbeing using the short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS): findings from the Health Survey for England. *Quality of Life Research*. 2017;26(5):1129-44. <https://doi.org/10.1007/s11136-016-1454-8>
14. Campbell-Sills L, Forde DR, Stein MB. Demographic and childhood environmental predictors of resilience in a community sample. *Journal of psychiatric research*. 2009;43(12):1007-12. <https://doi.org/10.1016/j.jpsychires.2009.01.013>
15. Delgadillo J, Saxon D, Barkham M. Associations between therapists' occupational burnout and their patients' depression and anxiety treatment outcomes. *Depression and anxiety*. 2018;35(9):844-50. <https://doi.org/10.1002/da.22766>
16. Abdelsadig Mohammed H, Elamin SA, El-Awaisi A, et al. Use of the job demands-resource model to understand community pharmacists' burnout during the COVID-19 pandemic. *Research in social and administrative pharmacy*. 2022;18(9):3568-79. <https://doi.org/10.1016/j.sapharm.2022.03.011>
17. Allinson M, Obeid L, Cornes K. Community pharmacists' experiences of working during lockdown. *Exploratory research in clinical and social pharmacy*. 2022;5:100121. <https://doi.org/10.1016/j.rcsop.2022.100121>
18. Holden RJ, Patel NR, Scanlon MC, et al. Effects of mental demands during dispensing on perceived medication safety and employee well-being: A study of workload in pediatric hospital pharmacies. *Research in social and administrative pharmacy*. 2010;6(4):293-306. <https://doi.org/10.1016/j.sapharm.2009.10.001>
19. Shao SC, Chan YY, Lin SJ, et al. Workload of pharmacists and the performance of pharmacy services. *PLoS One*.



