RESEARCH ARTICLE

Barriers and enablers of medication safety: A qualitative study from public hospitals in Kaduna State, Nigeria

Basira Kankia Lawal[1] (iD), Shafiu Mohammed[2,3] (iD), Aliyu A Alhaji[4], Bilkisu Bello Maiha[5], Muhammad Awwal Ladan[6] (iD), Umar Ibrahim Idris[7] (iD)

[1] Department of Clinical Pharmacy and Pharmacy Management, Kaduna State University, Kaduna, Nigeria
[2] Health Systems and Policy Research Unit, Ahmadu Bello University, Nigeria
[3] Department of Clinical Pharmacy and Pharmacy Practice, Ahmadu Bello University, Zaria, Nigeria
[4] Department of Community Medicine, Ahmadu Bello University, Zaria, Nigeria
[5] Department of Pharmacology and Therapeutics, Ahmadu Bello University, Zaria, Nigeria
[6] Department of Nursing Sciences, Bayero University Kano, Nigeria
[7] Faculty of Pharmacy, Universiti Sultan Zainal Abidin, Besut Campus, Terengganu, Malaysia

Correspondence
Umar Idris Ibrahim
Faculty of Pharmacy
University Sultan Zainal Abidin (UniSZA)
Terengganu
Malaysia
umaribrahim@unisza.edu.my

Abstract

Background: There has been a growing concern for patient safety in recent years. Little is known about medication safety in Nigeria. Anecdotal evidence has indicated widespread medication errors and insufficient error reporting in healthcare facilities. **Aim:** This study aimed to explore the factors affecting medication safety in selected public health facilities in Kaduna State, Nigeria. **Methods:** Semi-structured interviews (using a topic guide) were conducted with fifteen (15) purposively sampled healthcare providers (doctors, nurses, and pharmacists) in two hospitals in Kaduna State, Nigeria. The data were both inductively and deductively analysed using content analysis. **Results:** Themes relating to factors affecting medication safety were mapped onto the Vincent multi-level framework. Interview data revealed 30 subthemes as factors affecting patient safety, and respondents also suggested improvements in several areas, including attitudes, training, and education. **Conclusion:** Factors affecting medication safety were identified, as was the need for prioritising patient safety by regulatory agencies and practitioners.

Introduction

Healthcare systems around the world face multiple challenges that impact the quality of healthcare service provision (Zahrani, 2018). Patient safety has been defined by the World Health Organisation as "the absence of preventable harm to a patient during the process of health care" (WHO, 2011). Furthermore, medication safety has long been established as a critical component of the broader patient safety agenda (Institute of Medicine, 2000). It is estimated that ten million patients worldwide are harmed unnecessarily and suffer from disabling injuries or death each year as a result of unsafe medical practices and care (WHO, 2014).

Medication errors impose substantial costs annually and weaken patients' confidence in medical services (WHO, 2014). Furthermore, inappropriate medication use, unsafe medication practices, and medication errors continually present a detrimental impact on patient and economic outcomes all over the world (WHO, 2017). Medication use is a complex process that comprises the sub-processes of medication prescribing, order processing, dispensing, administration, and effects monitoring; medication errors can occur at any point in the medication-use system (Cohen *et al.*, 2018).

In low- and middle-income countries, it has been reported that a lack of safety culture compromises patient safety (Nejad *et al.*, 2011; Wilson *et al.*, 2012). In September 2008, the WHO presented a technical report on patient safety issues and solutions in African health systems to all 46 WHO African Region countries and the report was endorsed by all the countries (WHO, 2008). It is not clear to what extent these countries have been able to integrate these safety solutions into their healthcare systems. The twelve patient safety action areas highlighted in the report include a national patient safety policy, knowledge and learning in patient safety, patient safety awareness, health services for patient safety, healthcare-associated protection, healthcare worker protection, healthcare waste management, safe surgical care, medication safety, partnerships (patients, family, health professionals, and policymakers), patient safety funding, and research and surveillance (WHO, 2008).

