The impact of the COVID-19 pandemic on pharmacy personnel in primary care

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Introduction: The coronavirus (COVID-19) pandemic has impacted healthcare worldwide. It has altered service delivery and posed challenges to practitioners in relation to workload, well-being and support. Within primary care, changes in physicians’ activities have been identified and innovative work solutions implemented. However, evidence is lacking regarding the impact of the pandemic on pharmacy personnel who work in primary care. Aim: To explore the impact of the pandemic on the working practice (including the type of services provided) and job satisfaction of pharmacists and pharmacy technicians within Scottish general practice. Due to the stressful nature of the pandemic, we hypothesise that job satisfaction will have been negatively affected. Methods: An online questionnaire was distributed in May–July 2021, approximately 15 months since initial lockdown measures in the UK. The questionnaire was informed by previous literature and underwent expert review and piloting. Analysis involved descriptive statistics, non-parametric statistical tests and thematic analysis. Results: 180 participants responded (approximated 16.1% response rate): 134 pharmacists (74.4%) and 46 technicians (25.6%). Responses indicated greater involvement with administrative tasks and a reduction in the provision of clinical services, which was negatively perceived by pharmacists. There was an increase in remote working, although most participants continued to have a physical presence within general practices. Face-to-face interactions with patients reduced, which was negatively perceived by participants, and telephone consults were considered efficient yet less effective. Professional development activities were challenged by increased workloads and reduced support available. Although workplace stress was apparent, there was no indication of widespread job dissatisfaction. Conclusion: The pandemic has impacted pharmacists and technicians, but it is unknown if changes will be permanent, and there is a need to understand which changes should continue. Future research should explore the impact of altered service delivery, including remote working, on patient care.

Introduction:

The coronavirus (COVID-19) was first identified in December 2019 and progressed to a global pandemic in March 2020 (World Health Organization, 2020a). The pandemic caused a dramatic shift in healthcare services worldwide as healthcare systems prioritised the treatment of COVID-19 (Moynhan et al., 2021). Healthcare workers rapidly changed roles and their daily routines to mitigate disruption whilst reducing COVID-19 transmission risk (Chudasama et al., 2020; Adam et al., 2021). Nations have reported disruption of routine healthcare affecting services in 90% of countries (World Health Organization, 2020b) including hypertension management, cancer treatment and rehabilitation services (World Health Organization, 2020c; Chudasama et al., 2020), with a predicted ongoing increase in non-COVID-19 mortality as a result (World Health Organization, 2020c).

During the pandemic, there was prioritisation of COVID-19 in hospitals and primary care practitioners were at the forefront of dealing with the pandemic within the community (Jovičić-Bata et al., 2021; Lasalvia et al., 2021). Within general practice, innovative work solutions have been implemented to cope with the pressures of the pandemic, including remote patient consultations and telephone triage systems (The Lancet Respiratory, 2020; Khan et al., 2020; Verity et al., 2020; Mughal et al., 2021; Smyrnakis et al., 2021; Wanat et al., 2021) which offered general practitioners (GPs) the flexibility to work from home (Khan et al., 2020). This was considered an opportunity to improve the work-life balance of GPs and aid recruitment; however, an increase in workload and work-related stress have been reported (Khan et al., 2020; Cebrián-Cuenca et al., 2021; Wanat et al., 2021). Additionally, the lack of physical examination in remote consultations elicited anxiety as GPs were concerned about missing essential information for diagnoses (Wanat et al., 2021). Concerns have also been raised regarding professional isolation due to
reduced patient and colleague interaction, alongside implications for professional development due to difficulties offering teaching and training within remote working environments (Khan et al., 2020).

Within primary care pharmacy, there is only limited research examining the impact of the pandemic on this workforce. Malson (2020) reflected that general practice pharmacists may have adopted remote working practices and virtual consultations in line with GPs (Malson, 2020). A qualitative study by Paudyal et al identified that general practice pharmacists have reduced provision of pharmacist-led specialist clinics, medication reviews and medicines reconciliation since the pandemic (Paudyal et al., 2021), yet these data were derived from only two participating general practice pharmacists. Additionally, a UK-wide survey conducted in Sept/Oct 2020 identified that the risk of leaving the profession was highest for pharmacists working in general practice (Royal Pharmaceutical Society, 2020), yet it is unclear if this is associated with the pandemic.

Within hospital and community pharmacy, there is growing evidence of the pandemic’s impact on these pharmacy personnel. An international review by Visacri et al. (2021) identified that service delivery had been altered within these sectors, with the community pharmacy sector in particular challenged by increasing workloads and prescriptions (Jovićić-Bata et al., 2021; Thorakkattil et al., 2021). Alterations in working practice in community and hospital sectors reduced contact with patients and increased telehealth communication (Adam et al., 2021; Koster et al., 2021; Parajuli et al., 2021; Thorakkattil et al., 2021), alongside the adoption of remote working (Bourdin et al., 2021). Additionally, pharmacists within these sectors have experienced increased stress and pressure (Imeri et al., 2021; McCallum et al., 2021) and reduced support for professional development since the pandemic (Imeri et al., 2021).

