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RESEARCH ARTICLE

# Exploring Nigerian pharmacists' attitudes and perceptions to continuing education and professional development

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## Abstract

**Background:** Many professions undergo continuous training to keep abreast of happenings and current trends. Pharmacy is one of such profession; it achieves this by participating in Mandatory continuing professional development (MCPD). MCPDs come in various forms, including seminars, conference attendance, and reading research journals. **Aim:** This study sets out to assess and explore pharmacists' attitudes towards continuing education in Nigeria and investigate the perceived barriers that hinder pharmacists from being involved in continuing education (CE) activities. **Methods:** A validated questionnaire composed of 19 items was shared online among pharmacists practicing in different settings in Nigeria. Descriptive and inferential statistics were used to analyse the variables. **Results:** A total of 586 pharmacists participated in the study. A high percentage (77.80%) of those who completed the questionnaire strongly agreed that life-long learning is a professional responsibility of all pharmacists to increase their knowledge. A fair number of the participants (52.90%) adopted a positive attitude toward CE, while almost a similar percentage (47.10%) of participants displayed poor attitudes. The main barriers identified were the lack of time (49.10%), the cost of (MCPD) programmes (65.90%), and job constraints (64.80%). **Conclusion:** This study showed that the attitude of Nigerian Pharmacists toward CE is polarised between positive and negative, with several factors impeding their involvement in CE.

## Introduction

The pharmacy profession has undergone tremendous transformation in recent years. The roles of pharmacists have expanded beyond medication dispensing to providing pharmaceutical care and public health services to patients (Lemay *et al.,* 2018). Pharmacists must continually improve their knowledge, abilities, and performance to provide patient-centred care (Biggs, 2003). Each country has developed its system for regulating Continuing Education (CE) and Continuing Professional Development (CPD). CE has become mandatory with a definite number of credits as a condition for the renewal of the pharmacist license in many countries, such as France and the United States (US). However, the United Kingdom (UK) and Canada follow a mandatory CPD approach (Driesen *et al.,* 2007). In the Middle East, Jordan and Iran have mandatory CE systems. Since 1991, pharmacists in Iran have had to complete 25 hours of continuing education to renew

their licenses (Ibrahim, 2012; Sarayani *et al.,* 2012). Among the Arabian Gulf countries, Saudi Arabia and the United Arab Emirates (UAE) have mandatory CE systems. In the UAE, CE has been mandatory since 2009, and pharmacists are required to complete 20 CE hours annually for re-licensure (Hasan, 2009; Ibrahim, 2012).

Complementary institutions that carry out postgraduate non-academic education for pharmacists in Nigeria include the West African Postgraduate College of Pharmacists (WAPCP) and the Pharmacists Council of Nigeria (PCN) in the form of mandatory continuing professional development programmes. Universities have kept up with postgraduate academic training for pharmacists who want to deepen their understanding of the various core areas of pharmacy education, such as pharmaceutics, pharmaceutical, and medicinal chemistry, pharmacognosy, toxicology, pharmacology, therapeutics, pharmaceutical microbiology, pharmaceutical technology, and clinical pharmacy. Schools of pharmacy have traditionally offered capacity-building and capital development in postgraduate education in pharmaceutical sciences, usually involving research, serving as a means of developing and providing the pharmacist workforce with the required competencies in academia and the healthcare delivery system (Ogaji & Ojabo, 2014).

The WAPCP plays a significant role in the postgraduate training of pharmacists in English-speaking West African nations. The College is an arm of the West African Health Community (WAHC) that was founded in 1990 in response to patients' increasingly complex medical needs. Another postgraduate professional programme designed to keep the expertise of practising pharmacists up-to-date is the PCN mandatory continuous professional development (MCPD) programme. In early 2000, the PCN initiated MCPD in designated centres across the country. The programme was designed in modules, each for a year, and was a prerequisite to the annual renewal of the license to practice. The programme was mounted at various centres across the country. Universities and research institutions were used as training sites (Ogaji & Ojabo, 2014).

Continuing Professional Development (CPD) is a lifelong learning process that requires continuous proficiency of the pharmacist through the maintenance and enrichment of skills, performance, and knowledge. It is a global tool that requires active participation in learning activities, allowing pharmacists to keep their knowledge up-to-date, assert their skills, and have a vital function among other healthcare professionals (International Pharmacy Federation (FIP), 2014). The role of the CPD process is to encourage healthcare professionals to keep up with the changes in practice and ensure that the public confidence in the services they offer is retained and developed (International Pharmacy Federation (FIP), 2014). However, due to the nonlegal backing tying the annual registration to the participation in update lectures, it suffered some setbacks.

## Methods

### *Study design*

A descriptive, cross-sectional survey of pharmacists' attitudes and perceptions was conducted from March to July 2021. It included Nigerian pharmacists working in public and private sectors (hospitals, regulatory institutions, research institutions, and private pharmacies). Data were collected via an anonymous online questionnaire. Responses allowed for calculating participants' scores to interpret their attitudes toward CPD. Also, open-ended questions enabled pharmacists to talk freely about the barriers that might prevent them from undertaking CPD activities.