Patient safety in Africa continues to be in dire straits, with most countries lacking national policies and plans on safe and quality healthcare practices, funding of healthcare systems, and critical support systems for healthcare safety/quality. This situation is exacerbated by fake and counterfeit medicines, poor healthcare infrastructure, under-equipped healthcare facilities, and weak healthcare delivery systems (Kaduna State Government, 2010). Furthermore, limited research has explored these challenges, which affect healthcare systems in low- and middle-income countries (LMICs) (Ogundimu, 2015).

Although patient safety has become a global concern, there seems to be a huge gap in the literature in Nigeria, particularly regarding healthcare professionals' perceptions of patient safety. Furthermore, healthcare practitioners' current situation and perspectives on medication safety in Nigeria are unknown (Aveling *et al.,* 2015). Anecdotal evidence has revealed widespread medication errors and insufficient error reporting in healthcare facilities. Thus, this study aimed to explore healthcare professionals' (HCPs) perspectives on factors affecting medication safety.

Methods

Study settings

The study was conducted in two selected hospitals (a secondary and a tertiary public hospital) in Kaduna State, which is located in the northwest geopolitical zone of Nigeria. As of 2018, Kaduna State has an estimated population of 8.6 million (Ogunleye *et al.,* 2016). It has 1,692 healthcare facilities, of which 40.2%

belong to the private sector, 3.2% are secondary healthcare facilities, and 0.3% are tertiary healthcare facilities (Ogunleye *et al.,* 2016).

The two hospitals selected for this study were Ahmadu Bello University Teaching Hospital (ABUTH) and Yusuf Dantsoho Memorial Hospital (YDMH). ABUTH is a tertiary hospital located in the Zaria Metropolitan Area of Kaduna State, Nigeria. It is the major and largest tertiary hospital in the state and also receives multiple other patients from neighbouring states. At the time of the study, ABUTH had a total of 606 medical doctors, 624 nurses, and 35 pharmacists, along with other trainee healthcare professionals.

YDMH, the second hospital in the study, is a major secondary hospital in the state. It is located in the state capital (Kaduna town) and serves a large number of the township population. At the time of the study, it had eleven (11) medical doctors, 93 nurses, and six (6) pharmacists, along with other trainee healthcare professionals.

Study design

A qualitative approach, through key informant interviews (KII), was adopted to explore the perceptions of HCPs on patient safety, with a particular focus on medication safety. The results were reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines, enabling readers to comprehend the conduct of the interviews (Tong *et al.,* 2007).

Study participants

Participants were doctors, nurses, and pharmacists working in the selected secondary and tertiary hospitals in Kaduna State. All HCPs (doctors, nurses, and pharmacists) who were willing to participate and had spent not less than six (6) months working in the health facility were eligible. House officers, student nurses, and intern pharmacists were excluded.

Sampling and recruitment

Participants for the KII were selected purposively until a saturation point was attained. Efforts were made to select participants reflecting various professional groups and years of experience. The respondents were met personally at their workplaces, and a convenient time and place for the face-to-face interview was scheduled. Before the interviews, information about the study was provided to the participants, who were also assured of anonymity and that they could withdraw at any point of the study.

Data generation

Data were collected from 15 participants through an exploratory qualitative survey using key informant interviews (KII). For each interview session, the interviewer provided a self-introduction, explained the purpose of the interview to the participant, and obtained verbal consent. Information such as date, time, venue, and some other details were recorded in the interviewer's filed notes. The interviews were semi-structured and audiotaped for easy transcription and coding. All interviews were conducted face-to-face by the primary investigator (BKL) and a pharmacist pursuing a doctorate degree with previous experience working in hospital settings. An interview guide was developed based on similar studies (Mekonnen *et al.,* 2016; Samsiah *et al.,* 2016). It included questions on patient safety, knowledge of medication errors and error reporting, the current situation of medication safety practice, barriers and strategies for reporting medication errors by healthcare professionals, and suggestions for improvements. Probing questions were asked to further obtain elaborate answers. Interview sessions lasted between 30 and 60 minutes.

