ASSESSING KNOWLEDGE, ATTITUDE, AND PRACTICES OF EARLY-CAREER PHARMACISTS' REGARDING OPIOID USE DISORDER AND MENTAL HEALTH CO-MORBIDITIES: PREDICTING PATIENT HEALTH OUTCOMES IN NIGERIA

Abstract

Background: This study examined the knowledge, attitudes and practices of Early career pharmacists regarding opioid use disorder and mental health comorbidities, predicting patient health outcomes in Nigeria.

Methodology: This was a cross sectional survey conducted across the six geopolitical zones in Nigeria. We used evidence of licensure and not more than 5 years in practice to identify eligible participants. Information sheets were sent to all potential participants through email. If interested, they signed the consent form and sent the survey online to be completed and returned within 24 h.

Results: Descriptive statistics were used to summarize the data. Out of 514 participants, majority had accurate knowledge on basic questions as well as a negative attitude regarding how comfortable in providing patient care as well as in monitoring and assessment. 342 (66.5%) respondents and 357 (69.5%) respondents were neutral on the information regarding the percentage of patients that achieve treatment adherence and average patient satisfaction respectively, while (166, 32.3%) (128, 24.9%) reported low/negative treatment adherence and patient satisfaction respectively.

Conclusion: The findings show that in as much the knowledge of these medical conditions are substantial, but the negative outcomes still persist.

Introduction

Opioid Analgesics are recognized as legal medication therapy for special patients with severe chronic pain that does not respond to other pain reliefs, they are however associated with risk for abuse , addiction and even overdose deaths (1). Thus, Opioid use disorder (OUD) is a chronic, yet treatable condition marked by cycles of remission and relapse; it involves a loss of control over opioid use and compulsive use despite harmful effects (2). Effective treatment can lead to a successful recovery, but the risk of relapse remains a lingering challenge. The opioid crisis is an individual and global health emergency; an estimated 26.8 million people worldwide are living with OUD in 2016, with over 100,000 opioid overdose deaths occurring each year, including more than 47,000 in the united states in 2017 (3).

Mental disorder is a wide range of conditions that affect mood, thinking and behaviour. Mental health disorders are often underreported and under diagnosed, especially in low and middle income countries (4).

As a result of the economic instability in Nigeria and quest for greener pastures, there is increased migration and brain drain of experienced psychiatric pharmacists. This causes the

majority of the work force to be the early career pharmacists who might not be as equipped with the knowledge and expertise to handle opioid use disorder and mental health issues.

Although currently, Pharmacists (especially those in community practice) play a crucial role in addressing the opioid crisis as they have the opportunity to interact more regularly with patients than other healthcare providers.; this enables the pharmacist to provide the essential counselling on prevention and to promote the responsible use of opioid medications (5). Actions like appropriate storage and disposal of prescription opioid alongside harm reduction services like opioid substitution therapy, needle and syringe exchange programs, naloxone distribution can help to limit opioid abuse, (6) thus the pharmacist is and should be armed with the key knowledge and responsibility to address opioid related issues including counselling, drugs dispensing, appropriate dosing and involvement in opioid stewardship programs.

The relationship between mental health and drug/substance abuse escalates challenges in management of the condition because drug/substance use triggers mental health disorders by causing neurobiological changes that alters neurotransmitter levels and causes a structural change in the brain. The consequence of this is not just individual bound but also places enormous burden on the society, increasing healthcare costs and criminal justice involvement. The associated stigma also further complicates the situation (7).

Part of the remedy includes regulation and strict maintenance of drug laws in the country and strategically creating awareness and educating adolescents on the awareness about the dangers of opioid disorder (8) which is an interdisciplinary activity between health care providers including pharmacists (9).

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However, barriers such as shortage of community pharmacists (10),low confidence, limited time and lack of targeted and structural training have been detected and suggests need for more structured training as this would empower pharmacists to fulfil these roles more effectively and in turn enhance patient outcome (11).

This emphasizes the need to tailor western expertise to Nigeria s local needs and develop a systematic, theory based method to address these barriers by establishing a Nigerian addiction studies curriculum which is being developed in 4 universities in Nigeria (12).

