1 **Current reality and preferences for continuing professional development (CPD)**

2 **of pharmacists in South London, Great Britain – supporting pharmacists to**

3 **achieve their CPD requirements.**

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28 **Abstract:**

29 Background: Continuing professional development (CPD) is essential for

30 pharmacists and is a regulator requirement in Great Britain (GB).

31 Objectives: The aim of this study was to establish current participation in CPD

32 activity in GB, in terms of format and providers, plus preferences of pharmacists,

33 including motivators and barriers, and support needed for application of learning.

34 Methods: This study utilised a questionnaire and semi-structured interviews of

35 pharmacists in South London, England.

36 Results: The majority of responders (n=293/338, 86.6%) had taken part in CPD

37 activity in the past 12 months. Although face-to-face workshops were the most

38 preferred activity, digital completion was the most used activity. There was

39 increasing non-participation with reduced working hours (p=0.003). The employer

40 was the most commonly used provider. From 19 interviews three main themes

41 emerged: Engagement, Intervention and Application.

42 Conclusions:

43 It is clear that no single format is preferred by all. There needs to be a strategy to

44 ensure good utilisation of providers, and CPD based events having an impact on

45 practice.

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Introduction

Continuing Professional Development (CPD) is needed to ensure pharmacists are up to date with current practice and guidelines, and to ensure they are providing optimal patient care. With increasing new roles for pharmacists such as working in medical centres or care homes they need to be trained to ensure service provision and competence, wherever they work (Rouse *et al*., 2009). This knowledge needs to be updated regularly to keep up with the changing role, with better critical thinking and collaboration (Toklu & Hussain, 2013). CPD is the basis of achieving lifelong learning but is led by the professional to fulfil their individual needs, dependent on their role and expertise. Achievement of CPD can take place through independent activity, along with participation in organised continuing education (CE) and training events.

Registrants of the General Pharmaceutical Council (GPhC), the regulator of pharmacy in Great Britain (GB), are bound by their revalidation requirements, which include CPD. The GPhC describes CPD as 'a process of continuing learning and development throughout the life of a professional' (The General Pharmaceutical Council, 2017a) and revalidation as 'what a future framework of assurance should look like' (The General Pharmaceutical Council, 2017b). Revalidation, introduced in 2018, includes the creation of 4 CPD entries annually along with a reflection of action on changing practice after a discussion with a suitable peer who understands the registrant's role and practice, and reflective report showing how the registrant is achieving the required standards of pharmacy professionals. Prior to this, only 9 cycles of CPD were required to be completed annually. Although CPD completion is also required for pharmacy technicians in GB, this study will focus on the pharmacist population.

Formats of learning activity

79 Achieving CPD is not just about participating in traditional face-to-face CE activities,

80 but using a range of formats. The GPhC do not specify how registrants should

81 complete their CPD requirements, as long as learning is completed and there is a

82 reflection of how this has impacted practice.

83 Face-to-face attendance activity allows student and instructor interaction plus

84 immediate feedback, although this is more time and resource intensive (Johnson *et*

85 *al*., 2000). It also allows the opportunity for peer discussion. A variety of face-to-face

86 methods are available including networking meetings, conferences, workshops,

87 seminars and lectures, thus giving participants choice to ensure information is

88 presented in a way that is tailored to their learning style and training needs

89 (Romanelli *et al*., 2009). A study by Artino (2010) has shown that learners who

90 perceive that the topic of a course has content importance would rather attend a

91 face-to-face training. Benefits of attending face-to-face training include networking

92 for professional development (Author, 2017), along with having the ability to question

93 an instructor to support learning outcomes (Du Boulay & Luckin, 1999: Lim *et al*.,

94 2014).

95 The use of technology in education and training is increasing steadily with Electronic

96 learning (E-learning) packages, participation in online courses, webinars and

97 podcasts increasing in popularity (Kaplan & Haenlein, 2016). E-learning has

98 become more common place in recent years, either in addition to, or as a

99 replacement for traditional face-to-face learning. It is seen as useful for mandatory

100 learning that needs to be repeated regularly, thereby saving time and money on

101 face-to-face interventions, and allowing maximum coverage of the population (World

102 Health Organization, 2015; Buxton & De Muth, 2012). Distance learning is learning

103   delivered where the student and tutor are not co-located (Du Boulay & Luckin, 1999)

104   and relies entirely on technology for the learning experience. It can provide a more

105   flexible approach for pharmacists' development, thus allowing pharmacists to learn

106   at their own pace (World Health Organization, 2015). Webinars are also being used

107   more frequently with benefits including being able to share a message to a wide

108   group of participants in various locations (Johnson, Aragon & Shaik, 2000;

109   Stephenson *et al*., 2008). Although initially a cost may be incurred from creating the

110   learning, cost savings are seen when compared to face-to-face learning due to

111   multiple mass use and venue and resource savings (Wake & Lisgarten, 2003; Wyatt,

112   2009; Wyatt & Sullivan, 2005). Social media and mobile application use are also

113   becoming more commonplace especially with younger professionals who have been

114   termed as 'digital natives' due to their understanding and use of technology on a

115   regular basis (Ellis *et al*., 2012). A previous study found that older males have been

116   seen to hold the greatest interest in distance learning (Driesen *et al*., 2008).

117   Where distance learning is combined with traditional classroom learning, this is

118   termed blended learning. Blended learning can provide a more flexible approach for

119   pharmacist development, as it does not fully replace traditional face-to-face learning

120   (Buxton, 2014). No difference is seen between perceived and actual learning gains

121   between online and blended learning approaches (Lim *et al*., 2014). Furthermore,

122   using a blended approach does not impact outcomes based on gender (Lim &

123   Morris, 2009).

124   At the same time reading journals, books and manuals as a learning format still

125   occurs.