Data analysis

Interview data were transcribed verbatim and reviewed for accuracy by the interviewer (BKL). Data were analysed using content analysis as described by Hsieh and Shannon (2005). This process was carried out manually. Interview transcripts were read several times for overall understanding after assigning a code to each participant. Coding of transcripts was done by BKL, with words highlighted and noted. As many headings as necessary were written down, and similar codes were merged into different categories. As described by Patton

(Patton, 2002), researcher triangulation was carried out regarding the data categorisation to ensure rigour. This procedure involved other members of the research team (SM and MAL), who independently analysed the data and discussed and compared the findings. Inter-related codes were then merged into categories through an integrated approach to the coding process (Bradley *et al.*, 2007). Themes generated from the KIIs were then mapped onto the multilevel framework developed by Vincent and colleagues (1998). This framework categorises various influences on injuries resulting from medical care into seven types of factors: patient factors, individual staff factors, team factors, task and technology factors, work environment factors, organisational and management factors, and institutional context factors, respectively.

Ethical considerations

Ethical approval was obtained from the ethics committees of representative study sites, i.e., the Ahmadu Bello University Teaching Hospital (ABUTHZ/HREC/D21/2018) and the Kaduna State Ministry of Health (MOH/ADM/744/VOL.1/499).

Results

Characteristics of respondents

A total of 15 HCPs were interviewed: 5 doctors, 5 nurses, and 5 pharmacists. Six of the respondents were males, and nine were females. The number of years of work experience in a hospital ranged from 1 to 26 years (Table I).

Table I: Characteristics of participants in KIIs

Interviewee code	Sex	Profession	Years of work experience in facility	Hospital type
R01	Female	Pharmacist	2 years	Tertiary
R02	Female	Pharmacist	3 years	Secondary
R03	Female	Pharmacist	6 years	Secondary
R04	Male	Pharmacist	15 years	Tertiary
R05	Male	Pharmacist	26 years	Tertiary
R06	Male	Nurse	6 years	Secondary
R07	Female	Nurse	15 years	Tertiary
R08	Female	Nurse	2 years	Secondary
R09	Female	Nurse	6 years	Tertiary
R10	Female	Nurse	25 years	Tertiary
R11	Female	Doctor	8 years	Tertiary
R12	Male	Doctor	1 year	Tertiary
R13	Female	Doctor	2 years	Secondary
R14	Male	Doctor	25 years	Tertiary
R15	Male	Doctor	20 years	Tertiary

Factors affecting patient safety

Seven (7) themes and 30 subthemes affecting patient safety were identified, which were then merged and mapped into the different categories of the multilevel framework developed by Vincent and colleagues (1998). Table II summarises the factors affecting patient safety, while Table III presents detailed information on the themes and subthemes.

Table II: Factors affecting patient safety

Category/theme	Description*	Subthemes
Work environment factors	Relate to workplace conditions that the HCPs perceived to influence patient safety.	• Security • Shift/ duty patterns • Physical environment • Facilities, infrastructure and materials • Manpower shortage • Competence mix
Organisational and management factors	Relate to conditions of the health care organisation that the HCPs perceived to influence patient safety.	• Training and re- training • Welfare and research support • Blame culture • Fear of litigation • Financial constraints • Error reporting systems
Individual HCP factors	Refer to various personal characteristics of the HCPs that they perceived to influence patient safety.	• Abilities and skills • Attitude • Knowledge about errors and medication safety • Fallibility • Delay in carrying out tasks
Task and technology factors	Refer to workplace technologies and processes involved in storing and sharing of data, information and knowledge that the HCPs perceived to influence patient safety.	• Documentation and incident reporting • Guidelines and policies • Information • Patient counselling
Team factors	Refer to various aspects of the interaction between HCPs which they perceive to influence patient safety.	• Teamwork • Communication
Patient factors	Relate to patients' influence on patient safety as perceived by the HCPs.	• Illiteracy • Patient involvement • Economic constraints • Caregiver participation
Institutional context factors	Refer to conditions of the outer context of the health care organisation that the HCPs perceived to influence patient safety.	• Drug supply systems • Healthcare delivery in other facilities • Open drug market system