For the past three decades, clinical pharmacists have also played a vital role in collaborative mental health care, working alongside other healthcare professionals to improve patient outcomes; contributing their expertise as educators, consultants (13), community pharmacists

are also accessible and equipped to support mental health promotion, awareness, knowledge and care in the communities in other to combat stigma and discrimination which is the main hindrance to mental health care delivery, causes poor health outcomes, isolation and increased suicidal tendency (14)(4).

Considering this knowledge and factors that will improve health outcomes in OUD and mental health co morbidities, it is essential to access the level of knowledge and pharmaceutical care offered by early career pharmacists, who are majorly in the frontline of pharmaceutical care, due to brain drain in Nigeria. This will be an addition to identifying areas of inadequacy or so, for public health intervention and focusing on programs and initiatives that will help improve patients' outcomes.

Methods

Study design and participants

This was a cross sectional survey conducted among early career pharmacists, spanning all six geo political zones of Nigeria. In the study, early career pharmacists are referred to as licensed pharmacists with not more than five years of practices.

Setting

The study was carried out across the six geopolitical zones in Nigeria. Through convenient sampling, two states were selected from each geopolitical zones as follows; Lagos and Ogun from the southwest, Enugu and Anambra from the southeast, Edo and Rivers from the south-south, Kogi and Plateau from the North central, Kano and Sokoto from the northwest and Adamawa and Bauchi from the northeast.

Sampling

Participants were randomly selected from various practice settings including Hospital, community and mental health fields. Each state has records of its licensed pharmacists, and the records were used to sample the participants in the study.

Eligibility criteria

Respondents had to meet some specific criteria to be able to participate in the study; They must have graduated from pharmacy school and then either completing their mandatory internship or National service programs. Practicing pharmacists with less than five years post-graduation were also eligible. However, eligible pharmacists who didn't provide informed consent were not included in the study.

Sample size

The study was conducted on a nationwide scale, spanning the country's six geopolitical zones. Two states were randomly chosen to represent each zone. A total sample size of 520 wererepresentative of the population, assuming a 5% error margin, 95% confidence interval and 50% response distribution rate. Raosoft's online sample size calculator was used to conduct the sample size calculation. The sample size was proportionally distributed across the participating states. The study achieved a 100% response rate, most likely due to the inter-state distribution of data collection responsibilities among the authors and the fact that the respondents were primarily young adults with regular access to the internet.

As at 2022, Nigeria had a total of 25,000 registered pharmacists, including interns. Although there are no official stratified datasets or estimates specifically for early career pharmacists in the Nigeria, we then used the database of licensed pharmacists in each state to identify eligible participants. These

data were supplied by the state coordinators of the Pharmacists Council of Nigeria (PCN), the regulatory body that oversees pharmacist licensure in Nigeria. Assuming an error margin of 5% at a 95% confidence interval with a population size of 25,000, the estimated sample size for this study was 520.

Participant recruitment and data collection

Participant information sheets were distributed to all potential respondents via email. Interested individuals provided their consent by signing the form online. Participants who expressed interest to participate in the study received the survey electronically, which they were asked to complete and submit within 24 hours. All data collection for this study was carried out between September 30, 2024 and November 2, 2024.

Instruments for data collection and outcomes

The homogeneity of the questionnaires was tested using Cronbach's alpha.the Cronbach alpha value was determined as 0.833 showing a high internal consistency for questions.

Data analysis

Descriptive data analysis was utilized to outline respondents' characteristics (socio-demographics), knowledge questions, attitude question and outcome. The analysis was done with IBM Statistical Products and service solution (SPSS) for windows, version 23.0 (IBM Corp, Version 23.0. Armonk, NY, USA)(15).

Ethical considerations

Ethical clearance for this study was obtained from the Health Research and Ethics Committee of the University of Nigeria Teaching Hospital (Reference Number; NHREC/05/01/2008B-FWA00002458-1RB00002323) Issued on 29 October, 2024. Written consent was obtained from every participant prior to their enrolment in the study.