Scottish context

The role of pharmacists and pharmacy technicians within general practice is varied and includes a range of clinical and administrative activities (e.g. medication reviews, medication reconciliation) whilst working within a multidisciplinary primary care environment (Figure 1) (Claire et al., 2021). Typically, pharmacists and pharmacy technicians increase capacity within primary care by addressing medication-related problems and support the management of long-term conditions (Levene et al., 2020; Claire et al., 2021; The Scottish Government, 2017a). Although there are similarities across community pharmacy, general practice pharmacy and hospital pharmacy within Scotland and the UK, some differences are apparent (Royal Pharmaceutical Society, 2021a; The Scottish Government, 2017a). The role of community pharmacy involves medication supply to the general population, offering targeted clinical services and being easily accessible to offer advice for acute and minor ailments (The Scottish Government, 2017a). General practice pharmacists and technicians instead situate within a general practice premise, and their role tends to involve formal medication reviews and supporting the long-term management of patient’s chronic conditions (The Scottish Government, 2017a). The hospital pharmacy sector has a role of supplying medicines to in-patients, and clinical services are delivered alongside doctors, nursing staff and other healthcare professionals (The Scottish Government, 2017a). Within Scotland, community and hospital pharmacy sectors are well established, yet the primary care pharmacy workforce is in development with £20.4m invested since 2015 to integrate pharmacy personnel in general practice (The Scottish Government, 2017b). This led to the introduction of the pharmacotherapy service in 2018, designed to enhance the clinical role of pharmacy personnel whilst relieving GPs of certain duties. The service is stratified into three level of tasks defined as core, advanced and specialist (see Appendix 1 for descriptions of the 17 tasks) (The Scottish Government, 2018). Increasingly, pharmacy technicians focus on core tasks with support from pharmacists as needed, whilst pharmacists have an additional focus on advanced and specialist tasks (Stewart et al., 2020).

To understand the pandemic’s impact on general practice pharmacy personnel, this study explores how the working practice (e.g. the type and delivery of services provided) and the job satisfaction of pharmacists and pharmacy technicians changed during the first 15 months of the pandemic. Due to the stressful nature of the COVID-19 pandemic (Imeri et al., 2021; McCallum et al., 2021), we also hypothesise that job satisfaction will have been negatively affected by the pandemic.

Methods

An online questionnaire, hosted on Qualtrics© (version 2021), was used to ascertain participants’ perceptions. The study was conducted between May and June 2021. Ethical approval was granted by the Strathclyde Institute of Pharmacy and Biomedical Sciences Ethics Committee.

Sample

Eligible participants were pharmacists and pharmacy technicians who worked within a general practice setting in Scotland in May 2021. This included those who commenced employment before and after the pandemic was announced in March 2020. The potential sample was estimated to be 1119 staff, comprising 851 pharmacists (WTE 698.5) and 268 pharmacy technicians (WTE 236.9) (NHS Education for Scotland, 2020).
Participant recruitment and data collection

Representatives of the Scottish Practice Pharmacy and Prescribing Advisors Association (SP3AA) group and NHS Education for Scotland (NES) Education and Training Leads were sent an email with a link to the online questionnaire on Wednesday 19th of May 2021. These individuals are pharmacists who have a managerial or educational role for pharmacists and technicians who work in general practice within the different geographical regions of Scotland. These pharmacists were instructed to disseminate the online questionnaire by forwarding the email with the questionnaire link to their email lists of pharmacist and technicians who work within general practice. A response deadline was set for the 4th of June 2021, with the email asked to be re-disseminated on 26th and 31st of May to act as a reminder and support dissemination to those who may have been on leave or who work part time. A Participant Information Sheet preceded the questionnaire, and participants provided informed consent.

Questionnaire development

Overall, the questionnaire focused on: working tasks; interaction with patients; work setting and job satisfaction. Questionnaire items on working practice were informed by Stewart et al. (2020) and adapted to reflect changes instigated by the pandemic (e.g. remote working practices) and the newly implemented pharmacotherapy service (Scottish Pharmacy Practice and Prescribing Advisers Association, 2018). Participants were asked question to identify if, since the pandemic, they had increased, decreased, or not changed their time spent on each pharmacotherapy service task since the pandemic. Hassell et al.’s (2007) questionnaire measuring UK pharmacists’ job satisfaction was adapted for use. It is a validated satisfaction scale (Warr et al., 1979) and considered valid for pharmacists and technicians working within general practice (K Hassell, personal communication, 3rd of March 2021). Minor edits were made to ensure applicable language. The questionnaire comprised closed-ended questions with nominal, ordinal and Likert response options, which were interspersed with four open-ended questions focusing on the impact of the pandemic on service delivery, working practice, professional development and additional comments. Demographic characteristics were collected such as age, gender, job role and when participants commenced employment within general practice.

Questionnaire review and piloting

Expert review of the questionnaire was conducted by the SP3AA group and NES, comprising pharmacists (n = 6) and technicians (n = 2), who commented on its appropriateness and relevance. Usability testing was conducted with broader research group members (n = 6). Piloting was conducted by an additional cohort of pharmacists (n = 6) and technicians (n = 2) who offered improvements in clarity and indicated time-to-complete. Pilot participants suggested improvements to the Likert scale. A 7-point Likert scale from ‘Extremely Dissatisfied’ to ‘Extremely Satisfied’ with equal positive and negative responses was selected. Piloting indicated the questionnaire took approximately 20 min to complete.

Data management and analysis

Questionnaire responses obtained from Qualtrics© were exported into Microsoft Excel®, IBM Statistical Package for the Social Sciences (SPSS)© and NVivo© qualitative data analysis software.

Quantitative data analysis

Responses to closed-ended questions underwent descriptive statistics and presented either as modes, medians with interquartile range (IQR), total counts and percentages. Non-parametric tests were used to test the hypothesis that there was a reduction in participant’s job satisfaction. The Wilcoxon Matched-Pair Signed-Rank test was applied when the distribution of the differences between participants’ responses pre- and post-pandemic was symmetrical, with the Paired-Samples Sign Test applied when this assumption was not met. Statistical significance was determined using the Holm–Bonferroni method to account for multiple tests by correcting for Family-Wise Error Rate, with an overall type 1 error rate of α = 0.05 (Holm, 1979; Sinclair et al., 2013). The Mann–Whitney test was used to calculate if there were differences in overall job satisfaction between those newly employed and those employed pre-pandemic.