*adapted from Samsiah et al., 2016

Table III: Themes and subthemes indicating the barriers and enablers of factors affecting medication safety

Category/theme	Description*	Subthemes
Work environment factors	Relate to workplace conditions that the HCPs perceived to influence patient safety.	• Security concerns (B) • Unfavourable shift/ duty patterns (B) • Physical environment (B) • Insufficient facilities, infrastructure and materials (B) • Manpower shortage (B) • Competence mix (B/F)
Organisational and management factors	Relate to conditions of the health care organisation that the HCPs perceived to influence patient safety.	• Poor funding of training and re- training (B) • Insufficient welfare and research support (B) • Blame culture (B) • Fear of litigation (B) • Financial constraints (B) • Lack of error reporting systems (B)
Individual HCP factors	Refer to various personal characteristics of the HCPs that they perceived to influence patient safety.	• Abilities and skills (B/F) • Poor attitudes (B) • Insufficient knowledge about errors and medication safety (B)

Category/theme	Description*	Subthemes
		• Fallibility (B) • Delay in carrying out tasks (B)
Task and technology factors	Refer to workplace technologies and processes involved in storing and sharing of data, information and knowledge that the HCPs perceived to influence patient safety.	• Poor documentation and incident reporting (B) • Lack of guidelines and policies (B) • Non digitised information systems (B) • Insufficient patient communication (B)
Team factors	Refer to various aspects of the interaction between HCPs which they perceive to influence patient safety.	• Teamwork (B/F) • Professional misunderstandings and strikes (B)
Patient factors	Relate to patients' influence on patient safety as perceived by the HCPs.	• Illiteracy (B) • Patient involvement (F) • Financial constraints (B) • Self-medication (B)
Institutional context factors	Refer to conditions of the outer context of the health care organisation that the HCPs perceived to influence patient safety.	• Erratic drug supply systems (B) • Poor referral services (B) • Open drug market system (B)

B= barrier; F= facilitator

1. Work environment factors

HCPs raised concerns regarding staff shortages, which caused staff to be highly overworked and stressed. As a result, HCPs have limited time to discuss and counsel patients properly.

"Sometimes you are on night duty, you are the only one and you are tired. You have very busy ward. You might make an error without even knowing" (R08, nurse)

Moreover, workplace design was considered to affect patient safety as certain services, such as payment centres and pharmacy services, were not decentralised. Hence, patients or caregivers have to queue for long periods, resulting in delays in healthcare provision.

"Some units have pharmacists close to them, but the payments are centralised. So they have to go long distance to queue and there is a delay before getting drugs" (R11, doctor)

Further concerns regarding the work environment included a lack of security at the workplace, insufficient working tools, and frequent rotations of staff across various units of the hospitals, all of which affect patient safety.

"We don't even have drugs all the time. We have so much out of stock, so we can't ensure medication safety" (R02, pharmacist)

"Most of time you are alone on duty with no security to check people coming in and out" (R06, nurse)

2. Organisational and management factors

Specifically, financial constraints were the most common factor mentioned by the respondents. HCPs expressed deep concern that it is a crucial challenge in the Nigerian healthcare system, affecting the quality of care.

"Even to go for conferences we do it out of pocket now, institutions do not sponsor because they don't have the money, nobody sponsors you even for local conferences. So for international conferences, you are dreaming, and even when you do your research, nobody pays for your publications. So you can see that there is no motivation" (R14, doctor)

Blame culture was another factor affecting patient safety raised by respondents. HCPs may fear the negative repercussions of reporting errors. Also, there was a concern about litigation, although this is not typical in Nigeria. HCPs perceived that reporting errors may cause patients to engage and proceed with legal actions.