126   Due to the variety of formats on offer and the lack of consistent model, it is hard to

127   identify the format preferred or used by all (Driesen *et al*., 2008; Bellolio & Stead,

128 2009) or the cost benefits from the activities (Brown *et al*., 2002) or indeed which

129 activities are needed if at all. To ensure participation in various learning formats and

130 CPD opportunities, preferences need to be identified so they can be taken into

131 account in the design of learning programs (Marriott *et al*,. 2007).

132

133 *Providers of pharmacist CPD in Great Britain*

134 In GB, to support CPD requirements, education and training for pharmacists is

135 currently provided by a number of different organisations. The main providers are

136 described below, and summarised in Table I.

137 **Table I to be added here**

138 The Centre for Post-graduate pharmacist education (CPPE) is funded through the

139 National Health Service (NHS) multi-professional Education and Training Fund from

140 Health Education England (HEE) to provide CPD to all registered pharmacists and

141 pharmacy technicians in England. Upon registration with the GPhC, there is

142 automatic enrolment to CPPE services. There is no additional registration fee for

143 participants and education and training is free at the point of contact. The GPhC, in

144 their annual report for 2018-2019 state there were 56288 pharmacists on the register

145 in GB as at March 31st 2019 (The General Pharmaceutical Council, 2019).

146 Participation in CPPE activity is voluntary. Activities on offer include PDF distance

147 learning packages, online assessments, online e-courses supported by a tutor, e-

148 learning, e-workshops, focal point face-to-face learning events, self-study guides and

149 workshops.

150

151 The Royal Pharmaceutical Society (RPS) is the professional membership

152 organisation for pharmacists in GB. Joining the RPS is voluntary, and attracts an

153 annual registration fee. The RPS has a national network of Local Practice Forums

154 (LPFs), run by volunteer members from that geographical area, which represent and

155 support their members locally, including the organisation of face-to-face education

156 and training events. Centrally, the RPS organise both face-to-face and virtual

157 education and training events which are open to both members and non-members

158 usually at a cost (Royal Pharmaceutical Society, 2019), including an annual national

159 conference and local events, plus webinars.

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161 Whereas the aforementioned providers cater for pharmacists working in all sectors,

162 the following two providers focus on community pharmacists. These include 80 Local

163 Pharmaceutical Committees (LPCs) who are independent representative groups of

164 community pharmacists within a locality, in England (Pharmaceutical Services

165 Negotiating Committee, 2019). LPCs tend to organise face-to-face evening

166 information meetings for their members to cascade local issues and priorities. On the

167 other hand, the National Pharmacy Association (NPA) is a trade association, which

168 represents both independently owned community pharmacies and national chain-

169 owned pharmacies. Pharmacies pay a membership fee to join. The NPA offers a

170 wide range of training courses, both face-to-face and distance learning, along with a

171 CPD hub, for all members of the pharmacy team.

172 The United Kingdom Clinical Pharmacists Association (UKCPA) is a fee-paying

173 member organisation for healthcare professionals who provide direct clinical

174 pharmacy services, so has more focus on hospital pharmacists. Sharing current

175 experiences is central to face-to-face UKCPA learning events.

176 Groups are also available representing clinical specialties or for particular

177 demographic groups. These organisations arrange face-to-face meetings and

178 conferences, as well as alternative formats for learning, such as webinars and e-
179 learning opportunities.

180

181 Multiple studies have been conducted looking into barriers and motivators for
182 participation of pharmacists in CPD activities. Facilitators that influence participation
183 in learning include desire to learn, a requirement to stay licensed or registered to
184 practice and enjoying a change from routine (Hanson *et al*., 2007). Staying licensed
185 may include being able to offer specific services in a pharmacy setting or completing
186 statutory CPD. Clear outcomes for learning and how it can be applied into practice
187 and benefit the workplace are essential to facilitate interest in learning (Jubraj, 2009).
188 Having confidence in the format and process of learning will increase participation,
189 as well as having support in the workplace (Power *et al*., 2011). However, it is noted
190 that hospital pharmacists are more confident in the process of partaking in, and
191 recording CPD, than community pharmacists.

192 The most common barriers identified are time and location of training and the
193 associated cost and travel (Buxton & De Muth, 2012; Marriot *et al*., 2007; Hanson *et*
194 *al*., 2007; Donyai *et al*., 2011). Lack of motivation is also seen as a barrier along with
195 method of delivery (Marriot *et al*., 2007; Donyai *et al*., 2011). Time barriers usually
196 stem from job or family constraints (Hanson *et al*., 2007; Author, 2017). Finally, the
197 quality and facilitation of delivery impacts participation (Marriot *et al*., 2007; Donyai *et*
198 *al*., 2011) along with understanding of CPD processes and technical problems
199 (Donyai *et al*., 2011).

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201 Pharmacists fail to see the relevance of CPD, and decreased engagement is seen
202 once they are further on in their careers (Attewell *et al*., 2015). Lack of support and

resources for CPD and lack of perceived relevance on practice also has an effect on participation (Marriott *et al.*, 2007, Donyai *et al.*, 2011; Eden *et al.*, 2009). Understanding the mechanisms for translating learning into behavioural change and practice outcomes is crucial to help pharmacists maintain their professional development (Grimshaw *et al.*, 2002; Auston, 2012). This can be achieved through measuring all aspects of implementation from barriers and facilitators through to strategies for implementation and outcome measures (Moullin *et al.*, 2016). Planning prior to implementation is also key to a successful outcome (Farrell *et al.*, 2012) with activities being designed with application of learning into practice in mind (Lim & Morris, 2009).