### *Sampling and data collection procedures*

All fully-licensed pharmacists working in the public and private sectors were eligible for the study. The study targeted pharmacists working at all care levels, including hospitals, clinics, non-governmental organisations, other private sectors, and community pharmacies, in addition to pharmacists in regulatory institutions and research institutions.

In 2019, 14,878 pharmacists renewed their annual licenses (Okafor *et al.,* 2021). Using the above as the estimated pharmacists' population in Nigeria and assuming an acceptable response rate of 50%, a confidence interval of 95%, and a margin of error of 5%, the minimum sample size was 375 for this study. Accordingly, all eligible pharmacists were invited to participate during the data collection period. The exclusion criteria were the refusal to participate, incomplete questionnaires, and unregistered pharmacists.

### *Study instrument*

The study questionnaire was developed from a validated survey that investigated physician orientation toward lifelong learning using the Jefferson Scale of Physician Lifelong Learning (JSPLL) (Hojat *et al.,* 2003). The scale was slightly changed to reflect the findings from a pilot study, as such, suitable for pharmacists. The questionnaire included both closed and open-ended questions, which were divided into four parts (A to D): sociodemographic characteristics of the participants, factors affecting motivation towards postgraduate

education, the types of continuing education used by the pharmacist, barriers to CPD continuing education, and attitudes towards continuing education.

A pilot study of five questionnaires was carried out to obtain the validity of the questionnaire among the study sample. Three questionnaires were collected from a polyclinic, and the other two were from a private pharmacy. Several minor changes were made to the questionnaire. Another pilot study was also undertaken among five pharmacists; two worked in polyclinics, and three in private pharmacies. No further modifications to the questionnaire were made after the second pilot. Data from the two pilots were not included in the results. A copy of the final version of the questionnaire is attached in Appendix A.

### *Study procedure*

E-links of the developed questionnaire were sent simultaneously via e-mail, telegram, WhatsApp, and Facebook. Reminders were sent intermittently every two weeks. Each pharmacist was eligible to respond to the online questionnaire only once.

### *Data analysis*

Data were analysed on Statistical Package for Social Sciences (SPSS) version 25 and frequency tests were performed to identify any further errors. Responses were presented as frequency and median. A statistical correlation was used to assess the relationship between the sociodemographic characteristics of respondents and attitudes toward CPD scores. The mean for the total attitude and total barrier scores were calculated. The scores were not normally distributed, so the non-parametric method for the inferential statistics was employed. The Spearman rho correlation was done to get the association between the attitude and the barrier. Also, the Chi-square association was performed to identify the variables significantly associated with attitudes and barriers to CPD. Thematic analysis was done on the qualitative data collected as responses to question 19.

## Results

A total of 586 pharmacists participated in the study, of whom 366 (62.50%) were males and 220 (37.50%) were females. Of the total sample, 180 (30.70%) worked in governmental hospitals, 210 (35.80%) were community pharmacists, 74 (12.60%) were from academia, 48 (8.20%) from industries, 10 (1.70%) from regulatory institutions, 4(0.70%) from research institutions, and 42(7.20%) worked in other sectors. Table I shows the characteristics of the participants.

**Table I: Characteristics of participants**

| Characteristics | Classification | Number (%) |
|---|---|---|
| Age | 18-29 | 276 (47.10) |
| | 30-39 | 248 (42.30) |
| | 40-49 | 36 (6.10) |
| | 50-59 | 24 (4.10) |
| Gender | Male | 366 (62.50) |
| | Female | 220 (37.50) |
| Qualification | Bachelor of Pharmacy (B. Pharm) | 498 (85.00) |
| | Master of Pharmacy (M. Pharm) | 50 (8.50) |
| | Doctor of pharmacy | 22 (3.80) |
| | Others | 16 (2.70) |
| Years of experience | Less than 5 years | 420 (71.70) |
| | 6-10 | 100 (17.10) |
| | 11-15 | 24 (4.10) |
| | 16-20 | 18 (3.10) |
| | More than 21 | 24 (4.10) |
| Highest qualification | B. Pharm | 464 (79.20) |
| | M. Pharm | 24 (4.10) |
| | MSc | 60 (10.20) |
| | PhD | 16 (2.70) |
| | WAPCP | 22 (3.80) |

| Characteristics | Classification | Number (%) |
|---|---|---|
| Current area of practice | Government Hospital | 180 (30.70) |
| | Private Hospital | 18 (3.10) |
| | Community Pharmacy | 210 (35.80) |
| | Industry | 48 (8.20) |
| | Regulatory | 10 (1.70) |
| | Research | 4 (0.70) |
| | Academics | 74 (12.60) |
| | others | 42 (7.20) |

Table II shows the responses to the questions related to attitudes toward CPD on a five-point Likert scale. More than 77% of respondents strongly agreed that lifelong learning is the professional responsibility of all pharmacists; they also agreed that rapid changes in therapeutics require constant updating of knowledge and the development of new professional skills.