Qualitative data analysis

Responses to the open-ended questions were analysed within NVivo©. The data were structured using the framework method, whereby a matrix of summarised data is formed of codes (Gale et al., 2013). A coding framework was developed by NW based on 20% of participant’s responses. Overarching framework headings were based on the sections of the questionnaire and NW conducted coding inductively within these headings by assigning a paraphrase which represented the textual data. The coding framework was validated by NW, RN and AF by independently applying it to the analysis of 10% of responses. NW and ED applied the validated framework to 10% of data to ensure coding consistency. Thereafter, coding was conducted by NW and ED, with the coding framework iteratively adapted throughout ongoing discussions. A thematic analysis was conducted by NW making connections between codes (Gale et al., 2013), which was validated by ED by reading the themes and ensuring they were valid. The point of integration of the qualitative and quantitative data was at the interpretation and reporting level, where a ‘weaving approach’ was adopted with the results written as an integrative account (Fetters et al., 2013).

Research team and reflexivity

This study was conducted by NW (Research Associate), RN (Research Fellow), AF (PhD Candidate), ED (Research Associate) and MB (Professor of Pharmacy) who each have experience of conducting questionnaires. Due to the anonymity of the participants, there were no concerns that established relationships between the researchers and participants would affect the results. NW, RN, AF, ED and MB work as researchers or academic staff members. MB also works as a Chief Pharmacist for Public Health Scotland, and NW also works as a community pharmacist. Therefore, NW may have biases/assumptions as a practicing pharmacist, yet this would likely be minimal as they have no work experience in general practice.

Results

Demographic characteristics

A total of 180 participants responded, of which 134 were pharmacists (74.4%) and 46 were pharmacy technicians (25.6%). This equates to an approximated 15.8% and 17.2% response rate for
pharmacists and technicians, respectively. In total, 160 participants offered responses to the open-ended, free text questions which underwent qualitative analysis. Of the 180 respondents, a total of 151 participants (83.9%) were employed within general practice prior to the pandemic: 114 of which were pharmacists, and 37 were pharmacy technicians. A total of 29 participants (16.1%) were employed to work within general practice during the pandemic: 9 of which were technicians, and 20 were pharmacists. Full demographic characteristics are presented in Appendix 2.

Representatives of 12 of the 14 healthcare regions in Scotland participated, with no representation from the two most rural regions (Orkney and the Western Isles). The majority of participants had >10 years professional experience; however, most had 1–5 years’ experience specifically in the general practice setting.

**Working tasks**

Pharmacotherapy service tasks undertaken were explored to understand changes in work activity to ascertain if participants had increased, decreased or not changed the time spent on each task since the pandemic. Out of the 17 pharmacotherapy service tasks (defined in Appendix 1), Table 1 presents the eight tasks whereby at least a quarter of pharmacist (25%) either increased or decreased their time spent on these activities, with full data presented in Appendix 3. For the core tasks, there was most commonly an increase in activity observed, with over half of pharmacists increasing their time spent on Repeat Prescription Requests. For the advanced and specialist tasks, approximately a quarter of pharmacists decreased their time delivering Medication and Polypharmacy Reviews.

Table 1. Pharmacotherapy service tasks whereby at least 25% of pharmacists (n = 114) reported an increase or decrease in their time spent on these activities since the pandemic

| Pharmacotherapy services | n (%) pharmacists who increased time spent on activity | n (%) pharmacists who reported no change in time spent on activity | n (%) pharmacists who decreased time spent on activity |
|--------------------------|-------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------|
| Core tasks               |                                                       |                                                               |                                                      |
| - Medicines reconciliation| 40 (35.1%)                                             | 63 (55.3%)                                                   | 11 (9.6%)                                            |
| - Repeat prescription requests | 59 (51.8%)                                      | 44 (38.6%)                                                   | 11 (9.6%)                                            |
| - Serial prescriptions   | 41 (36.0%)                                             | 66 (57.9%)                                                   | 7 (6.1%)                                             |
| - Hospital immediate discharge letters (IDLs) | 42 (36.8%)                                      | 59 (51.8%)                                                   | 13 (11.4%)                                           |
| - Formulary adherence    | 7 (6.1%)                                               | 78 (68.4%)                                                   | 29 (25.4%)                                           |
| - Prescribing indicators and audits | 6 (5.3%)                                              | 56 (49.1%)                                                   | 52 (45.6%)                                           |
| Advanced tasks           |                                                       |                                                               |                                                      |
| - Medication review (more than 5 medicines) | 18 (15.8%)                                        | 68 (59.6%)                                                   | 28 (24.6%)                                           |
| Specialist tasks         |                                                       |                                                               |                                                      |
| - Polypharmacy reviews   | 17 (14.9%)                                             | 66 (57.9%)                                                   | 31 (27.2%)                                           |

Table 2. Pharmacotherapy service tasks whereby at least 25% of technicians (n = 37) reported an increase or decrease in their time on these activities since the pandemic

| Pharmacotherapy services | Increased time spent on activity | No change in time spent on activity | Decreased time spent on activity |
|--------------------------|----------------------------------|-------------------------------------|----------------------------------|
| Core tasks               |                                  |                                     |                                  |
| - Medicines reconciliation| 14 (37.8%)                       | 18 (48.6%)                          | 5 (13.5%)                        |
| - Serial prescriptions   | 11 (29.7%)                        | 25 (67.6%)                          | 1 (2.7%)                         |
| - Hospital immediate discharge letters (IDLs) | 13 (35.1%)                      | 19 (51.4%)                          | 5 (13.5%)                        |
| - Prescribing indicators and audits | 3 (8.1%)                           | 22 (59.5%)                          | 12 (32.4%)                        |

**Theme 1: Altered primary care landscape affecting service delivery**

The changes highlighted in the quantitative data were elaborated upon within free-text responses. There was a perceived emphasis on offering core tasks, with a reduction in time spent on advanced and specialist clinical services offered to patients. This was most commonly negatively perceived by pharmacists as it can be ‘mundane and not clinically challenging’ (P69, Pharmacist). This change
in service activity existed alongside a change in the focus of pharmacy’s role within primary care to support GPs and practices by freeing up their workload. Some participants believed that the development of primary care pharmacy services had been halted and felt undervalued:

‘Other complex clinical work was deemed as adding to GP burden and not relieving it . . . GPs felt little value of the advanced level input and wanted only [core] and some [advanced] services . . . I felt undervalued after so many years of functioning at this advanced level’. (P71, Pharmacist)

**Types of interaction**

The way in which pharmacy personnel interacted was explored, with the most commonly reported response (i.e. the mode) presented in Table 3. Pre-pandemic, pharmacists reported some face-to-face interaction with patients. During the pandemic, modal responses indicated pharmacists and technicians most often reported no face-to-face and video interaction with patients during the pandemic. The modes for time spent conducting telephone communication reflected an increase for pharmacists and technicians before and during the pandemic.

| Interaction                        | Pharmacists (n = 134) | Technicians (n = 46) |
|-----------------------------------|-----------------------|----------------------|
|                                   | Employed before       | Employed during      | Employed before       | Employed during      |
|                                   | pre-pandemic (n = 114) | pandemic (n = 20)    | pre-pandemic (n = 37) | pandemic (n = 9)     |
| Face-to-face patient interaction  | 1–20%                 | 0%                   | 0%                    | 0%                   |
| Telephone patient interaction     | 1–20%                 | 41–60%               | 21–40%                | 21–40%               |
| Video patient interaction         | 0%                    | 0%                   | 0%                    | 0%                   |
| Conducting work without direct patient interaction* | 1–20% | 21–40% | 41–60% | 41–60% |

*For example looking at patient records/note-based review/engaging with other healthcare professionals without speaking to patients.

| Interaction                        | Pharmacists (n = 134) | Technicians (n = 46) |
|-----------------------------------|-----------------------|----------------------|
|                                   | Employed before       | Employed during      | Employed before       | Employed during      |
|                                   | pre-pandemic (n = 114) | pandemic (n = 20)    | pre-pandemic (n = 37) | pandemic (n = 9)     |
| Face-to-face patient interaction  | 1–20%                 | 0%                   | 0%                    | 0%                   |
| Telephone patient interaction     | 1–20%                 | 41–60%               | 21–40%                | 21–40%               |
| Video patient interaction         | 0%                    | 0%                   | 0%                    | 0%                   |
| Conducting work without direct patient interaction* | 1–20% | 21–40% | 41–60% | 41–60% |

Theme 3: Remote working: both a friend and foe

Participants had polarised opinions on remote working. Some participants found their work achievable when working remotely from home, and it had personal benefits such as an improvement in their work/life balance as it allowed for extra flexibility. The reduced time travelling to meetings or general practices was positively commented upon, as was the ease of scheduling and joining meetings remotely. For some, however, remote working was necessary due to social distancing requirements which limited space for pharmacy staff to work onsite in general practices. This impacted tasks which required the pharmacy staff to be onsite. For example, printing prescriptions required onsite staff to complete the task. Remote working also made it difficult to interact with colleagues which negatively impacted the working relationships as ‘all ad hoc conversations and learnings were removed’ (P43, Pharmacist). A prominent challenge was the limited ability of participants to be supervised, mentored and supported when working remotely:

‘Due to practices not having space I have mostly been working from home. This means I have no available pharmacist for advice, guidance or overseeing my work. This means I have been able to do less due to safety’. (P20, Pharmacy Technician)

**Job satisfaction**

**Job satisfaction: descriptive statistics**

Overall job satisfaction was positively viewed, with median responses of >5 (median scale from 1 to 7) for pharmacists and technicians before and during the pandemic. For participants employed before the pandemic, 52% of pharmacists and 73% of technicians reported either no change or an increase in their satisfaction for their job overall. A notable difference in the median score in relation to pharmacists’ satisfaction with patient contact
was observed, reducing from a median of 5 (IQR = 4.00–6.00) pre-pandemic to a median of 3 (IQR = 2.00–5.00) in 2021. Descriptive statistics at an item and job role level are presented in Appendices 6–7.

**Job satisfaction: statistical tests**

For pharmacists employed before the pandemic, various determinants of overall satisfaction significantly reduced post-pandemic (see Table 4). This was most apparent with the level of patient contact pre and post pandemic ($P < 0.001$), with a corresponding difference in the median observed (as described above). For the other determinants, the pre- and post-pandemic median responses were $\geq 5$. This suggested that, although there was a statistically significant reduction, there was not widespread dissatisfaction amongst participants. For technicians, there was no statistically significant change in participants reported satisfaction with any determinant of job satisfaction (Appendix 6), with all medians $\geq 4$ indicating general satisfaction.

A comparison was made of overall satisfaction for participants employed during the pandemic to those employed pre-pandemic (Appendices 6 and 7). The median for overall job satisfaction was greater for those employed during the pandemic for pharmacists (median = 6, IQR = 4.25–6.00) and technicians (median = 6, IQR = 4.00–6.50). A Mann–Whitney U test indicated this difference was statistically significant for pharmacists ($U$ test statistic = 8,213, $P = 0.009$) indicating greater satisfaction for those employed during the pandemic, but no statistical significance was identified for technicians ($U$ test statistic = 2,448, $P = 0.234$).

**Theme 4: Workplace stress**

The qualitative findings identified that workplace stress was apparent. The pandemic and altered working practices were reported to increase the pressure felt by participants whilst doing their job. The changing role increased the workload for many participants and reduced the available time they had within their working day for other activities. Increased workloads posed challenges for undertaking professional development activities, with protected learning time no longer available to many participants. Additionally, concerns were raised regarding insufficient staffing to meet the increased workload, with some respondents highlighting the risk of patients receiving sub-optimal services:

> 'The volume of work has massively increased . . . I have felt rushed often to the point where I am trying to achieve tasks and get through the most amount of patients and I wonder if patients are receiving the same quality of care they were previously.' (P162, Pharmacist).