Although studies have evaluated elements of pharmacists participation in, and preferences and barriers for participation in learning events in GB, no survey has been carried out with large numbers (Donyai et al., 2011). This paper seeks to be the first paper to provide the pharmacists perspective on the main education and training providers in GB, through analysis of previous participation in activities. In addition, preferences for participation in terms of format, length and frequency are explored along with motivations and barriers for participation. With the multitude of providers and formats on offer, preferences should be considered to ensure future investment is used to maximise participation, ensure return on investment and to ensure CPD can be achieved in the best way for learners, and to support providers in the planning of events. These learns can be used by providers globally. This is needed in an increasingly financially and time stretched society. Previous studies relating to motivators and barriers for pharmacists' participation in education have been either

227 qualitative or quantitative. This study intends to combine both research approaches

228 aiming to bring a more in-depth understanding to the subject.

229 Thus, the aim of this study was to establish current participation in and preferences

230 of pharmacists in terms of format and provider, plus motivators and barriers, for

231 participation in CPD activity in GB, and support needed for application of learning.

232

233 **Methods:**

234 This study used structured interviews along with questionnaires. The location under

235 investigation is South London, England, covering 12 local health authorities. There

236 are namely Bexley, Bromley, Croydon, Greenwich, Kingston, Lambeth, Lewisham,

237 Merton, Richmond, Southwark, Sutton and Wandsworth. There is one LPF covering

238 South London, and 5 LPCs covering the 12 local health authority areas. In 2018,

239 approx. 1800 pharmacists worked in this area. This included 647 community

240 pharmacies with 1195 community pharmacists, along with 10 NHS hospitals (Health

241 Education England, 2018). The questionnaire included questions based on

242 information from GPhC (2019), previously used local evaluation forms (Author, 2017)

243 and validated learning style preference tools (Honey, 1992; Deing, 2004; Fleming &

244 Baume, 2006). No other previous studies could be found that identified the aims of

245 this present study. This questionnaire received face validation, to ensure suitability

246 and clarity, through the South London LPF committee members, which consists of

247 pharmacists from all sectors of the profession (n=8). The survey consisted of 26

248 Likert scale, tick box multiple choice and open-ended questions, in 7 parts.

249 The questionnaire was added to an online data collection tool, Survey Monkey. A

250 pilot study aiming for a 5% population (n=90) to ensure content validity was

251 completed via local contacts and the LPF committee in South London. The pilot

received 63 responses between February and March 2015. No problems or anomalies with the questionnaire were reported, therefore roll out then occurred starting in September 2015 with the pilot sample included in the data. Using Raosoft software, (http://www.raosoft.com/samplesize.html) based on a sample size of 1800, 317 responses were required to achieve a 95% confidence interval and to limit sample error. The questionnaire link was circulated through local pharmacy networks; leads of the 5 LPCs for dissemination to community pharmacies, plus it was sent to hospital and local health authority Chief pharmacists, who are responsible for planning and commissioning local health services. It was also posted out to 250 pharmacies in South London which were known from previous work (Author, 2019). Three final year pharmacy students on the undergraduate MPharm programme further helped to collect responses from hospital and community pharmacists using paper surveys with collection finishing in March 2016. Completion of the survey was taken as implied consent to take part. Responses were entered onto Survey Monkey by the lead researcher from paper surveys received. Raw data was exported from Survey Monkey to Microsoft Excel to be analysed. As the data was non-normally distributed and ordinal in nature, chi-square tests and Mann Whitney U tests were used to identify any associations between responses. Sub analyses were performed to identify potential variances by gender, sector, age and working hours. Statistical significance was assumed where $P \leq 0.05$. Preferences for learning formats were ranked according to 1st, 2nd and 3rd preferences expressed. These preferences were added to gain an overall preference score. For open ended questions word counts were used, along with weighted means, where appropriate.

The structured interview consisted of 16 questions with the objective of understanding the previous experience of training and providers, preferences for

277   completing educational activity, motivators and barriers, as well as multidisciplinary

278   learning. All questions were face validated by a colleague pharmacist prior to the

279   start of the study. However, 6 of the questions were used in a previous study

280   (Author, 2017). No additional pilot was carried out for the additional questions,

281   although participants were invited to participate in the interview by giving their

282   contact details when completing the questionnaire. Contact details were given by 74

283   responders at the end of the survey to participate in the follow up interview. All were

284   contacted by email to ask if they were willing to take part in the interview, either in

285   person or by telephone, according to preference and convenience. All who

286   responded (n=19) were interviewed between May and October 2015.

287   Those who accepted an invitation for the follow up interview were emailed to arrange

288   a suitable time for the interview. A participant information sheet was sent by email to

289   those who wished to be interviwed were given in person where face-to-face

290   interviews occurred. Written confirmation of participation was received via email from

291   all participants prior to carrying out the interview. The lead researcher travelled to

292   places convenient for the participant where possible, or conducted the interviews

293   over the phone. Interviews lasted between about 12-32 minutes, were audio

294   recorded with further verbal consent of the participants, and were transcribed

295   verbatim, before being deleted. Analysis of the data was done thematically using an

296   inductive framework approach (Braun & Clarke, 2006) using 5 phases, consisting of:

297   familiarisation of the data, generating initial codes (table 1), searching for themes,

298   reviewing the themes and defining and naming the themes. The transcripts were

299   read and re-read until all emerging themes had been coded. In addition, all

300   transcripts were managed and coded using NVIVO 10 software. Although no new

301   themes were identified after 14 interviews (Francis *et al*., 2010) all responders were

302 interviewed and included in results. Results are presented in form of themes and

303 corresponding subthemes underneath. Quotes from interviews are used to illustrate

304 the findings presented under each theme. This study received ethics approval from a

305 university ethics committee (1415/018).