**Table II: Attitudes towards CPD**

| | Strongly disagree (%) | Disagree (%) | Neutral (%) | Agree (%) | Strongly agree (%) |
|---|---|---|---|---|---|
| Routinely attend CPD programmes to improve my knowledge of patient care | 34 (5.80) | 58 (9.90) | 138 (23.50) | 230 (39.20) | 126 (21.50) |
| Lifelong learning is a professional responsibility of all pharmacists' | 2 (0.30) | 6 (1.00) | 6 (1.00) | 116 (19.80) | 456 (77.80) |
| Enjoy reading articles in which issues of pharmacy are discussed | 0 (0.00) | 10 (1.70) | 44 (7.50) | 228 (38.90) | 304 (51.90) |
| Routinely attend meetings of pharmacy organisations | 16 (2.70) | 38 (6.50) | 146 (24.90) | 276 (47.10) | 110 (18.80) |
| I read professional journals at least once every week | 22 (3.80) | 146 (24.90) | 178 (30.40) | 174 (29.70) | 66 (11.30) |
| Routinely search internet databases to find out about new developments in my speciality | 8 (1.40) | 34 (5.80) | 116 (19.80) | 260 (44.40) | 168 (28.70) |
| Believe that I would fall behind if I stopped learning about new developments in pharmacy | 6 (1.00) | 12 (2.00) | 14 (2.40) | 194 (33.10) | 360 (61.40) |
| One of the important goals of faculties of pharmacy is to develop students' lifelong learning skills. | 2 (0.30) | 6 (1.00) | 20 (3.40) | 212 (36.20) | 346 (59.00) |
| Rapid changes in therapeutics require constant updating of knowledge and the development of new professional skills | 0 (0.00) | 0 (0.00) | 2 (0.30) | 160 (27.30) | 424 (72.40) |
| Always make time for self-directed learning, even when I have a busy work schedule and other obligations | 8 (1.40) | 40 (6.80) | 114 (19.50) | 296 (50.50) | 128 (21.80) |
| Recognise my need to constantly acquire new professional knowledge | 0 (0.00) | 4 (0.70) | 26 (4.40) | 250 (42.70) | 306 (52.20) |
| Searching for the answer to a question is, in and by itself rewarding | 0 (0.00) | 6 (1.00) | 20 (3.40) | 226 (38.60) | 334 (57.00) |
| I take every opportunity to gain new knowledge/skills that are important | 2 (0.30) | 4 (0.70) | 28 (4.80) | 278 (47.40) | 274 (46.80) |

***Barriers to continuing education***

Table III shows the responses to Part C of the questionnaire related to barriers that prevented pharmacists from engaging in CE activities. The main barriers to CE from the perspectives of pharmacists were the cost of participation (65.90%, n = 386) and job constraints (64.80%, n = 380), followed by the distance to the CE programme location, as reported by 53.90% of pharmacists (n = 53.90), while 49.10% of pharmacists (n = 288) agreed that time constraint was the main barrier to engaging in CE activities.

Figure 1 shows the graph of the total scores generated from the responses to the attitude questions. The five-point Likert score was weighted from 0-5 (strongly

disagree to strongly agree). Then, the total was plotted against the frequency of the respondents. The graph shows a highly skewed distribution, so non-parametric analyses, such as Spearman rho Correlation and Chi-square, were used.

**Table III: Barriers to continuing professional development**

| Reasons (Barriers) | Response - Number (%) |
|---|---|
| Accessibility to learning activities (location/distance) | 316 (53.90) |
| Job constraints (restrictions) | 380 (64.80) |
| Lack of time | 288 (49.10) |
| Cost of participation | 386 (65.90) |
| Lack of relevant learning database/books | 107 (18.30) |
| Uninteresting subjects/topics | 45 (7.70) |
| Lack of quality learning activities | 121 (20.60) |
| Family constraints (restriction) | 112 (19.10) |
| Subjects/topics are too specialised | 45 (7.70) |
| Conferences are not regularly organised | 122 (20.80) |

***Factors associated with pharmacists' attitudes toward continuing education***

There was a significant correlation between the scores of pharmacists' attitudes towards CE and years of experience ($p < 0.05$), age ($p < 0.05$), and high educational attainment (M. Pharm. and Pharm. D.) ($p < 0.01$). Older pharmacists with more experience and a higher level of education had more positive attitudes toward CE. There was no significant correlation between attitudes towards CE and other factors, such as gender and the sector of the profession.

Table IV shows that a higher percentage of male pharmacists had a better attitude to CPD compared to their female counterparts though this difference was not statistically significant. However, there was a significant ($p < 0.05$) difference in the number of perceived barriers to CE between the two genders, with male respondents having higher perceived barrier scores than the latter.