- 2020;15(4):e0231482. <https://doi.org/10.1371/journal.pone.0231482>
20. Messeri A, Bonafede M, Pietrafesa E, et al. A web survey to evaluate the thermal stress associated with personal protective equipment among healthcare workers during the COVID-19 pandemic in Italy. *International journal of environmental research and public health*. 2021;18(8):3861. <https://doi.org/10.3390/ijerph18083861>
21. Mantelakis A, Spiers HVM, Lee CW, et al. Availability of Personal Protective Equipment in NHS Hospitals During COVID-19: A National Survey. *Annals of work exposures and health*. 2021;65(1):136-140. <https://doi.org/10.1093/annweh/wxaa087>
22. Zaidi STR, Hasan SS. Personal protective practices and pharmacy services delivery by community pharmacists during COVID-19 pandemic: results from a national survey. *Research in Social and Administrative Pharmacy*. 2021;17(1):1832-7. <https://doi.org/10.1016/j.sapharm.2020.07.006>
23. Lam W, Mey A, King MA, et al. The nature of conflict in community pharmacy – A pilot study of pharmacists' experiences during the COVID-19 pandemic. *Research in social and administrative pharmacy*. 2022;18(7):3164-3. <https://doi.org/10.1016/j.sapharm.2021.09.002>
24. Kelly DV, Young S, Phillips L, et al. Patient attitudes regarding the role of the pharmacist and interest in expanded pharmacist services. *Canadian Pharmacists Journal/Revue des Pharmaciens du Canada*. 2014;147 (4):239-47. <https://doi.org/10.1177/1715163514535731>
25. Watson KE, Schindel TJ, Barsoum ME, et al. COVID the catalyst for evolving professional role identity? A scoping review of global pharmacists' roles and services as a response to the COVID-19 pandemic. *Pharmacy*. 2021;9(2):99. <https://doi.org/10.3390/pharmacy9020099>
26. Goodhart AL, Johnson HA. The pharmacists behind the front lines. *Journal of the American Pharmacists Association* 2020;60(6):e35-e36. <https://doi.org/10.1016/j.japh.2020.07.007>
27. Hoti K, Jakupi A, Hetemi D, et al. Provision of community pharmacy services during COVID-19 pandemic: a cross sectional study of community pharmacists' experiences with preventative measures and sources of information. *International journal of clinical pharmacy*. 2020;42(4):1197-1206. <https://doi.org/10.1007/s11096-020-01078-1>
28. Elbeddini A, Prabakaran T, Almasalkhi S, et al. Pharmacists and COVID-19. *Journal of pharmaceutical policy and practice*. 2020;13(1):36-36. <https://doi.org/10.1186/s40545-020-00241-3>
29. Wang H, Liu Y, Hu K, et al. Healthcare workers' stress when caring for COVID-19 patients: An altruistic perspective. *Nursing ethics*. 2020;27 (7):1490-1500. <https://doi.org/10.1177/0969733020934146>
30. Cabas P, Di Bella S, Giuffrè M, et al. Community pharmacists' exposure to COVID-19. *Research in Social and Administrative Pharmacy*. 2021;17(1):1882-7. <https://doi.org/10.1016/j.sapharm.2020.05.020>
31. Deole SS, Deter M, Huang Y. Home sweet home: Working from home and employee performance during the COVID-19 pandemic in the UK. *Labour economics*. 2023;80:102295. <https://doi.org/10.1016/j.labeco.2022.102295>
32. Giovanis E, Ozdamar O. Implications of COVID-19: The Effect of Working From Home on Financial and Mental Well-Being in the UK. *International journal of health policy and management*. 2022;11(9):1635-41. <https://doi.org/10.34172/ijhpm.2021.33>
33. Delbosc A, Currie G, Jain T, et al. The 're-norming' of working from home during COVID-19: A transtheoretical behaviour change model of a major unplanned disruption. *Transport policy*. 2022;127:15-21. <https://doi.org/10.1016/j.tranpol.2022.08.007>
34. Piers RD, Versluys K, Devoghel J, et al. Interprofessional teamwork, quality of care and turnover intention in geriatric care: A cross-sectional study in 55 acute geriatric units. *International Journal of Nursing Studies*. 2019;91:94-100. <https://doi.org/10.1016/j.ijnurstu.2018.11.011>
35. Pedersen CA, Schneider PJ, Ganio MC, et al. ASHP national survey of pharmacy practice in hospital settings: Impact of COVID-19 pandemic on pharmacy operations—2020. *American journal of health-system pharmacy* 2021;78(18):1701-12. <https://doi.org/10.1093/ajhp/zxab212>
36. Barry HE, Cadogan CA, O'Reilly E, et al. Changes to community pharmacy practice during the COVID-19 pandemic: a cross-country documentary analysis. *The International journal of pharmacy practice* 2022;30 (Supplement-1):i21-i22. <https://doi.org/10.1093/ijpp/riac019.029>
37. Iqbal MR, Chaudhuri A. COVID-19: Results of a national survey of United Kingdom healthcare professionals' perceptions of current management strategy—A cross-sectional questionnaire study. *International Journal of Surgery*. 2020;79:156-61. <https://doi.org/10.1016/j.ijisu.2020.05.042>
38. Tobia L, Muselli M, De Luca F, et al. Community pharmacists' perceptions and experiences of stress during COVID-19. *Journal of pharmaceutical policy and practice*. 2023;16(1):17-17. <https://doi.org/10.1186/s40545-023-00523-6>
39. Jones AM, Clark JS, Mohammad RA. Burnout and secondary traumatic stress in health-system pharmacists during the COVID-19 pandemic. *American journal of health-system pharmacy*. 2021;78(9):818-24. <https://doi.org/10.1093/ajhp/zxab051>
40. Samir AlKudsi Z, Hany Kamel N, El-Awaisi A, et al. Mental health, burnout and resilience in community pharmacists during the COVID-19 pandemic: A cross-sectional study. *Saudi pharmaceutical journal*. 2022;30(7):1009-17. <https://doi.org/10.1016/j.jsps.2022.04.015>
41. Elbeddini A, Wen CX, Tayefehchamani Y, et al. Mental health issues impacting pharmacists during COVID-19. *Journal of pharmaceutical policy and practice*. 2020;13(1):1-46. <https://doi.org/10.1186/s40545-020-00252-0>
42. O'Neill LD, Wallstedt B, Eika B, et al. Factors associated with dropout in medical education: a literature review. *Medical Education*. 2011;45(5):440-54. <https://doi.org/10.1111/j.1365-2923.2010.03898.x>



Langran C, El-Beik A, Hughes L, Mantzourani E, Hall K, Willis S. A longitudinal study of UK pharmacists' resilience, burnout and wellbeing throughout the COVID-19 pandemic. *Pharmacy Practice* 2024 Jul-Sep;22(3):2929.

<https://doi.org/10.18549/PharmPract.2024.3.2929>

43. Bates I, John C, Bruno A, et al. An analysis of the global pharmacy workforce capacity. *Human resources for health*. 2016;14(1):1-7. <https://doi.org/10.1186/s12960-016-0158-z>
44. Whitfields K, Arya V, Austin Z, et al. Developing a Global Community of Practice for Pharmacy Workforce Resilience—Meet GRiT. *Pharmacy*. 2021;9(2):110. <https://doi.org/10.3390/pharmacy9020110>