306

307 **Table II to be added here**

308

309 **Results:**

310 The response rate, including the 63 pilot responses was 338 giving a response rate

311 of 18.8% if 1800 pharmacists in South London is assumed. Despite the low response

312 rate, the minimum sample size required (317) was achieved. Not all questions were

313 answered by all responders therefore valid percentages are used for each question.

314

315 *Demographics*

316 The majority of responders were female (n=215, 60.4%). Responses came from all

317 age ranges and multiple areas of practice. The majority of responders worked over

318 30 hours (n=225, 66.6%), and 72.8% (n=246) were in employed work, with 68

319 responders (20.1%) locuming. The demographics of the respondents broadly

320 reflected current breakdown of pharmacists in GB (Hassell, 2011). The majority

321 (n=293, 86.6%) had taken part in some form of education and training activity in the

322 past 12 months. Results did not vary by gender. By sector, those working in primary

323 care, defined as working in a commissioning or governance role for a local health

324 authority, (96.4%, n=27/28) and academia (96.3%, n=26/27) were most likely to have

325 participated. Of the 45 who had not participated in activity during the past year, there

326 was no obvious connection with gender or sector. However, there was a significant

327 correlation with working hours, with increasing non-attendance with reduced working

328 hours (p= 0.003). The demographics of pharmacist responders can be seen in Table

329 II.

330

331 **Table III to be added here**

332 *Previous participation*

333 From the 293 responders who had participated in education and training in the past

334 12 months, the employer was the most frequent organiser of education or training.

335 Just over half of responders (n=147/293, 50.1%) had participated in an employer led

336 event. The employer was most used by academics (n=17/27, 63%) with community

337 pharmacists using employer the least (n=86/200, 43%), compared to 43/90 hospital

338 pharmacists (47.8%). When taking into account that 246 participants stated they

339 were employed, 60% (147/246) had used employer organised training.

340 CPPE had been used by less than half (n=139/293, 47.4%), and 34.1% (n=100)

341 stated their education or training was self-driven. CPPE was used twice as much by

342 community pharmacists (n=98/200, 49%) versus their hospital colleagues (n=23/90,

343 25.6%). The RPS had been used by 29.4% (n=86/293) with 19.1% (n=56) using an

344 LPF. There was no difference seen across genders. There was similar usage across

345 age groups with the exception of those under 25 who used GPhC and RPS more

346 than other age groups. As expected, LPC and NPA were not used at all by hospital

347 pharmacists, while UKCPA was used more by hospital than community pharmacists

348 (8.9%, n=8/90 vs 1%, 2/200).

349 When looking at the format that had been used, 62.0% (n=181/293) had completed

350 an e-learning package, 54.8% (n=160/293) had attended a workshop, 53.4%

351 (n=156/293) had read a journal article and 51% (n=149/293) had attended a

conference or network meeting. All other formats had been used by less than 50%.

Some variation was seen for various formats across gender, sector and age. Conferences were attended by 59.1% (n=106/179) of females versus 36.2% (n=37/102) of males, whereas manuals were used by 17.7% (n=18/102) of males versus 8.3% (n=15/179) of females. E-learning, workshops and manuals were used more by community (n=175) than hospital pharmacists (n=81) (69.1% (n=121) vs 46.9% (n=38), 58.3% (n=102) vs 43.2% (n=35) and 16.6% (n=29) vs 4.9% (n=4) respectively) whereas completing a formalised qualification was about double for hospital pharmacists compared to community pharmacists (19.8% (n=16) vs 9.1% (n=16)). Those aged 26-35 were most likely to have undertaken a formalised qualification. Attendance at workshops and lectures increased with age, as did the use of webinars. Reading journals was also completed significantly more (P= 0.012) by the over 55s versus the under 25s (78.6% (n=22/28) vs 46.2% (n=14/30)).

The optimum time for participation in events is seen to be 1-2 hours, except for daytime or weekend events, which can be longer. Although podcasts would be acceptable up to 2 hours, shorter appears to be preferable.

Downloading and listening to podcasts appear to be acceptable monthly. Every three months seems to be optimum for evening events (including lectures and workshops) or participating in a webinar with 6 monthly being the most accepted for a 1-day conference, weekday daytime or weekend events.

Attendance at a workshop was the most preferred way of achieving learning, closely followed by completion of an e-learning package and attendance at a conference. 1st preference responses also mirrored overall response for individual formats. Full breakdown of results is shown in table IV.

Insert table IV here

When looking at demographics, those aged 36-45 were least likely to prefer face-to-face attendance and they showed the highest preference for e-learning by age group with females showing preference for e-learning over males. Those aged less than 25 had a higher preference for learning from mobile applications and video websites. Hospital pharmacists had stronger preferences for attendance at conferences and lectures than their community colleagues did, although there was no difference seen by sector for attendance at workshops. All sectors, genders and ages preferred attendance at workshops to lectures. When comparing by demographic group, females and hospital colleagues are significantly more positive about peer review ($p<0.05$; 0.010 gender, 0.003 sector) than males and community pharmacists. Linking to learning style preferences, visual learning was preferred, followed by kinaesthetic learning with over half (55.8%, n=177/317) stating they preferred to learn interpersonally through social interaction.

Barriers to attendance

The biggest barriers to attendance were time and venue, with finishing work too late being cited by 47.4% (n=152/321) of responders, venues being too far listed by 42.1% (n=135/321) and getting home too late being listed by 36.1% (n=116/321). Differences were seen between male and female responders and those working in hospital and community settings, but no other demographic. Others demographics included age, role and hours worked per week. Male responders were significantly more likely ($p=0.03$) to state barriers of finishing work too late, not getting paid to attend, preferring to complete CPD through non face-to-face methods, and learning topic having no link to a pharmacy service, compared to female colleagues. Females stated childcare issues as a barrier in 18.2% of cases versus 4.4% of men. By sector, community pharmacists stated the following barriers; finishing work too late,

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402 venues being too far, not getting paid to attend, not being contractually obliged to

403 attend, preferring to complete CPD through non face-to-face methods, format of

404 learning, and previous bad experience, more frequently than hospital colleagues.