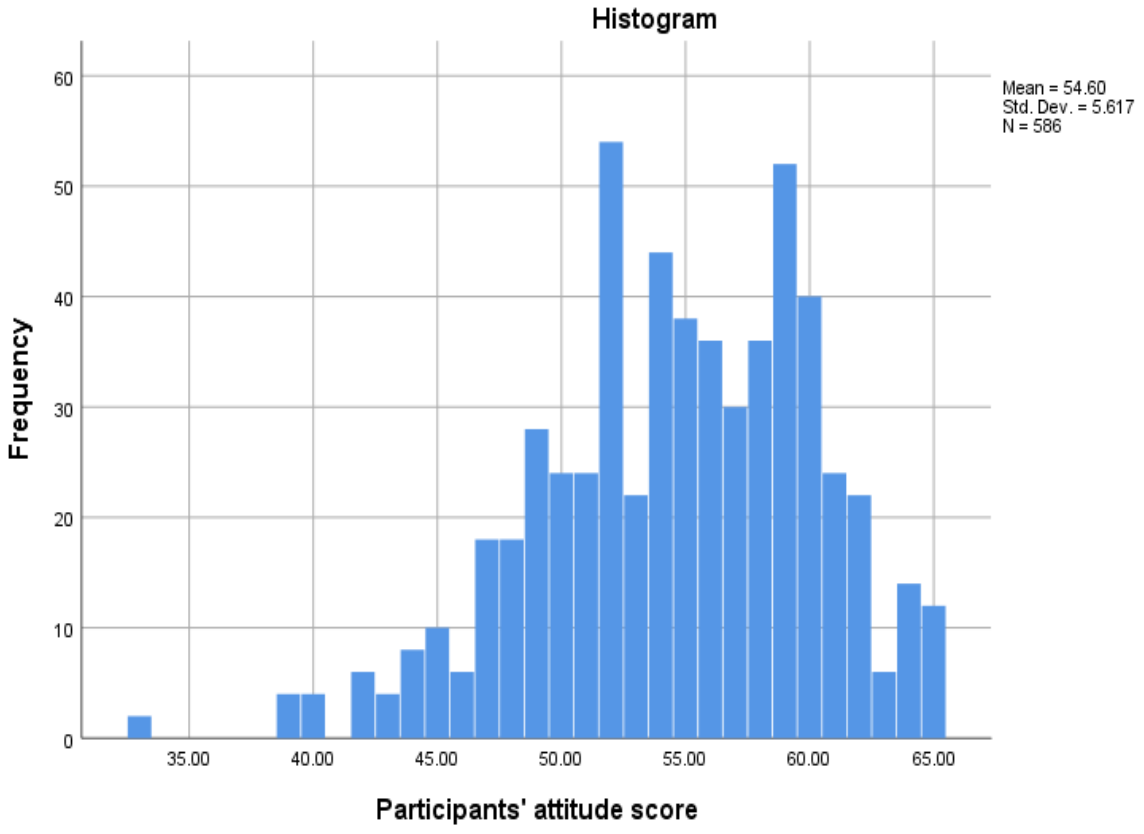


**Figure 1: Participants' attitude score towards MCPD**

**Table IV: Associations of sociodemographics with knowledge and practice of extemporaneous preparations**

| Variable | Poor attitude (n=276) | Good attitude (n=310) | *p*-value | Low barrier (n=196) | High barrier (n=390) | *p*-value |
|---|---|---|---|---|---|---|
| **Gender** | | | | | | |
| Male | 162 (59) | 204 (66) | 0.091 | 110 (54) | 256 (66) | **0.031** |
| Female | 114 (41) | 106 (34) | | 86 (44) | 134 (34) | |
| **Age (years)** | | | | | | |
| 18-29 | 150 (54) | 126 (40) | | 80 (41) | 196 (50) | |
| 30-39 | 104 (38) | 144 (46) | **0.001** | 90 (46) | 158 (40) | 0.107 |
| 40-49 | 16 (6) | 20 (7) | | 17 (9) | 19 (5) | |
| 50-59 | 4 (1) | 20 (7) | | 9 (4) | 15 (4) | |
| 60 and above | 2 (1) | 0 (0) | | 0 (0) | 2 (1) | |
| **Pharmacy degree** | | | | | | |
| B. Pharm | 242 (88) | 256 (83) | 0.202 | 169 (86) | 329 (84) | 0.944 |
| Pharm. D | 10 (4) | 12 (4) | | 7 (4) | 15 (4) | |
| Master of Pharmacy | 20 (7) | 30 (9) | | 15 (7) | 35 (9) | |
| Others | 4 (1.4) | 12 (4) | | 5 (3) | 11 (3) | |
| **Current area of practice** | | | | | | |
| Government Hospital | 92 (33) | 88 (28) | | 64 (33) | 116 (30) | 0.574 |
| Private Hospital | 14 (5) | 4 (1) | | 8 (4) | 10 (3) | |
| Community Pharmacy | 94 (34) | 116 (37) | **0.018** | 65 (33) | 145 (37) | |
| Industry | 18 (7) | 30 (10) | | 12 (6) | 36 (9) | |
| Regulatory institution | 4 (1) | 6 (2) | | 3 (2) | 7 (2) | |
| Research Institution | 0 (0) | 4 (1) | | 2 (1) | 2 (1) | |
| Academia | 30 (11) | 44 (14) | | 24 (12) | 50 (13) | |
| Others | 24 (9) | 18 (6) | | 18 (9) | 24 (6) | |
| **Years of practice** | | | | | | |
| ≤ 5 years | 216 (78) | 204 (66) | | 129 (66) | 291 (75) | |
| 6-10 years | 28 (10) | 72 (23) | **< 0.001** | 41 (21) | 59 (15) | 0.140 |
| 11-15 years | 14 (5) | 10 (3) | | 12 (6) | 12 (3) | |
| 16-20 years | 12 (4) | 6 (2) | | 6 (3) | 12 (3) | |
| ≥ 20 years | 6 (2) | 18 (6) | | 8 (4) | 16 (4) | |
| **Highest qualification** | | | | | | |
| B. Pharm | 220 (80) | 244 (78) | | 150 (76) | 314 (81) | |
| M. Pharm | 10 (3) | 14 (5) | 0.584 | 9 (5) | 15(4) | **0.040** |
| M. Sc | 32 (12) | 28 (9) | | 19 (10) | 41 (10) | |
| Ph. D | 6 (2) | 10 (3) | | 4 (2) | 12 (3) | |
| WAPCP | 8 (3) | 14 (5) | | 14 (7) | 8 (2) | |