**Discussion**

This study explored the impact of the COVID-19 pandemic on the working practice and job satisfaction of pharmacists and pharmacy technicians working within Scottish general practice. It was conducted 15 months since the initial lockdown measures in March 2020, offering insight into the changes experienced by this workforce. Results indicated increased involvement in administrative medication management tasks such as medicines reconciliation. The related reduction in clinical services offered to patients was negatively perceived by pharmacists. The majority of participants continued to have a physical presence within general practice, but there was a notable increase in remote working and a reduction in face-to-face contact with patients. Patient-facing contact was missed by participants, and telephone consultations were considered less effective than in-person consultations. Qualitative findings identified that engagement with professional development activities was challenging during the pandemic due to increased workloads and

**Table 4. Pharmacists’ job satisfaction for those employed before the pandemic (only significant results shown)**

| Determinants of job satisfaction | Pharmacists employed before pandemic ($n = 114$) |
|---------------------------------|-----------------------------------------------|
|                                 | Pre-pandemic median (IQR) | May/June 2021 median (IQR) | Participants reporting reduction in satisfaction ($n$, %) | Participants reporting no change in satisfaction ($n$, %) | Participants reporting increase in satisfaction ($n$, %) | Test statistic | $P$ value |
| Overall job satisfaction*       | 5 (5.00–6.00)             | 5 (3.00–5.00)             | 55 (48.2%)                                      | 46 (40.4%)                                      | 13 (11.4%)                                             | -4.972       | $< 0.001$† |
| Physical working conditions*    | 5 (4.00–6.00)             | 5 (4.00–6.00)             | 42 (36.8%)                                      | 55 (48.2%)                                      | 17 (14.9%)                                             | -3.125       | 0.002†     |
| Your colleagues and fellow workers* | 6 (5.00–6.00)             | 6 (5.00–6.00)             | 27 (23.7%)                                      | 80 (70.2%)                                      | 7 (6.1%)                                               | -3.258       | 0.001†     |
| Recognition you get for good work* | 5 (5.00–6.00)             | 5 (4.00–6.00)             | 36 (31.6%)                                      | 61 (53.5%)                                      | 17 (14.9%)                                             | -3.060       | 0.002      |
| Your salary*                    | 5 (4.00–6.00)             | 5 (4.00–6.00)             | 17 (14.9%)                                      | 90 (78.9%)                                      | 7 (6.1%)                                               | -2.315       | 0.021      |
| Your hours of work*             | 6 (5.00–6.00)             | 6 (4.00–6.00)             | 30 (26.3%)                                      | 80 (70.2%)                                      | 4 (3.5%)                                               | -4.287       | $< 0.001$† |
| Amount of variety in your job*  | 5 (4.00–6.00)             | 5 (3.00–5.25)             | 49 (43.0%)                                      | 46 (40.4%)                                      | 19 (16.7%)                                             | -4.088       | $< 0.001$  |
| Patient contact*                | 5 (4.00–6.00)             | 3 (2.00–5.00)             | 67 (58.8%)                                      | 38 (33.3%)                                      | 9 (7.9%)                                               | -6.538       | $< 0.001$† |

**KEY:** 1 = extremely dissatisfied, 2 = very dissatisfied, 3 = somewhat dissatisfied, 4 = neutral, 5 = somewhat satisfied, 6 = very satisfied, 7 = extremely satisfied.

*Variables with a statistically significant reduction (corrected $\alpha < 0.05$) in reported levels of satisfaction for pharmacists employed pre-pandemic ($n = 114$).

†Pairwise-comparisons Sign Test conducted as distribution of the differences between participants responses pre- and post-pandemic was asymmetrical. Specific $P$ values denoting significance were determined using the Holm–Bonferroni method (37, 38).
lack of opportunity for support and mentoring. However, although workplace stress was apparent, there was not widespread dissatisfaction with participants’ jobs overall.

The findings indicate a change in work activity with greater involvement in some core pharmacotherapy service tasks which are more administrative in nature. Increased involvement with prescription requests could be related to the public’s initial ‘panic ordering’ of repeat medicines (Watt G, Mullin A and Blane D, 2020) and increased need for pharmacists to support GPs with this. The reduction in care-home related activity is likely associated with the challenges Scottish care homes faced with COVID-19 transmission rates (Burton et al., 2021), as well as altered care home policies in relation to who was able to enter the premises. This has been identified throughout the UK, where support for care homes by GPs has also been compromised due to remote working (Park et al., 2020). Changes in activity may also be explained by a shift in focus to support GPs to free up their workload, particularly as the majority of patients with COVID-19 are managed by GPs in the UK (Gray and Sanders, 2020). This could explain pharmacy personnel’s increased time spent on administrative tasks which offer immediate time-saving benefits, alongside reduced involvement with tasks which may be considered longer-term improvement work (e.g. formulary adherence). Paudyal et al similarly identified changes in the services provided by GP pharmacists (Paudyal et al., 2021), yet it remains unclear the impact of reduced provision of pharmacy services to primary care populations. This has clear implications for the continuity of patient care, and future research may wish to explore the impact of altered service delivery on pharmaceutical care outcomes (Weir et al., 2021). It is also unknown if such COVID-related changes to work practice will continue indefinitely and ongoing research to monitor this is needed, particularly considering the stress and negative associations with reduced patient contact.

This study identified an increase in pharmacists’ and technicians’ remote working, alongside reduced patient interaction and an increased reliance on telephone consultations with patients. This corroborates previous reflection that general practice pharmacists may have adopted remote working practices and virtual consultations (Malson, 2020) and mirrors findings of a UK wide survey indicating an increase in healthcare telephone consults (Horton et al.). Overall, these findings indicate that the pandemic has impacted primary care work processes, particularly in terms of the way in which patients are engaged with. Participants of the present study were less satisfied with their contact with patients since the pandemic and the effectiveness of telephone consults was questioned. This reflects previous findings that telephone consultations are convenient yet not always appropriate for patients who are new to a practice (Malson, 2020), on multiple medicines or with multiple co-morbidities (Hewitt et al., 2010; Malson, 2020), require a physical examination (Malson, 2020), have hearing impairments (Malson, 2020) or do not have access to a telephone or phone ‘credit’ (Verity et al., 2020). Previous research has also identified challenges building rapport during remote consultations (Verity et al., 2020) and identified that healthcare professionals are less likely to elicit additional concerns using this mode of communication (Hewitt et al., 2010). The sparse use of video consults may be considered surprising, as pre-pandemic there were extensive efforts to develop and subsequently adopt ‘Attend Anywhere’ (Wherton and Greenhalgh, 2020; Beattie et al., 2020), a video consultations platform which has national licence throughout Scotland. It is unclear why this technology was not adopted by pharmacy personnel in primary care despite its availability, and future work should explore patient and pharmacy personnel perceptions and preferences of remote consults in a post-COVID era (Murphy et al., 2021), which should inform evidenced-based guidelines on when, and how, to conduct remote consultations.