405 These differences were, however, not significant. For all listed barriers, except 'I do

406 not require the training to do my job', where responses were mirrored, barriers were

407 perceived to a greater extent by community pharmacists. Full results can be seen in

408 table V.

409 **Insert table V here**

410 Of the 35 open-ended responses, time featured strongly with timing of events being

411 a barrier (n=12), along with release for attendance at events if they were daytime

412 events due to no employer support for attendance (n=4). In addition, cost of some

413 events was also a barrier (n=6) along with the current training on offer being pitched

414 at the wrong level due to specialism in role (n=4).

415 From the free text responses (n=289) about motivators for participation in ongoing

416 education and training, topic was the main factor (n=58), with many citing interest

417 (n=30), requirement (n=42) and role (n=40) as motivators. Knowledge (n=39) and

418 CPD (n=36) plus relevance (n=36) also featured strongly.

419 *Tools to support application of learning*

420 After attending a learning event, 72% of responders (n=231/321) said they would

421 benefit from receiving a copy of the presentation. Over half (58.6%, n=188/321)

422 asked for case studies and 57.9% (n=186/231) asked for a follow up email with a

423 reminder of key points. Just less than half (46.7%, n=150/321) felt that completing an

424 online assessment would be of use. Interestingly, 6 responders (1.9%) said they did

425 not need any tools after an event. All of these responders were community

426   pharmacists, with 3 being male and 3 females; 3 were employed, 2 were locums and

427   1 was retired; 2 were less than 25, with 1 each from the other age ranges.

428   *Interviews:*

429   A total of 19 interviews were completed giving a response of 25.7% (19/74). Of those

430   interviewed 11 were female. Participants included 1 pharmacist working in a GP

431   surgery, 2 local health authority commissioning pharmacists, 2 academic

432   pharmacists, and 5 working in a hospital setting with the remaining working in a

433   community setting. All participants who replied to the initial request for interview were

434   included.

435   Three main themes emerged from the interviews: Engagement, Intervention and

436   Application of learning, each with related subthemes (Table 1).

437   **Engagement**

438   Engagement for attendance or participation in a learning event is linked to attraction

439   for the event, and is supported by enablers for participation and topic. Enablers

440   include regular planned meetings and ensuring the meeting is relevant to role.

441

442   'The newer therapies around, new ways of treating patients, that's what makes

443   something relevant to me. It is about practice, basically about information that

444   improves my practice.' (**Interview 16)**

445

446   Support service outcomes and personal CPD was also seen as beneficial.

447

448   'I don't normally go to additional training unless it will benefit a service, so it needs to

449   be necessary information.' (**Interview 18)**

450   'I am sure there are lots of people who are behind on their CPD entries and actually

451   that is a really good way to consolidate your learning.' (**Interview 5)**

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453   It is also important to provide ongoing learning in protected learning time.

454

'I would rather attend, where the mobile is off, no one is disturbing me, and I am doing something constructive.' (**Interview 11)**

The timing and location of meetings drives attendance, echoing the survey results, along with previous experience of a training provider.

'I think location makes a big difference. I know if you can get somewhere really easily it is less of a barrier after a long day.' (**Interview 9)**

'I think I would trust xxxx, because the ones I have attended I have liked.' (**Interview 4)**

However, if participants are not aware of sessions they won't participate so awareness and advertising of content is essential. Echoing the survey, barriers to attendance also include family and work commitments, and the need to try and maintain the correct work life balance.

'I like to know who the speakers are and the agenda in advance, because sometimes you turn up and it is not at all what you thought, so if you have someone from a different angle to what you wanted covered, and I would also, ideally, like it to be someone independent.' (**Interview 14)**

'Jobs are getting more stressful, so for many pharmacists, especially community pharmacists, you are in your pharmacy 8-7 you need a personal life and you need to be able to go home and relax.' (**Interview 5**)

Getting the topic right will attract more attendees to an event. The topic needs to be described well and be applicable to all, have national or local importance, and must be current and up to date to attract interest. Cost can also be seen as a barrier for some individuals if the course is a paid one.

'I have a feeling that people aren't attracted to the topic or don't think it is relevant for them, or, the importance of that has not been, they have not understood the importance of why that topic needs to be done.' (**Interview 15)**

'If I don't work I don't earn … so cost is a significant factor for me.' (**Interview 16)**

Intervention

The perceived success of the intervention depends on format. When attending a face-to-face educational event a mixture of teaching methods is useful and the use of case studies is requested, to supply the application of learning into practice.

'I think you need different styles for different people, there is no one answer.' (**Interview 10**)

The opportunity to network enables discussion and the sharing of best practice, and having an expert speaker supports this learning, bringing different perspectives. The sharing of anecdotes was seen to support recollection of knowledge and translating learning into ideas for application of knowledge into practice.

 'Being with like-minded people or people with specialist areas, trying to speak to them and get their insight.' (**Interview 17)**

 'It is good to help you remember what you are being told when you have a chance to think about how you will apply it in practice.' (**Interview 1)**

'It is to do with the speaker, and the way things are said, which makes you remember**' (Interview 4)**

Learning independently has pros and cons. Articles and emails or websites are seen as positive opportunities for learning on your own and in your own time. Flexibility is the main perceived benefit with independent learning.

'There are times I sometimes cannot make an event and you don't want to miss out, so a webinar is one of those good things that I like because I can do it from home…they are very clever with their IT so you listen but do the case studies with other people in a group virtually, which I think is an amazing model, because I felt like I was in a workshop but sitting at home.' (**Interview 5**)

Whilst technology is seen as a benefit, this is hindered when technology is not effective and from the lack of human interaction.