Table V demonstrates the association between attitudes to CPD activities and barriers, with an average total score of 52.90% having good or positive views toward CE, while 47.10% had poor or negative attitudes. Conversely, it shows that 66.6% and 33.40% of respondents had a high barrier and low barrier to CPD respectively.

**Table V: Relationship between last CPD activity and attitude to CPD and barriers to CPD**

| Last CPD activity taken (years) | Categorised attitude | | Categorised barrier | |
|---|---|---|---|---|
| | Poor attitude N (%) | Good attitude N (%) | Low barrier N (%) | High barrier N (%) |
| ≤ 1 | 75 (39.50) | 115 (60.50) | 49 (25.80) | 141 (74.20) |
| 1 | 42 (38.20) | 68 (61.80) | 46 (41.80) | 64 (58.20) |
| 2 | 38 (50.70) | 37 (49.30) | 27 (36.00) | 48 (64.00) |
| 3 | 4 (22.20) | 14 (77.80) | 10 (55.60) | 8 (44.40) |
| 4 | 6 (100.00) | 0 (0.00) | 0 (0.00) | 6 (100.00) |
| > 4 | 6 (75.00) | 2 (25.00) | 0 (0.00) | 8 (100.00) |
| None | 105 (58.70) | 74 (41.30) | 64 (35.80) | 115 (64.20) |
| **Total** | **276 (47.10)** | **310 (52.90)** | **196 (33.40)** | **390 (66.60)** |

***Type and date of the last CE activity undertaken***

Of the total respondents, 32.40% (n = 190) reported they had their last CE less than a year ago, 18.80% (n = 110) had their last CE more than one year ago, and 12.80% (n = 75) had their last CE two years ago, while 30.5% (n = 179) had not attended any CE activity. Almost half of the pharmacists 42.50% (n = 249) stated that the last CE activity they undertook was attending a seminar, followed by reading a journal article 39.40% (n = 231) and attending a conference 29.20% (n = 171). Table VI shows the responses of participants to Part D of the questionnaire, which was about the type and date of the last CE activity.

**Table VI: Type and date of the last CE activity undertaken**

| Description | Date | Number (%) |
|---|---|---|
| **Time of the last CPD** | Less than 1 year ago | 190 (32.40) |
| | 1 year ago | 110 (18.80) |
| | 2 years ago | 75 (12.80) |
| | 3 years ago | 18 (3.10) |
| | 4 years ago | 6 (1.00) |
| | More than 4 years ago | 8 (1.40) |
| | None | 179 (30.50) |
| **Type of CPD attended** | Reading Journal article | 231 (39.40) |
| | Attending a seminar | 249 (42.50) |
| | Attending a Conference | 171 (29.20) |
| | Online courses/Webinars | 2 (0.30) |
| | Pieces of Training | 2 (0.30) |
| | MCPD | 3 (0.50) |
| **Received CPD points** | Yes | 140 (23.90) |
| | No | 446 (76.10) |
| **Received Certificate** | Yes | 191 (32.60) |
| | No | 395 (67.40) |

Table VII describes some crucial areas if addressed will enhance the level of pharmacists CPD enrollment in Nigeria. these areas include affordability (through fee reductions and sponsorship), accessibility (through flexibility, the ability to study at one's own schedule, and centers spread throughout each state of the federation), making CPD mandatory (it is important in requiring CPD as a condition of promotion, annual license renewal, and also by the creation of laws to enforce it). Additionally, respondent suggest promotion of more specialised opportunities, increased awareness, and inspiration for each CPD programme

**Table VII: Themes and codes of suggestions on how CPD could be improved for Nigerian Pharmacists**

| Themes | Codes |
|---|---|
| 1. Affordability | 1.1. Reduction of the fees |
| | 1.2. Giving sponsorship |
| | 1.3. Free |
| 2. Accessibility | 2.1. Decentralisation i.e. making it available in 36 States |
| | 2.2. Making it online |
| | 2.3. Increasing the options |
| | 2.4. Reducing the frequency of the MCPD |
| | 2.5. Increasing flexibility |
| | 2.6. Increasing the availability of CPD materials |
| 3. Making it mandatory | 3.1. Necessary for license renewal |
| | 3.2. Necessary for promotion |
| | 3.3. Use of enforcement and sanctions |
| | 3.4. Heads of departments facilitate the attendance of their staff |
| 4. Specialisation | 4.1. Specific for different practice areas |
| | 4.2. Residency |
| 5. Topicality | 5.1. Make it evidence-based |
| | 5.2. Counting conferences attended as CPD |
| | 5.3. Continuous improvement |
| | 5.4. Liaising with those in the academia |

| Themes | Codes |
|---|---|
| 6. Awareness/Proper sensitisation | 6.1. Wide dissemination of upcoming CPD<br>6.2. Early and timely sensitisation |
| 7. Reward system implementation | 7.1. Increment in salary and allowances<br>7.2. Motivation from the council<br>7.3. Awarding of points |