Despite some challenges experienced, there was not widespread dissatisfaction with participants’ job overall. Pharmacists and technicians employed during the pandemic were more satisfied when compared to those employed pre-pandemic. The reason for this difference is unclear, but it may be related to the fact that they were less likely to be working remotely from home. The findings are in contrast with results of a UK-wide survey conducted in Sept/Oct 2020 which identified that the risk of leaving the profession was highest for pharmacists working in general practice (Royal Pharmaceutical Society, 2020). This contrast could be explained by the different time points of data collection, as this study was conducted 15 months since the initial lockdown and some pandemic-related stressors may have alleviated, but it should also be acknowledged that the previous survey was UK wide and had only 83 general practice respondents. Overall, although widespread concerns with job satisfaction were not identified, if the challenges with workload identified continue indefinitely, it is possible that workplace satisfaction may be affected, and future research may be needed to monitor this.

The ability to engage with professional development activities appeared to be impacted by different facets of the pandemic including reduced protected learning time for pharmacists and limited support and mentoring, with professional development challenges also experienced by GPs within the UK and pharmacists in other sectors (Khan et al., 2020; Imeri et al., 2021). Considering this alongside the reduced provision of certain advanced and specialist services, it suggests that the professional and clinical remit of pharmacy personnel in Scottish general practice may not be currently progressing. This does not align with the Scottish pharmaceutical strategy whereby the skills of pharmacy personnel were envisaged to continually develop to deliver more complex pharmaceutical care to patients (The Scottish Government, 2017a). Additionally, the Royal Pharmaceutical Society’s 2030 strategic vision for general practice pharmacy proposes that the primary care pharmacy workforce should have a leading role in prescribing and managing long-term conditions (Royal Pharmaceutical Society, 2021b). Overall, the findings suggest the pandemic may have halted the professional progression of pharmacy personnel within primary care.

Strengths and limitations

A strength of this study is the application of Hassell et al.’s valid and reliable questionnaire to explore job satisfaction, which offers reassurance regarding the validity of the results (Hassell et al., 2007). Other elements of the questionnaire were developed from previously published work and were adapted by considering advancements within primary care pharmacy in Scotland (Stewart et al., 2020). A strength of this paper is the mixed method approach. Often, the qualitative findings helped to confirm the quantitative findings and vice versa. Additionally, in many instances the qualitative findings have helped expand upon quantitative findings and illuminated participants thoughts and feeling surrounding changes in practice, which facilitate the development of conclusions and next step recommendations of this work. The questionnaire permitted responses from pharmacists and pharmacy technicians, offering a glimpse into how the pandemic has affected the pharmacy workforce in primary care. However, neither pharmacy support workers nor administrative assistants were
sampled and it remains unknown how their role has been affected. A limitation is the low response rate and the potential for participation bias, and it is possible that this impacts the generalisability of the results, yet the extent of which is unclear. For example, it could be postulated that only participants with sufficient free time in their working day may have completed the questionnaire, which could impact the generalisability of the results relating to working tasks. Alternatively, it could be suggested that those most motivated to participate could be those with the most negative experiences of the pandemic’s impact on working practices, which could impact the generalisability of the job satisfaction results. As there is no central email distribution list of all potentially eligible participants, questionnaire dissemination was reliant on an email communication cascade directed by representatives of the SP3AA group and NES. It is therefore possible that some eligible participants may not have received the email comprising the questionnaire link, and it is possible that the email may not have been forwarded in a timely manner by all representatives. This was mitigated by repeated dissemination of the questionnaire and through close working with NHS management networks via the SP3AA group and NES Education and Training leads.

Conclusions

Overall, the study identified that the pandemic has impacted pharmacists and pharmacy technicians working practice and has hindered professional development opportunities, yet job satisfaction remained adequate. The findings suggest that the pandemic may have negatively impacted the professional progression of pharmacy personnel within primary care. There is a need to monitor pharmacists’ and technicians’ work activities to understand if changes are transient or permanent. Ongoing exploration of barriers to professional development and workplace satisfaction will help to identify if the pharmacy workforce is engaged and content as the challenges of the pandemic subside. It is possible that the pharmaceutical care of patients has been impacted due to limited delivery of specialised clinical services, and future work may be needed to explore the effects of altered service delivery on clinical, humanistic, economic and service outcomes (Weir et al., 2021). Lastly, there is a need to understand which elements of remote working should continue, such as telephone consults, and research involving patients would help strategists understand if a blended primary care model mixing remote consults and face-to-face interaction is desirable.

Supplementary material. To view supplementary material for this article, please visit https://doi.org/10.1017/S1463423622000445

Acknowledgements. We would like to acknowledge the sponsor, NHS Education for Scotland, and the Scottish Practice Pharmacy and Prescribing Advisors Association (SP3AA) group for their expert input. We wish to thank all participants, including pilot participants, for offering their time to participate. We also thank members of the Pharmacoeconomics and Health Care Research Group at the University of Strathclyde who supported the development of the questionnaire, and to Esraa Abushalla whose undergraduate dissertation supported the written content of this publication.

Financial support. This work was funded by NHS Education for Scotland.

Conflicts of interest. None.

Ethical standards. Ethical approval was granted by the Strathclyde Institute of Pharmacy and Biomedical Sciences Ethics Committee.