"The barrier is a big one of course; the fear of litigation. You are on your own!" (R05, pharmacist).

Many HCPs acknowledged the lack of error reporting systems for voluntary error reporting established by the health facilities. Most participants were unfamiliar with the concept of error reporting, although the majority stated they could discuss any error occurring with their immediate superiors. The holistic idea of formally transmitting these problems through a reporting system was either relatively unknown by the HCPs or absent in their health facilities.

"I don't know if there is anything that is used to report errors. The system does not make it easy to report. If you report something, it may be used against you" (R09, nurse)

3. Individual HCP factors

Participants commented on the need for HCPs to have a positive attitude towards the provision of healthcare services to promote patient safety. They expressed the need for HCPs to be proactive and interested in their duties.

> *"Issues come in when some staff are hostile, the patients don't feel free to ask them, that 'how do you take this drug?'. And some don't even have the patience to talk to the patient, they just collect the drug and write 1-1, 2-2 and throw everything back to the patient, when they ask you question they just switch off, and they don't want to listen to the patient." (R15, doctor)*

Repetitively, respondents mentioned that healthcare workers decide not to carry out tasks due to resource constraints. While some HCPs may find a way to navigate by disclosing their concerns about overcoming the challenges, others may show no feelings of distress or remorse.

> *"I won't be so partial, I will say sometimes we are not too proactive. We have to be proactive to be able to render the services" (R03, pharmacist)*

> *"Unless you work with the trust and fear of God. Some may not work if they don't get the resources. They just don't care." (R05, pharmacist)*

4. Task and technology factors

Concerns were raised about the lack of technological facilities, particularly information technology and other diagnostic and treatment facilities, which may affect patient safety. Hospital records are kept in hard copy (written form), making it difficult to retrieve information instantly. Limited and unavailable laboratory facilities caused treatment delays, which may affect patient safety.

> *"We mostly use broad spectrum antibiotics because at times we never get the microbial sensitivity. So the patient might be using an antibiotic that is not really what is supposed to be used." (R11, doctor)*

Another serious concern regarding task factors was the lack of policies, guidelines, and standard protocols for specific tasks. For example, there are no standard prescribing policies, no antibiotic policies, and no protocols for dosing certain drugs in health facilities.

> *"We just follow based on teachings, but a standardised protocol for a department, no we don't have things like that." (R11, doctor)*

5. Team factors

There were mixed views concerning team dynamics among the respondents. While some HCPs mentioned good working relationships and cordiality, others revealed hostility and power competition within and outside the teams, which was particularly evident regarding communication between healthcare providers. Inter-professional relationships were considered to be less harmonious than intra-professional interactions.

> *"I wouldn't say we work as a team because there are lots of lapses and communication gaps. But we try to maintain good relationship." (R13, doctor)*

> *"The doctors in our hospital, we don't really relate well and the nurses too. It's like the pharmacy department we are on our own" (R02, pharmacist)*

Professional misunderstandings were considered to cause incessant industrial actions and strikes among different unions of healthcare professionals, who are agitated for wage disparities and rivalry for professional recognition. These misunderstandings continue to disturb the team dynamics, which affects patient care.

> *"The relationship has not been too bad, but of recent the issue of JOHESU (joint health workers union) and the rest is trying to strain the relationship." (R07, nurse)*

6. Patient factors

HCPs highlighted the significant impact that patient-related factors have on patient safety. Challenges, such as financial constraints, play a major role in affecting patient safety. Patient illiteracy is another critical setback, further compounded when caregivers accompanying the patient are also illiterate.

> *"In as much as it is payment out of pocket, the patient is limited." (R14, doctor)*

Another concern raised was patients not abiding by hospital regulations but resorting to combining their medications with other personal, mostly complementary or traditional medicines, even during their hospital stay.