## Discussion

This study evaluated pharmacists' attitudes, perceptions, needs, barriers, experience, and convenience of engaging in continuing education in a sample of 586 pharmacists in Nigeria. It used open and closed-ended questions adapted from the JSPLL questionnaire (Hojat *et al.,* 2003), which was also used in a similar study conducted in Saudi Arabia (Aldosari, Alsairafi & Waheedi, 2020).

Majority of respondents raised concerned in Table III, that 65.90% do not participate in routing professional meeting because of cost involved. However, it is clear that majority of pharmacists are passionate about continuing professional development (CPD), as shown in Table II, where the majority of participants, 77.80% strongly agreed on the importance of lifelong learning and pharmacist professional development and 61.40% expressed a fear of falling behind if they stop learning regarding professional developments that may keep them updated of the happening in the pharmacy profession.

Considering the participants' last CE, approximately one-third of the sample reported they had it less than a year ago, another third had their last CE 1-3 years ago, and the last third had not engaged in any CE activity. The top five barriers to CE reported by pharmacists were location/distance, the lack of personal time, job constraints, funding, conferences not being regularly organised, and lack of motivation. These findings, particularly time constraints, corroborate pharmacists' preference (Saade *et al.,* 2018) for seminars as a form of CE against others, such as conference attendance and reading journal articles, considering the former requires less time and effort. Furthermore, there was a significant correlation between pharmacists' attitude scores and years of experience, age, and high educational attainment (M. Pharm. and Pharm. D.). A possible explanation could be that a higher qualification reinforces the value of CE. As a result, pharmacists with higher education levels are more motivated to learn than their peers with lower qualifications (Brooks & Everett, 2008).

In countries where CPD is mandatory, e.g., the UK, it has been found that most pharmacists believe that CPD activities are vital for improving their professional knowledge, skills, and attitudes. The actual participation of pharmacists in these activities was optimal (Alkhateeb, Attarabeen & Alameddine, 2016). The majority of pharmacists in that study agreed they should engage in CPD, and around 90% had already undertaken such an activity in the past 12 months. In addition, researchers in that study found that the participation of female pharmacists in the activities was statistically significantly higher than that of male pharmacists, with indirect learning being undertaken more than direct learning. Similarly, a study in 2020 identified various issues that encourage and discourage pharmacists from participating in CE activities, according to their gender. For example, it found that female pharmacists were more interested in attending lectures than male pharmacists, who had a greater interest in distance learning (Aldosari, Alsairafi & Waheedi, 2020).

Similar to barriers reported in the current study, researchers in different countries have also reported time constraints and lack of motivation, among factors that discourage pharmacists from participating in CE activities (Poudel *et al.,* 2017; Sacre *et al.,* 2019; Aldosari, Alsairafi & Waheedi, 2020). Poudel and colleagues have also expanded their research to examine factors that impact pharmacists' motivation for involvement in CE activities. The researchers reported that the factors that positively influenced pharmacists' motivation were improved knowledge, followed by improved skills, and keeping abreast with the latest information in the pharmacy field (Poudel *et al.,* 2017). Job restrictions associated with CE and lack of personal time coupled with the high cost formed the main barriers to attending CE, similar to previous findings (Saade *et al.,* 2018).

Similarly, one study found that motivation was significantly correlated with pharmacists' attitudes and negatively correlated with barriers (Saade *et al.,* 2018). It also revealed significant associations between attitudes, years of experience, and age, in line with our results. Consistently, other longitudinal research combined with qualitative interviews revealed pharmacists' main barriers to CE. These included work-related pressures, social life, lack of motivation, lack of financial resources, the restrictive nature of CPD, age, and experience (Laaksonen, Duggan & Bates, 2009; Power *et al.,* 2015; Iskandar *et al.,* 2018). Wherein some participants felt too old to learn new material and others deemed they were experienced enough not to engage in CPD. Other researchers have also identified a lack of resources and relevant learning opportunities, time constraints, and

inaccessibility (location/distance) as the main barriers to CE among pharmacists (Gelayee, Mekonnen & Birarra, 2018).

***Limitations***

This study has some limitations. The findings are restricted to pharmacists who have access to social media and a functioning e-mail account. The self-report questionnaire (JSPLL) was mainly designed as a data collection tool to measure the attitudes of physicians towards CE in the United States. The questionnaire used in this study may have restricted participants' responses to some questions, thereby limiting their scope. Social desirability bias is also possible since the participants might have responded to the questionnaire in a manner that may differ from their actual attitudes to please the researchers.