'So if you have questions there is no one to ask if you have problems.' (**Interview 18**)

'You have got the distractions of comments coming up and it goes out of sync, and maybe some technical glitches, so they are not my favourite.' (**Interview 9**)

Application

Application of learning is supported by the appropriate tools and assessment. A summary of notes or slides enables reflection on the learning, which echoes the questionnaire responses.

'A summary of what the actual objectives were after the learning event. Powerpoint presentations are o.k. but it also requires notes with it. Powerpoints are too brief, because when you go back to it doesn't help the understanding very well. I will go back to it if it is relevant.' (**Interview 18**)

Assessment of knowledge was seen as a positive.

'To help you remember what you know and don't know and will help you. Probably the day after because then it is fresh in your mind. Maybe online or given as a sheet during the evening.' (**Interview 7**)

Discussion:

The findings collected from the study point out that the provision of education and training activities, supporting CPD, is a complex situation that needs to be adjusted for personal preferences and circumstances.

The findings from this study build on previous work about motivators and barriers for participation of pharmacists in educational and CPD activities (Buxton & De Muth, 2012; Marriot *et al*., 2007; Hanson *et al*., 2007; Donyai *et al*., 2011, McConnell *et al*., 2010). Relevance to role is important along with ensuring the balance between learning and application into practice. It is seen that there is a need to participate

where possible, so planning is important to ensure participants can see the value in attending, by having a clear understanding of the topic, what learning will be gained, and how they can use that learning in practice, as found in a previous study by Author (2017). It is also clear that perceived barriers differ by gender and sector of work, so these would need to be addressed, dependent on the target audience.

It was positive to see that most respondents had participated in an activity to support their ongoing learning and CPD in the past 12 months. However, it is interesting to see that the national free system available to all pharmacists, CPPE, had only been used by just over half. This may be a result of having access to multiple organisations in addition to employers who offer a large range of support to their employees. Having seen that non-participation increases with decreased working hours, the role an employer has on motivating participation in learning cannot be underestimated. Previous studies have shown pharmacists are more likely to participate in CPD activities where they have an active interest (Hanson *et al.*, 2007; Donyai *et al.*, 2011). There may also be a different perception of what is needed as additional learning or education if this is already embedded in the job, for example with shadowing, or peer review. The results show that peer review and shadowing received greater scores when they are used regularly in practice, such as with hospital pharmacists. This may be, in part, due to the collaborative working nature and interprofessional element of the hospital role. With the introduction of peer review into the revalidation system for pharmacists in GB, this may act as a catalyst for pharmacists to participate in face-to-face events, and to gain feedback, especially for those community pharmacists who work in isolation. CPD completion is integral to the new revalidation process, so participation in activities will continue to be required.

Our results show that, although e-learning is the most utilised method for achieving or delivering training, face-to-face learning is still preferred, where possible, showing that the format of learning is not the main driver. Being active in the learning process was, however, seen as a preference. As previously seen in a study by Author (2017), the topic is a key driver for participation in learning. E-learning may facilitate participation of fact heaving learning or mandatory learning by employers due to accessibility. Health and safety topics, for example, can be more easily accessed through e-learning. A previous study by Gonzalez-Gomez *et al*. (2012) showed higher female satisfaction with e-learning compared to male students, and our results echo this. However, with the increasing use of technology, the results show that younger pharmacists are increasingly using alternative technological methods to achieve learning as they want theory, whereas older pharmacists prefer the social interaction of learning in a group environment through lectures or workshops, as echoed by learning style preference results. However, even though younger pharmacists are open to technology and online learning they do not want it to replace face-to-face contact completely (Nesterowicz *et al*., 2016; Simonds & Brock, 2014). Using technology, as in previous studies by Ikenwilo & Skatun (2014), and Lim *et al*. (2007), is shown to have positive impact, although is impacted by technical barriers. Previous studies have shown e-learning to be flexible (World Health Organization, 2015; Lim *et al*. 2007). This may also overcome some of the barriers related to venues being too far and getting home too late. Our findings do suggest though there is a preference for human interaction when using technology which has also been seen in previous studies (World Health Organization, 2015; Nesterowicz *et al*., 2016).

Attendance at events may be affected by age as our study showed that those between the age of 36-45 having least preference to face-to-face attendance. A previous study (Author, 2017) identified that this could be due to childcare or caring responsibilities. In addition to age, ease of access to venues and geography of an area may also impact participation as a study in Western Australia showed pharmacists used journals most commonly, followed by reference books then the internet as sources of education (Clifford, 2011). Our results showed that those over 55 are more likely to use journals as a format for CPD.

The results emphasise that the intervention needs to provide the opportunity to learn according to individual educational needs, whilst enabling participants to share thoughts and experiences, in order to translate the learning into practice. The findings in this paper echo previous work showing that a variety of activities included in the training event allows a wider range of learning styles to be accommodated (Hayes & Allinson, 1996).

With regards to gender, previous research by Driesen *et al*. (2008) showed that women prefer lectures to workshops, as they disliked active involvement, however our study differs, showing involvement is preferred to ensure learning is achieved.

Our results looked at preferences by sector. Due to their target audiences, it is not a surprise that community pharmacists had strong preference for LPC and NPA whereas UKCPA had greater participation as a provider for education and training from hospital pharmacists. CPPE and employer were also preferred by community pharmacists. The content of sessions by CPPE may also be felt to not be appropriate for the hospital pharmacists, as topics are general, so if the pharmacist specialises in a certain area, more detailed training may be required. A study by Nesterowicz *et al*. (2016) showed that hospital pharmacists were more confident in

625 completing CPD than their community colleagues which may also explain the

626 increase in completion of formalised qualifications in hospital pharmacists compared

627 to community pharmacists. Hospital pharmacists were also seen as statistically more

628 activist than their community colleagues which may explain their support of peer

629 review. It was seen that academics had the most participation of all demographic

630 groups, which is positive, reflecting job requirements to teach material that is

631 relevant and up-to-date.