References

Adam JP, Khazaka M, Charikhi F, Clervil M, Huot DD, Jeabaily J, Pascal O, Morin J and Langevin MC (2021) Management of human resources of a pharmacy department during the COVID-19 pandemic: take-aways from the first wave. Research in Social and Administrative Pharmacy 17, 1990–1996.

Beattie M, Morrison C, Macgilliecatthain R, Gray N and Anderson J (2020) Near me at home: codesigning the use of video consultations for outpatient appointments in patients’ homes. BJM Open Quality 9, e001035.

Bourdin A, Dotta-Celio J, Niquille A and Berger J (2021) Response to the first wave of the COVID-19 pandemic in the community pharmacy of a University Center for Primary Care and Public Health. Research in Social and Administrative Pharmacy 18, 2706–2710.

Burton JK, Mcminn M, Vaughan JE, Fleuriot J and Guthrie B (2021) Care-home outbreaks of COVID-19 in Scotland March to May 2020: national linked data cohort analysis. Age and Ageing 50, 1482–1492.

Cebrián-Cuenca A, Mira JJ, Caride-Miana E, Fernández-Jiménez A and Orozco-Beltrán D (2021) Sources of psychological distress among primary care physicians during the COVID-19 pandemic’s first wave in Spain: a cross-sectional study. Primary Health Care Research and Development 22, e55.

Chudasama YV, Gillies CL, Zaccardi F, Coles B, Davies MJ, Seidu S and Khunti K (2020) Impact of COVID-19 on routine care for chronic diseases: a global survey of views from healthcare professionals. Diabetics & Metabolic Syndrome 14, 965–967.

Claire M, Claire A and Matthew B (2021) The role of clinical pharmacists in general practice in England: impact, perspectives, barriers and facilitators. Research in Social and Administrative Pharmacy 18, 3432–3437.

Fetters MD, Curry LA and Creswell JW (2013) Achieving integration in mixed methods designs-principles and practices. Health Services Research 48, 2134–2156.

Gale NK, Heath G, Cameron E, Rashid S and Redwood S (2013) Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC Medical Research Methodology 13, 117.

Gray R and Sanders C (2020) A reflection on the impact of COVID-19 on primary care in the United Kingdom. Journal of Interprofessional Care 34, 672–678.

Hassell K, Seston E and Shann P (2007) Measuring job satisfaction of UK pharmacists: a pilot study. International Journal of Pharmacy Practice 15, 259–264.

Hewitt H, Gafaranga J and Mckinstry B (2020) Comparison of face-to-face and telephone consultations in primary care: qualitative analysis. British Journal of General Practice 60, e201–e212.

Holm S (1979) A simple sequentially rejective multiple test procedure. Scandinavian Journal of Statistics 6, 65–70.

Horton T, Hardie T, Mahadeva S and Warburton W (2021) Securing a positive health care technology legacy from COVID-19. The Health Foundation. United Kindgom.

Imeri H, Jadhav S, Barnard M and Rosenthal M (2021) Mapping the impact of the COVID-19 pandemic on pharmacy graduate students’ well-being. Research in Social Administrative Pharmacy 17, 1962–1967.

Jovičić-Bata J, Pavlović N, Milošević N, Gavarić N, Golocorbin-Kon S, Todorović N and Lalji-Popović M (2021) Coping with the burden of the COVID-19 pandemic: a cross-sectional study of community pharmacists from Serbia. BMC Health Services Research 21, 304.

Khan N, Jones D, Grice A, Alderson S, Bradley S, Carder P, Drinkwater J, Edwards H, Essang B, Richards S and Neal R (2020) A brave new world: the new normal for general practice after the COVID-19 pandemic. BJGP Open 4, bigopen20X101103.

Koster ES, Philbert D and Bouvy ML (2021) Impact of the COVID-19 epidemic on the provision of pharmaceutical care in community pharmacies. Research in Social and Administrative Pharmacy 17, 2002–2004.

Lasalvia A, Rigon G, Rugiu C, Negri C, Del Zotti F, Amaddeo F and Bonetto C (2021) The psychological impact of COVID-19 among primary care physicians in the province of Verona, Italy: a cross-sectional study during the first pandemic wave. Family Practice 39, 65–73.
Levene LS, Seidu S, Greenhalgh T and Khunti K (2020) Pandemic threatens primary care for long term conditions. BMJ 371, m3793.

Malson G (2020) No going back: how the pandemic is changing general practice pharmacy. The Pharmaceutical Journal 294, 305.

Mcallum BA, Dunkley K, Hotham E and Suppiah V (2021) Bushfires, COVID-19 and Australian community pharmacists: ongoing impact on mental health and wellbeing. International Journal of Pharmacy Practice 29, 186–188.

MoriNihan R, Sanders S, Michaleff ZA, Scott AM, Clark J, To EJ, Jones M, Kitchener E, Fox M, Johansson M, Lang E, Duggan A, Scott I and Alharqouni I. (2021) Impact of COVID-19 pandemic on utilisation of healthcare services: a systematic review. BMJ Open 11, e045343.

Mughal F, Mallen CD and Mckee M (2021) The impact of COVID-19 on primary care in Europe. The Lancet Regional Health Europe 6, 100152.

Murphy M, Scott LJ, Salisbury C, Turner A, Scott D, Denholm R, Lewis R, Iyer G, Macleod J and Horwood J (2021) Implementation of remote consulting in UK primary care following the COVID-19 pandemic: a mixed-methods longitudinal study. British Journal of General Practice 71, e166–e177.

NHS Education for Scotland (2020) TURAS | Data intelligence: pharmacy workforce of NHS Scotland. https://turasdata.nhs.scot/workforce-official-statistics/nhsscotland-workforce/publications/01-december-2020/dashboards/pharmacy/ (Accessed June 2021).

Parajuli DR, Khanal S, Wechkunanukul KH, Ghimire S and Poudel A (2021) Pharmacy practice in emergency response during the COVID-19 pandemic: lessons from Australia. Research in Social and Administrative Pharmacy 18, 3453–3462.