## Conclusion

In this study, pharmacists in Nigeria showed they understand the significance of CE and reported several factors as influencers and barriers to getting them involved in CE. Some of the ways to address these barriers are CPD programmes tailored to their need and preferences, a more affordable and cost-effective cost of participation, and accessibility to quality learning materials should be ensured. Also, appropriate solutions, such as putting in place legally-backed guidelines and regulations that will include CE activities in the requirements for license renewal, could result in improvements in CE participation by pharmacists.

## Conflict of interest

The authors declare no conflict of interest.

## References

Aldosari, H., Alsairafi, Z., & Waheedi, S. (2020). Continuing education in pharmacy: A cross-sectional study exploring pharmacists' attitudes and perceptions. *Saudi pharmaceutical journal*, **28**(7), 803–813. https://doi.org/10.1016/j.jsps.2020.05.008

Alkhateeb, F.M., Attarabeen, O.F., & Alameddine, S. (2016). Assessment of Texan pharmacists' attitudes, behaviors, and preferences related to continuing pharmacy education. *Pharmacy practice*, **14**(3), 769. https://doi.org/10.18549/PharmPract.2016.03.769

Biggs, D. (2003). Issues in continuing professional development for pharmacists. *Bulletin of the Kuwait Institute for Medical Specialization,* **2**, 55-58

Brooks, R., Everett, G. (2008). The impact of higher education on lifelong learning. International Journal of Lifelong Education, **27** (3), 239–254. http://dx.doi.org/10.1080/02601370802047759

Driesen, A., Verbeke, K., Simoens, S., & Laekeman, G. (2007). International trends in lifelong learning for pharmacists. *American journal of pharmaceutical education*, **71**(3), 52. https://doi.org/10.5688/aj710352

Gelayee, D.A., Mekonnen, G.B., & Birarra, M.K. (2018). Involvement of community pharmacists in continuing professional development (CPD): a baseline survey in Gondar, Northwest Ethiopia. *Globalization and health*, **14**(1), 15. https://doi.org/10.1186/s12992-018-0334-0

Hasan S. (2009). Continuing education needs assessment of pharmacists in the United Arab Emirates. *Pharmacy world & science: PWS*, **31**(6), 670–676. https://doi.org/10.1007/s11096-009-9330-z

Hojat, M., Nasca, T.J., Erdmann, J.B., Frisby, A.J., Veloski, J.J., & Gonnella, J.S. (2003). An operational measure of physician lifelong learning: its development, components and preliminary psychometric data. *Medical teacher*, **25**(4), 433–437. https://doi.org/10.1080/0142159031000137463

International Pharmaceutical Federation (FIP). (2014). Quality Assurance of Pharmacy Education: The FIP Global Framework

Iskandar, K., Raad, E.B., Hallit, S., Chamoun, N., Usta, U., Akiki, Y., Karaoui, L.R., Salameh, P., & Zeenny, R.M. (2018). Assessing the perceptions of pharmacists working in Lebanese hospitals on the continuing education preferences. *Pharmacy practice*, **16**(2), 1159. https://doi.org/10.18549/PharmPract.2018.02.1159

Laaksonen, R., Duggan, C., & Bates, I. (2009). Overcoming barriers to engagement in continuing professional development in community pharmacy: a longitudinal study. *Pharmaceutical journal,* **282**(7535), 44-48

Lemay, J., Waheedi, M., Al-Taweel, D., Bayoud, T., & Moreau, P. (2018). Clinical pharmacy in Kuwait: Services provided, perceptions and barriers. *Saudi pharmaceutical journal*, **26**(4), 481–486. https://doi.org/10.1016/j.jsps.2018.02.011

Mohamed Ibrahim O.H. (2012). Assessment of Egyptian pharmacists' attitude, behaviors, and preferences related to continuing education. *International journal of clinical pharmacy*, **34**(2), 358–363. https://doi.org/10.1007/s11096-012-9616-4

Ogaji, J.I., & Ojabo, C.E. (2014). Pharmacy education in Nigeria: The journey so far. *Archives of Pharmacy Practice,* **5**(2), 47-60. https://doi.org/10.4103/2045-080X.132644

Okafor, U.G., Jatau, A.I., Alabi, O., & Mohammed, E.N. (2021). Assessment of awareness and satisfaction of online renewal of practising license among pharmacists in Nigeria. *Tropical Journal of Pharmaceutical Research,* **20**(2), 169-175. https://doi.org/10.4314/tjpr.v20i1.24

Poudel, R.S., Piryani, R.M., Shrestha, S., Chaurasiya, R., & Niure, B. P. (2017). Opinion of hospital pharmacy practitioners toward the Continuing Pharmacy Education program: a study from a tertiary care hospital in central Nepal. *Integrated pharmacy research & practice*, **6**, 157–161. https://doi.org/10.2147/IPRP.S145026

Power, A., Grammatiki, A., Bates, I., Mc Kellar, S., Johnson, B. J., Diack, H. L., Stewart, D., & Hudson, S. A. (2011). Factors affecting the views and attitudes of Scottish pharmacists to continuing professional development. *The International journal of pharmacy practice*, **19**(6), 424–430. https://doi.org/10.1111/j.2042-7174.2011.00135.x

Saade, S., Ghazala, F., Farhat, A., & Hallit, S. (2018). Attitudes towards continuous professional development: a study of pharmacists in Lebanon. *Pharmacy practice*, **16**(1), 1103. https://doi.org/10.18549/PharmPract.2018.01.1103