Results

Out of 520 potential participants who gave written or verbal consent to participate, the total number of respondents who completed the online survey was 514, amounting to a response rate of 98.8%. Majority of the respondents were male (332, 64.6%), (475, 92.4%) of the respondents were between age 20-29 while the rest are age 30-39, (508, 98.8%) Of the respondents graduated with the BPharm or PharmD degree. Participants with 0-1, 2-3 and 4-5 years in pharmacy practice were (335, 65.2%), (150, 29.2%) and (29, 5.6%) respectively while (266, 51.8%), (232, 45.1%) and (16, 3.1%) practice in the community, hospital and the online/tele pharmacy, respectively. (367, 71.4%) of the respondents practice in the urban area while (113, 22.0%) and (34, 6.6%) practice in the semi urban and rural areas respectively. (134, 26.1%), (57, 11.1%), (258, 50.2%), (5,1.0%), (5,1.0%) and (55,10.7%) of the participants practice in the southwest, south-south, south east, north west, north east, and north central geopolitical zones respectively.

Table 1: socio-demographics of respondents

Sociodemographic		**Frequency**	**Percentage**
Age	**20-29**	475	92.4
	30-39	39	7.6
	40-49	-	-
	50-59	-	-
	>60	-	-
Gender	**Male**	332	64.6
	Female	182	35.4

Highest educational level	**PharmD/ BPharm**	508	98.8
	MPharm	6	1.2
	PhD	-	-
	None	-	-
Years of experience as a community pharmacist	**0-1**	335	65.2
	2-3	150	29.2
	4-5	29	5.6
Practice Area	**Community settings**	266	51.8
	Hospital Settings	232	45.1
	Mental Health Settings		
	Tele Pharmacy/ online settings	16	3.1
	NGOS	-	-
Location	**Urban**	367	71.4
	Semi-urban	113	22.0
	Rural	34	6.6
Geopolitical Zone of Practice	**North-Central**	55	10.7
	North-east	5	1.0
	North-west	5	1.0
	Southeast	258	50.2
	South-south	57	11.1
	Southwest	134	26.1

In Table 2, a substantial number (419, 81.5%) of the respondents have the accurate knowledge on the meaning of opioid use disorder, the early career pharmacists who have the correct knowledge for the risk factors associated with opioid use disorder, symptoms of opioid disorder, treatment options for opioid use disorder and the meaning of medication assisted treatment were (367, 71.4%), (403, 78.4%), (469, 91.2%) and (341, 66.3%) respectively.

Table 2: frequency and percentage of early career pharmacist with correct knowledge on opioid use disorder

Opioid Use Disorder knowledge	**Frequency**	**Percentage**
What is opioid use disorder?	419	81.5
What are the risk factors for opioid use disorder?	367	71.4
What are the symptoms of opioid withdrawal?	403	78.4
What are the treatment options for opioid use disorder?	469	91.2
What is medication-assisted treatment (MAT)?	341	66.3

Table 3 also shows that the percentage of early career pharmacists who have accurate knowledge on the meaning of depression and anxiety were (492, 95.7%) and (504, 98.1%) respectively. (422, 82.1%) of early career pharmacists knows how mental health co morbidities affect opioid use disorder treatment, (413, 80.4%) have the accurate knowledge of the screening tools for depression and anxiety while (246, 47.9%) knows how to manage patients with co-occurring opioid use disorder and mental health conditions.

Table 3: frequency and percentage of early career pharmacist with correct knowledge on mental health comorbidity

Mental Health Co-Morbidities	**Frequency**	**Percentage**
What is depression?	492	95.7

What is anxiety?	504	9. 81
How do mental health co-morbidities affect opioid use disorder treatment?	422	82.1
What are the screening tools for depression and anxiety?	413	80.4
How do you manage patients with co-occurring opioid use disorder and mental health conditions?	246	47.9

In table 4, the number of early career pharmacists that are comfortable with treating patients with opioid use disorder is (72, 14.0%). (28, 5.4%) have encounter with patients with opioid use disorder and (502, 97.7%) thinks that medication assisted treatment is effective while (509, 99.0%) believes that opioid use disorder is a treatable condition.