632 Our results have shown for the first time the level of use of training providers in the

633 GB, and the correlations between demographics and learning preferences. Although

634 demographics and learning style preferences had an influence on participation and

635 format preference, learning needs to be individually led to support differences.

636 Flexibility supported by a range of formats and opportunities is required, to support

637 the learning of all pharmacists. The need to ensure participation is important to allow

638 the attendees to apply their learning. The opportunity to network and share is also

639 important to increase knowledge, as well as motivating individuals, as also

640 previously identified by Herrera *et al*. (1996). This study echoes that the speaker or

641 facilitator is also key to engage participants as seen by Copeland *et al*. (1998).

642 Opportunities for hands on application will allow for practice improvement after the

643 intervention (Driesen *et al*., 2007), although long term application of learning and

644 achievement of learning outcomes still needs further research (Asarbakhsk &

645 Sandars, 2013; Salter *et al*., 2014).

646 It must be noted that none of the providers are being used to their full capacity.

647 Therefore providers are encouraged to continue using various formats of learning,

648 and should evaluate the impact of these through uptake and regular feedback. With

649 the employer being the main provider, more awareness is needed of alternative

650 opportunities to ensure value for money for those who are funding activity, especially

651 when this is government funded. With the introduction of revalidation, a focus on

652 collaborative working, to ensure peer review conversations, and impact on practice

653 will be required. Rather than just attendance or participation, a change in practice will

654 be needed, so activities need to be designed in a variety of formats to ensure

655 learning can be applied to practice while embedding peer review. Therefore, a

656 strategy is required for provision to match revalidation requirements. Our results

657 show that providers need to consider relevance to practice and use examples that

658 can increase knowledge but are also applicable to the pharmacist role.

659 These findings remind us that a one-off education or training event may be

660 insufficient to embed new learning into practice, so activities prior to and after the

661 event are useful in helping to enable pharmacists to retain learning and apply them

662 into practice. These findings will support planning of CPD interventions globally.

663 Comparing to a previous literature review regarding attitudes and participation in

664 CPD activities in GB (Donyai *et al*., 2011), this is a large sample size, and combines

665 qualitative and quantitative results, along with information of providers and

666 preferences for different formats, including digital provision. However, although a

667 large sample of pharmacists has been surveyed, they are all from one location, as in

668 previous studies, so this may be considered as a limitation of the study. Although the

669 demographics broadly represent those on the GPhC register (Hassell, 2011), other

670 factors such as location, working patterns or travel time may be different in various

671 parts of GB. This study is also limited as, although preferences were identified,

672 knowledge actually gained from the various formats was not investigated. Future

673 studies may also benefit from multivariate analysis to study confounding factors.

674 The study brings together new and previous research to highlight the ingredients

675 needed to ensure maximum participation in educational events through the

676 understanding of current experiences and expectations of pharmacy professionals.

677 Thus, these findings will support pharmacists to continue to achieve CPD required to

678 maintain revalidation with the GPhC.

679

680 **Conclusions:**

681 Pharmacists want to participate in activity where possible, and the drivers for this are

682 topic, interest and gaining CPD. Barriers to be overcome include timing of event and

683 location, so the use of technology should be explored, as currently e-leaning is the

684 most used format, so will continue to grow in the future. Planning in advance is

685 crucial. It is seen that face-to-face learning is still preferred, although there is an

686 increasing emergence of online learning. Therefore, continued work is still needed to

687 ensure preferences are taken into account when planning learning programmes, to

688 allow uptake and flexibility of opportunities, but also to ensure social interaction and

689 the ability to ask for help when required. There needs to be a strategy to ensure

690 good utilisation of providers. To support application of learning into practice,

691 pharmacists should be given information, where available, and their knowledge

692 should be tested, to ensure learning. Where applicable, the sector and gender of

693 attendees should also be included in the planning to ensure their unique motivators

694 and barriers are taken into account. Further work needs to be completed to compare

695 the results found in the South London local health authorities with other areas of the

696 country, and globally to identify factors that may cause differences in results, and to

697 identify similarities and differences globally. Future work should also compare

698 participation in events by provider in other countries. Work with different healthcare

699 professionals would also be useful to identify similarities and differences across

700 professions. A framework needs to be created to ensure knowledge is gained from

701 the learning programmes on offer, and that this is measured and evaluated.

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Provider in GB	Target audience in GB	Provider abbreviation
The Centre for Postgraduate Pharmacist Education	All registrants of the GPhC	CPPE
The General Pharmaceutical Council	Registrants	GPhC
Local Pharmaceutical Committee	Community pharmacists	LPC
Local Practice Forum	Members of the Royal Pharmaceutical Society in a local geography	LPF
The National Pharmaceutical Association	Community pharmacists	NPA
The Royal Pharmaceutical Society	Members	RPS
The United Kingdom Clinical Pharmacy Association	Those working in clinical practice	UKCPA

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882 **Table I:** Summary of providers