Sacre, H., Tawil, S., Hallit, S., Sili, G., & Salameh, P. (2019). Mandatory continuing education for pharmacists in a developing country: assessment of a three-year cycle. *Pharmacy practice*, **17**(3), 1545. https://doi.org/10.18549/PharmPract.2019.3.1545

Sarayani, A., Rashidian, A., Gholami, K., Torkamandi, H., & Javadi, M. (2012). Efficacy of continuing education in improving pharmacists' competencies for providing weight management service: three-arm randomized controlled trial. *The Journal of continuing education in the health professions*, **32**(3), 163–173. https://doi.org/10.1002/chp.21141

**Appendix A: Questionnaire**

**INTRODUCTION**

Hello, we are a team of pharmacists practicing in Nigeria and are conducting a study in which we would love your response.

Postgraduate education for pharmacists in Nigeria includes Universities that have continued to carry out postgraduate academic training for pharmacists wishing to advance their knowledge in the various core areas of pharmacy education, the West African Postgraduate College of Pharmacists (WAPCP) and the Pharmacists Council of Nigeria (PCN) in the form of mandatory continuing professional development. It is essential for pharmacists to maintain their professional competency. However, many different factors could be related to non-participation rates to continuing professional development of pharmacists. This study aims to assess pharmacists' attitudes and perceptions toward the current continuing professional development programs. This study is not funded by any organization or cooperate body. All responses will be treated with utmost confidentiality and anonymity. Your participation is voluntary, and consent is implied by attempting the survey. Thank you

In this study. We are exploring pharmacists' attitudes and perceptions toward Continuing Professional Development (CPD) in Nigeria. All responses are appreciated and will remain confidential and anonymous.

**A. PHARMACIST DEMOGRAPHICS**

Sex
[a]Male [b]Female

Age (in years)
[a] 18-29 [b] 30-39 [c] 40-49 [d] 50-59 [e] 60+

Pharmacy degree
[a] Bachelor of Pharmacy (B.Pharm) [b] Doctor of Pharmacy (Pharm D.) [c] Masters of Pharmacy (MPharm) [d] Others ……..(Please specify)

Current area of practice
[a] Government Hospital [b] Private Hospital [c] Community pharmacy [d] Industry [e] Regulatory institution [f] Research institution [g] academia [h] others specify

Years of Pharmacy Practice
[a] ≤ 5 years [b] 6-10 years [c] 11-15 years [d] 16-20 years [e] ≥ 21 years

Highest qualification
[a] B. Pharm [b] M. Pharm [c] MSc [d] Ph.D. [e] WAPCP [f] Professor
(tick those applicable)

**B. ATTITUDES TOWARD CPD**

**NOTE:** for each question (√) Tick one option of your choice only.

1. I routinely attend CPD programs to improve patient care.
   [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
2. Lifelong learning is a professional responsibility of all pharmacists'
   [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
3. I enjoy reading articles in which issues of pharmacy are discussed.
   [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
4. I routinely attend meetings of pharmacy organizations.

[a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree

5. I read professional journals at least once every week.
   [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
6. I routinely search internet database to find out about new developments in my specialty.
   [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
7. I believe that I would fall behind if I stopped learning about new developments in pharmacy.
   [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
8. One of the important goals of faculties of pharmacy is to develop students lifelong learning skills.
   [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
9. Rapid changes in therapeutics require constant updating of knowledge and development of new professional skills.
   [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
10. I always make time for self-directed learning, even when I have a busy work schedule and other obligations.
    [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
11. I recognize my need to constantly acquire new professional knowledge
    [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
12. Searching for the answer to a question is, in and by itself rewarding.
    [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree
13. I take every opportunity to gain new knowledge/skills that are important.
    [a] Strongly agree [b] Disagree [c] neutral [d] Agree [e] Strongly disagree

**C. PERCEIVED BARRIERS TO CPD**

14. In your opinion, what are the barriers to continuing professional development that you face? (Tick as applicable)
    [ ] Accessibility to learning activities (location/distance).
    [ ] Job constraints (restrictions)
    [ ] Lack of time
    [ ] Cost of participation
    [ ] Lack of relevant learning database/books
    [ ] Uninteresting subjects/topics
    [ ] Lack of quality learning activities
    [ ] Family constraints (restriction)
    [ ] Subjects/topics are too specialized
    [ ] Conferences are not regularly organized
    [ ] others (please specify)……

**D. ABOUT THE LAST CPD ACTIVITY YOU HAVE UNDERTAKEN**

15. When was the last time you undertook a CPD activity?
16. Describe the last continuing professional development activity you undertook:
    PCN MCPD? .....
    Reading Journal articles? (Please specify)
    ……
    Attending a seminar? (Please specify)
    ……
    Attending a Conference? (Please specify)
    …….
    Others (please specify)
    ……
17. Did you receive Continuing Medical Education (CME) points:
    [ ] yes [ ] No
18. Did you receive a certificate of attendance:
    [ ] yes [ ] No
19. Could you briefly tell us how CPD could be improved for Nigerian pharmacists?

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THANK YOU FOR YOUR TIME!