> *"Some patients, even though they are in the hospital, you might not know that they are taking something else not from what is being prescribed for them." (R06, nurse)*

7. Institutional context factors

HCPs reported that external factors affect patient safety, which include poor healthcare delivery in other facilities (both government and private hospitals). Most

patients are referred to secondary and tertiary healthcare facilities after being mismanaged in other facilities. There tends to be incomplete information regarding patient diagnosis and treatment. Additionally, some of the facilities to which the patients were referred do not have competent staff for patient care.

> *"We have received a lot of complaints that have come from other facilities. There is more [errors] out there, because like these patent medicine stores, you know a lot of them treat patients." (R07, nurse)*

A further concern raised by the HCPs was the disorderly open drug market in Nigeria, negatively impacting the provision of quality care because many drugs are freely circulating in the system without proper checks and laws to regulate them. Again, the quality of medicines sourced from open markets cannot be guaranteed.

> *"This is a country where anything comes in, we want to be sure that are these drugs genuine?" (R14, doctor)*

Strategies for improvement recommended by the HCPs

HCPs raised some valuable suggestions on strategies that could be adopted for improving patient safety. The reiterating suggestion by the HCPs was education and sensitisation on errors and error reporting.

> *"There should be training on how to document it [errors] and there should be policies and guidelines, then some motivation. It is not about blaming each other, everyone makes mistakes." (R03, pharmacist)*

Further recommendations included improved relationships among HCPs and teamwork; multi-professional meetings with HCPs and other auxiliary staff; attitudinal change of staff; improved access to information; education and sensitisation on errors and error reporting; capacity building through training and re-training; availability of treatment guidelines and policies; improvement of infrastructure; and patient education and engagement.

> *"The pharmacists should be involved. Let's work as a team. They should be there during rounds to give their own inputs." (R11, doctor)*

> *"I think if there is a form, a clear reporting form. If you make an error, this is the format you should report. And it should just be for correction measure, not for punishment." (R06, nurse)*

Discussion

The study represents the first qualitative investigation conducted in Kaduna State, northwest Nigeria, to explore the perceptions of healthcare professionals about patient safety. Participants in this study were HCPs (doctors, nurses, and pharmacists) working at public health facilities in Kaduna State.

Interviews conducted with the HCPs revealed good intra-professional teamwork compared with inter-professional teamwork, where there were some challenges and quibbles.

HCPs raised concerns about staff numbers (size) and workload. This finding reflects the pressing concern of HCPs that staff size was inadequate compared to the workload, which negatively impacts patient safety. Shortages of staff have been identified to affect patient safety. Consequently, HCPs may be exhausted and become prone to errors. Moreover, they may be under pressure and rushing to serve many patients quickly, causing a loss of concentration. This finding corresponds to previous conclusions from Libya and Ethiopia (Rages, 2014; Wami *et al.,* 2016; Mekonnen, 2017) and those of a qualitative study conducted in two African hospitals (Ogundimu, 2015). Staff shortages are a common concern in most African hospitals. It has been reported that hospitals in LMICs experience staff shortages, heavy workloads for healthcare providers, and distractions, all of which lead to unsafe healthcare service provision (Jha *et al.,* 2013). The WHO Workforce Alliance factsheet for Nigeria revealed that the human resource for healthcare (HRH) availability of physicians, nurses, and midwives per 10,000 population is 20.1. Further examination indicates that these estimates are 4 and 16.1 for physicians and nurses/midwives, respectively (WHO 2018). Regrettably, HCPs continue to leave the country yearly, seeking better working conditions in well-organised and developed countries (brain drain). Interestingly, the issue of staff shortages is not specific to African nations but a worldwide concern, as it exists even in developed nations (Combes *et al.,* 2018; Khalil & Lee, 2018).