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code	subtheme	theme
regular/planned meetings are beneficial		
relevance to role		
local location		
timing of events influences attendance		
length of events influences attendance		
scheduled events give protected learning time		
good advertising and awareness needed		
registering ties you in		
CPD is a driver		
learning is mandatory and needs to be completed		
experience or trust in provider	Enablers	
although you registered things might come up		
family commitments stop attendance		
if you finish work too late you can't attend		
pharmacists finish work too late		
work/life balance needed	Barriers	
current/up to date topic		
interest in topic		
topics should be applicable to all		
local topics increase attendance		
a clear description of the topic is needed	Topic	Engagement
case studies are useful	Ingredients for	intervention

mixture of methods needed	group learning	
specialist speakers are useful		
sharing best practice		
Discussion		
Networking		
Multidisciplinary learning - seeing other peoples point of view		
pharmacy is an insular profession		
mixing with other sectors		
human interaction with presenters needed		
effective facilitation needed		
articles are useful/flexible		
webinars are good refreshers of knowledge		
flexibility in participation in distance learning		
IT is easy to use		
IT can be a barrier if technical issues		
websites/email updates are sources of information	Individual learning	
No interaction		
Copy of slides useful		
References after an event		
Application opportunities need to be discussed	Tools	Application of learning
assessment of learning after the event	Assessment	

912 **Table II:** Coding for thematic analysis

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Gender		Sector	
Male	n=119 (35.2%)	Community Pharmacy	n=200 (62.3%)
Female	n=215 (60.4%)	Hospital pharmacy	n=90 (28%)
No response	n=15 (4.4%)	Primary care (commissioning or governance)	n=28 (8.7%)
Age		Academia/education	n=27 (8.4%)
Less than 25	n= 37 (10.9%)	Industry	n=5 (1.6%)
26-35	n=128 (37.9%)	General Practice	n=5 (1.6%)
36-45	n=68 (20.1%)	Government	n=3 (0.9%)
46-55	n=52 (15.4%)	Registered pharmacist in full time study	n=2 (0.6%)
Over 55	n=32 (9.5%)	Other	n=8 (2.5%)
No response	n=21(6.2%)	**Employment status**	
Working hours/week		Employed	n=246 (72.8%)
Over 30 hours	n=225 (66.6%)	Locum	n=68 (20.1%)

				Not currently working	n=7 (2.1%)
Between 15-30 hours	n=68 (20.1%)				
Up to 15 hours	n=18 (5.3%)			Retired	n=6 (1.8%)
No hours	n=7 (2.1%)			Student	n=2 (0.6%)
No response	n=20 (5.9%)			No response	n=9 (2.7%)

Table III: Demographics of pharmacist responders

	1st preference	2nd preference	3rd preference	Total of responders choosing this option (out of 323)
Attendance at a workshop	66	55	32	153 (47.4%)
Completion of e-learning package	52	44	38	134 (41.5%)
Attendance at a conference/network meeting	51	31	29	111 (34.4%)
Attendance at a lecture/seminar	36	31	39	106 (32.8%)
Reading a downloaded presentation	26	14	27	67 (20.7%)
Reading journal(s)	14	17	20	51 (15.7%)
Participation in a webinar	13	18	17	48 (14.9%)
Role play/ patient simulation	12	7	12	31 (9.6%)

Mobile application(s)	9	13	6	28 (8.7%)
Small group discussion	8	22	20	50 (15.5%)
Completion of a workbook	7	27	15	49 (15.2%)
Listening to a Podcast	7	9	11	27 (8.4%)
Reading book(s)	6	8	9	23 (7.1%)
Information websites	6	8	17	31 (9.6%)
Video Websites e.g. YouTube	4	10	14	28 (8.7%)
Peer review	3	3	4	10 (3.1%)
Social Media	2	4	8	14 (4.3%)
Laboratory based activity	1	2	3	6 (1.9%)

926 **Table IV:** Overall preference for learning format

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Barrier to attendance	Overall Response (n=321)	Male (n=115)	Female (n=198)	Community (n=197)	Hospital (n=83)
I finish work too late	47.4% n=152	58.3% n=66	41.1% n=81	62.4% n=121	28.9% n=24
Venues are too far	42.1% n=135	40.9% n=46	42.9% n=85	47.2% n=92	34.9% n=29
I would get home too late	36.1% n=116	37.4% n=42	36.4% n=71	41.1% n=79	34.9% n=29
I do not get paid to attend	28.7% n=92	35.7% n=40	24.8% n=48	36.6% n=70	18.1% n=15
No interest in subjects on offer	26.5% n=85	24.4% n=28	27.8% n=54	24.9% n=49	22.9% n=18
Not advertised with sufficient notice	23.4% n=75	21.7% n=24	24.8% n=49	26.9% n=52	18.1% n=15
Not needed for my job role	16.8% n=54	13% n=15	19.2% n=37	14.2% n=28	14.5% n=11
I do not get accredited to attend	16.2% n=52	17.4% n=20	14.7% n=28	18.3% n=35	12.1% n=10
I prefer to complete	14.0% n=4	19.1% n=22	10.1% n=20	18.3% n=36	1.2% n=1

my training through non face-to-face methods					
Childcare issues	13.1% n=42	4.4% n=5	18.2% n=36	13.7% n=27	12.1% n=10
I do not require the training to do my job	12.8% n=41	12.2% n=14	12.6% n=25	10.7% n=21	10.8% n=9
My employer supplies all the training I require	12.1% n=39	15.7% n=18	10.1% n=20	14.7% n=29	10.8% n=9
I am not contractually obliged to attend	12.1% n=39	10.4% n=12	12.6% n=25	13.7% n=27	8.4% n=7
No link to a pharmacy service	10.0% n=32	15.7% n=18	6.6% n=13	11.2% n=22	7.2% n=6
Format of learning does not appeal	9.7% n=31	10.4% n=12	7.6% n=15	10.2% n=20	3.6% n=3
Previous bad experience	8.7% n=28	10.4% n=12	9.1% n=16	10.7% n=21	3.6% n=3
Caring responsibilities	5.3% n=17	5.2% n=6	5.1% n=10	6.1% n=12	4.8% n=4

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Table V: Barriers for attendance at training events

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