Table 4: frequency and percentage of early career pharmacist attitude towards opioid use disorder

Attitudes-*Opioid Use Disorder*	**Positive**		**Negative**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
How comfortable are you treating patients with opioid use disorder?	72	14.0	442	86.0
How often do you encounter patients with opioid use disorder?	28	5.4	486	94.6
Do you think medication-assisted treatment is effective?	502	97.7	12	2.3
Do you believe opioid use disorder is a treatable condition?	509	99.0	5	1.0

Table 5 reveals that (394, 76.7%) knows how important mental health screening is in the treatment of opioid use disorder, the number of early career pharmacists confident in managing patients with co-occurring conditions, who believe that mental health co-morbidities affect treatment outcomes and who thinks that stigma affects patients' willingness to seek treatment are (34, 6.6%), (509, 99.0%) and (496, 96.5%) respectively.

Table 5: frequency and percentage of early career pharmacist attitude towards mental health comorbidity

Attitudes-Mental Health Co-Morbidities	**Positive**		**Negative**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
How important is mental health screening in opioid use disorder treatment?	394	76.7	120	23.3
How confident are you in managing patients with co-occurring conditions?	34	6.6	480	93.4
Do you believe mental health co-morbidities affect treatment outcomes?	509	99.0	5	1.0
Do you think stigma affects patients' willingness to seek treatment?	496	96.5	18	3.5

In Table 6, the frequency at which early career pharmacists assess patients for opioid use disorder is (12, 2.3%), (121, 23.5%) monitor patients' treatment progress often while (292, 56.8%) provide naloxone to patients who are at risk of overdose.

Table 6: frequency and percentage of early career pharmacist assessment of quality of life in opioid use disorder

Quality of life- Opioid Use Disorder	**Yes**		**No**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
How often do you assess patients for opioid use disorder?	12	2.3	502	97.7
How often do you monitor patients' treatment progress?	121	23.5	393	76.5
Do you provide naloxone to patients at risk of overdose?	292	56.8	222	43.2

In Table 7, (58, 11.3%) screen patients often for depression and anxiety while (410, 79.8%) collaborate with mental health professionals.

Table 7: frequency and percentage of early career pharmacist assessment of quality of life in mental health comorbidities

Quality of life -*Mental Health Co-Morbidities*	**Yes**		**No**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
How often do you screen patients for depression and anxiety?	58	11.3	456	88.7
Do you collaborate with mental health professionals?	410	79.8	104	20.2

In table 8, (139, 27.0%) of patients experience symptoms reduction, also there has been a commensurate decrease in average hospitalization rate for patients with opioid use disorder by the frequency of (369, 71.8%). Table 9 reveals that only (166, 32.3%) mental health patients achieve treatment adherencewhile (128, 24.9%) is the average rate of patients who are satisfied with the treatment. (342, 66.5%) were neutral concerning patients' treatment adherence while (357, 69.5%) also responded neutrally on average patient satisfaction rate with treatment.

Table 8: frequency and percentage of early career pharmacist assessment of outcome measures

OUTCOME MEASURES	**Yes**		**No**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
How often do patients experience symptom reduction?	139	27.0	375	73.0
Have they been a commensurate decrease in average hospitalization rate for patients with opioid use disorder?	369	71.8	145	28.2

Table 9: frequency and percentage of early career pharmacist assessment of outcome measures

OUTCOME MEASURES	**Low**	**Neutral**	**High**
	F (%)	**F (%)**	**F (%)**
What percentage of patients achieve treatment adherence	166 (32.3)	342(66.5)	6(1.2)
What is the average patient satisfaction rate with treatment?	128(24.9)	357(69.5)	29 (5.6)

Discussion

This study is a novel study that seeks to assess the knowledge, attitude, and practices of early-career pharmacists' regarding opioid use disorder and mental health co-morbidities and how they predict patient health outcomes in Nigeria. Recognizing pharmacies as primary care gatekeepers, staffed largely by early career pharmacists, the study sought to address the urgent need for improved knowledge so as to review the curriculum for mandatory continuous education in MH, ultimately enhancing patient outcomes. Majority of respondents showed a high knowledge in opioid use disorder and mental health comorbidities. This percentage has been shown to be higher than those from Tafere et al., which was conducted in Ethopia(16–18). This further buttress the fact that the curriculum for pharmacy education is sufficient to cover basic knowledge for opioid use disorders and mental health comorbidities. In as much as knowledge is an important precursor to outcome, it cannot be a stand-alone.