Park S, Elliot J, Berlin A, Hamer-Hunt J and Haines A (2020) Strengthening the UK primary care response to COVID-19. British Medical Journal, 370, m3691.

Paudyal V, Cadogan C, Fialová D, Henman MC, Hazen A, Okuyan B, Lutters M and Stewart D (2021) Provision of clinical pharmacy services during the COVID-19 pandemic: experiences of pharmacists from 16 European countries. Research in Social and Administrative Pharmacy 17, 1507–1517.

Royal Pharmaceutical Society (2020) Workforce wellbeing: mental Health and Wellbeing Survey 2020. https://www.rpharms.com/recognition/all-our-campaigns/workforce-wellbeing/wellbeing-survey-2020 (Accessed October 2020).

Royal Pharmaceutical Society (2021a) Pharmacy 2030: a professional vision. https://www.rpharms.com/pharmacy/pharmacy2030 (Accessed October 2021).

Royal Pharmaceutical Society (2021b) Pharmacy 2030: a professional vision for general practice pharmacy. Scotland: Royal Pharmaceutical Society. https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20accesses/Pharmacy%202030/RPS%20Pharmacy%202030%20-%20Blurb%20for%20Pharmacy%202030/Pharmacy%202030.pdf?ver=YNwVkJGYWt7w tricky KHk%3D (Accessed October 2021).

Scottish Pharmacy Practice and Prescribing Advisers Association (2018) National Pharmacotherapy Service Specification. (Accessed October 2020).

Sinclair J, Taylor P and Hobbs S (2013) Alpha level adjustments for multiple dependent variable analyses and their applicability – a review. International Journal of Sport Science and Engineering 7, 17–20.

Smyrnakis E, Symintiridou D, Andreou M, Dandoulakis M, Theodoropoulos E, Kokkali S, Manolaki C, Papageorgiou Dl, Birtsou C, Paganas A, Stachteas P, Vlachopoulos N, Pagkosidis I, Zeimbekis A, Roka V, Gilakomis A, Kotsani M, Avakian I, Makridou E, Gavana M, Hadich AB and Avergerinou C (2021) Primary care professionals’ experiences during the first wave of the COVID-19 pandemic in Greece: a qualitative study. BMC Family Practice 22, 174.

Stewart D, Maclure K, Newham R, Gibson-Smith K, Bruce R, Cunningham S, Maclure A, Fry S, Mackerrow J and Bennie M (2020) A cross-sectional survey of the pharmacy workforce in general practice in Scotland. Family Practice 37, 206–212.

The Lancet Respiratory, M (2020) COVID-19 heralds a new era for chronic diseases in primary care. The Lancet Respiratory Medicine 8, 647.

The Scottish Government (2017a) Achieving excellence in pharmaceutical care: a strategy for Scotland. Edinburgh: The Scottish Government

The Scottish Government (2017b) Primary Care funding – allocation for pharmacists in GP practices 2017–2018. https://www.sehd.scot.nhs.uk/pga/PCA2017/P094.pdf (Accessed October 2020).

The Scottish Government (2018) The 2018 general medical services contract in Scotland. https://www.glasgowlmc.co.uk/download/contract%20and%20contractual%20issues/The%202018-General-Medical-Services-Contract-in-Scotland.pdf (Accessed October 2020).

Thorakakkattil SA, Nemr HS, Al-Ghamdi FH, Jabbour RJ and Al-Qanee AM (2021) Structural and operational redesigning of patient-centered ambulatory care pharmacy services and its effectiveness during the COVID-19 pandemic. Research in Social and Administrative Pharmacy 17, 1838–1844.

Verity A, Naidu D and Tzortziou-Brown V (2020) Does total triage and remote-by-default consulting impact vulnerable groups: a pilot study. medRxiv 11, 20220046.

Visacri MB, Figueiredo IV and Lima TDM (2021) Role of pharmacist during the COVID-19 pandemic: a scoping review. Research in Social and Administrative Pharmacy 17, 1799–1806.

Wanat M, Hoste M, Bobat N, Anastasaki M, Böhmer F, Chlabicz S, Colliers A, Farrell K, Karkana MN, Kinsman J, Lionis C, Marciniwicz I, Reinhardt K, Skoglund I, Sundvall PD, Vellinga A, Verheij TJ, Goossens H, Butler CC, Van Der Velden A, Anthierens S and Tonkin-Crine S (2021) Transformation of primary care during the COVID-19 pandemic: experiences of healthcare professionals in eight European countries. British Journal of General Practice 71, e634–e642.

Warr P, Cook J and Wall T (1979) Scales for the measurement of some work attitudes and aspects of psychological well-being. Journal of Occupational Psychology 52, 129–148.

Watt G, Mullin A and Blane D (2020) GPS at the deep end report 36: general practice in the time of covid-19. Glasgow: University of Glasgow.

Weir NM, Preston K, Newham R and Bennie M (2021) Development of a primary care pharmacy outcomes framework: an umbrella literature review. Research in Social and Administrative Pharmacy 18, 2757–2777.

Wherton J and Greenhalgh T (2020) Evaluation of the attend anywhere/nearest me video consulting service in Scotland, 2019-20. Scotland: Scottish Government.

World Health Organization (2020a) Coronavirus disease (COVID-19): Q&A. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19 (Accessed June 2021).

World Health Organization (2020b) In WHO global pulse survey, 90% of countries report disruptions to essential health services since COVID-19 pandemic. https://www.who.int/news/item/31-08-2020-in-who-global-pulse-survey-90-of-countries-report-disruptions-to-essential-health-services-since-covid-19-pandemic (Accessed June 2021).

World Health Organization (2020c) Rapid assessment of service delivery for NCDs during the COVID-19 pandemic. https://www.who.int/publications/m/item/rapid-assessment-of-service-delivery-for-ncds-during-the-covid-19-pandemic (Accessed June 2021).