HCPs were relatively unaware of the error reporting concept and further revealed they may not necessarily report errors that resulted in no harm to patients or errors committed but stopped before reaching the patient. The Institute of Medicine stipulated that for healthcare organisations to move towards a safer health system, errors are not to be treated as personal failures but rather as opportunities to improve the system and prevent harm (Institute of Medicine, 2000). This consideration needs to be reiterated to healthcare professionals to understand error reporting and patient safety through the provision of education on errors. Interestingly, a number of the HCPs interviewed

remarked that they usually informed their immediate senior colleagues of any errors or potential errors that occurred. This finding indicates that the HCPs did not feel pressured by hierarchical differences. As such, with proper orientation and education, HCPs would easily make error reporting a part of their culture, especially where there are set policies and guidelines for such reporting.

This study showed that medication safety is affected by both systemic and individual factors, as reported by other studies (Hartnell *et al.,* 2012; Khalil & Lee, 2018). Some key factors that affect patient safety as a whole have been identified as specific to healthcare institutions in developing countries like Nigeria. Many basic medication safety practices are not implemented at all or are poorly implemented. For example, medication safety committees are mostly nonexistent, pharmacists are not involved in medication reconciliation, and many other recommendations on medication safety practices by the WHO are not implemented (Lawal *et al.,* 2020). Additionally, hospitals face frequent drug stock-outs due to financial constraints and poor planning; hence, patients depend on drug-selling outlets whose quality cannot be guaranteed, thereby affecting their safety. Also, the chaotic and complicated drug supply system in the country continues to undermine the Nigerian healthcare sector (Jatau *et al.,* 2015). Deficiencies in basic infrastructure (such as a lack of electricity and poor facilities) were also identified as very common. The lack of adequate electricity can delay some healthcare procedures, such as equipment sterilisation for wound dressing, until power is available. These deficiencies have persistently compromised the quality of care in African health settings (Jha *et al.,* 2013). As such, the functionality and quality of healthcare facilities are determined by the accessibility, availability, quality, and acceptability of healthcare services for patients, as well as staff working conditions (Scholz *et al.,* 2015).

Finally, the findings from this study included some recommendations from HCPs on ways to improve patient safety at their facilities. These recommendations spanned various levels of the healthcare organisation, ranging from individual HCP factors (attitudinal change), team factors, and organisational factors (training and improved facilities), among others. Notably, patient safety extends beyond the boundary of an individual unit or organisation and requires contributions and collaborations from a wide range of stakeholders (Liu *et al.,* 2014). Thus, there is an urgent need for government policies to adopt and implement patient safety initiatives, such as those recommended by WHO and ISMP, across all health facilities in Kaduna State and Nigeria at large. This

measure will help develop and embed a safety culture, facilitating healthcare quality improvement initiatives. Furthermore, large-scale interventional studies and in-depth comparative studies are warranted to examine the different levels of healthcare, focusing on areas with weaknesses in patient safety culture dimensions.

Strengths and limitations

This study has several strengths. Firstly, it explored medication safety from the perspectives of three different groups of health professionals (medical doctors, pharmacists, and nurses), providing a wealth of information in line with the medication use process and relevant safety concerns. Secondly, the qualitative nature of the study enabled in-depth discussions with HCPs about patient safety culture, specifically medication safety, expanding the discussion on healthcare professionals' patient safety culture in Kaduna State and building upon previous findings (Lawal *et al.,* 2023).

This study has some limitations. Interviews were conducted with HCPs from only two hospitals; hence, the results are not generalisable. As with qualitative studies, the results are expected to be transferable to other HCPs practising in government-owned hospitals in Kaduna State due to multiple similarities. Furthermore, there could have been a possibility of cultural and social desirability bias, where respondents may try to give favourable impressions of themselves or their workplace. This bias was minimised by assuring participants of confidentiality and anonymity.

Further large-scale interventional studies across public healthcare facilities would improve the understanding of the medication safety concept in Kaduna State, thereby guiding policy development for healthcare quality improvement.

Conclusion

This study could identify the factors affecting medication safety. These ranged from individual HCP factors (attitudinal change) to team factors and organisational factors (training and improved facilities), among others. Hence, there is a need for regulatory agencies and practitioners to prioritise patient safety.

Conflict of interest

The authors declare no conflict of interest.

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