This study also revealed that majority of the respondents were not confident in managing the condition, this could be due to factors such as difficulty in communication with this patients, due to their aggressive nature, inability to pay attention, irritability insufficient time with patient, lack of access to patient information and lack of counselling room or office as outlined by Phokeo et al (19–21), despite the majority of them knowing that it's a treatable condition and that stigmatization affects patients' willingness to accept treatment, further buttressing the study conducted by Corrigan et al (22). Notable, its only very few that encounter these cases often and also believed medication assisted treatment is effective(23).

Majority of respondents never assessed patients for opioid use disorder, anxiety and depression or even monitored treatment progress. Negative attitude and barriers to pharmaceutical care provide sufficient reasons for this issue of never assessing patients as highlighted by Phokeo et al (17,20). About 56% stocked naloxone and hence provided to patients on prescription. Many of the pharmacist were open for collaboration with other healthcare practitioners. Collaborative care is the effective system for optimal outcome in mental health management as outlined by Davis et al(24).

From the respondents' point of view, a vast majority felt there was no reduction in patient outcome even though there was reduction in hospitalization rate. The treatment outcome was low in terms of medication adherence and patient satisfaction rate. Outcomes will be low in cases where the pharmacists have a negative attitude to mental health patients.(17).

This study also showed that a larger portion of pharmacists were neutral about their patients achieving medication adherence as well as average patients' satisfaction. In another study by Al-Arifi which was consistent with our study with respect to medication adherence. This could be due to the negative attitude or prejudice of pharmacist (18). This was in contrast with a study conducted by Chanie et al. which repirted a high satisfaction amongst patients. This could be due to the fact that availability of insurance was also not captured by our study. (25)

Strengths and limitations of the study

As this novel study focuses on early career pharmacists, addressing a distinct portion of the pharmacy workforce, we believe this focused approach will increase the relevance and practical initiation of the findings. Early career pharmacists frequently face unique challenges during their transition into professional practice. The emerging issues highlighted by the study will most likely be uncommon among experienced pharmacists. However, one of the key limitations of the study worthy of note is the fact that majority of the respondents range from intern pharmacists to pharmacists with barely three years of experience; which may not accurately reflect the population of early career pharmacists in Nigeria, therefore the results should be generalized with caution. A second limitation is the study's cross-sectional design, potentially masking the actual reasons and issues faces by early career pharmacists, which a more comprehensive approach might reveal.

Conclusion

Our findings show that early career pharmacists have a low and neutral attitude to mental health which ultimately decreases positive outcome. In practice, positive treatment outcome and patient satisfaction rate is directly proportional to medication adherence and the pharmacist's positive attitude towards the condition. Some pharmacists are negligent in this regard maybe because the patients are mostly not sober and they believe the treatment and healing is gradual; hence do not pay detailed attention to the patients, contrary to other ailments where outcome response is more immediate.

Suggested interventions to improve pharmacist's attitudes and practices in mental health comorbidities and opioid use disorder among early career pharmacists isto address the urgent need for improved knowledge and review the curriculum for mandatory continuous education in MH, ultimately enhancing patient outcomes. This Continuing Professional Education (CPE) can be in the form of conferences, workshops, seminars or online lectures focusing on recognizing mental health comorbidities and OUD, awareness has to be created for pharmacists to prioritize patients with these conditions as much as they do for patients with other health issues.

Ethical Approval

Ethical clearance for this stud was obtained from the Health Research and Ethics committee of the University of Nigeria Teaching Hospital. Written consent was obtained from each participant before enrolling in the study.

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