STRENGTHENING HOSPITAL PHARMACY PRACTICE IN NIGERIA THROUGH THE ADOPTION AND IMPLEMENTATION OF THE REVISED (2014) FIP BASEL STATEMENTS

By

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Executive Summary

This study, funded by the International Pharmaceutical Federation (FIP), aimed to assess the level of conformity of hospital pharmacy practice in Nigeria with the 2014 revised FIP Basel Statements. The primary objective was to evaluate how well Nigerian hospital pharmacies align with these internationally recognized standards.

Purpose and Objectives

The study sought to determine the extent to which hospital pharmacy practices in Nigeria adhere to the revised 2014 FIP Basel Statements, which provide a framework for optimal pharmacy practice and patient care**.**

Method

FIP Basel Statement assessment tools were distributed to hospital pharmacists across Nigeria. The completed tools were then analyzed to evaluate various aspects of pharmacy practice.

Key Findings

The analysis revealed that while certain areas, such as medicine procurement and monitoring of medicine use, scored above average, other

critical areas—including influence on prescribing, administration, human resources, and training and development—were found to be below average.

Conclusion

The findings indicate a significant disparity in adherence to the Basel Statements across different areas of hospital pharmacy practice. It is evident that pharmacists need to enhance their practices to better align with the Basel Statement requirements.

Recommendations

1. Adopt Basel Statements:Hospitals should incorporate the Basel Statements as a standard for planning, training, and appraising pharmacy practices and processes.

2. Training and Development: Hospital pharmacists should receive targeted training to improve their understanding and application of the Basel Statements.

Importance of Findings

Implementing these recommendations will likely lead to improved patient care and greater satisfaction among pharmacists by fostering a more standardized and effective approach to hospital pharmacy practice.

Background

Over the past decades, the pharmacy profession, including hospital pharmacy, has experienced a tremendous change in the scope of professional practice. Demographic and epidemiologic transitions, health sector reforms, the challenges of the increasing aging population, expanding disease profiles as well as increasing awareness of medication errors have significantly expanded the role of pharmacists from the restricted conventional service of preparing and distributing medicines to more patient-centered services. The expanded roles of pharmacists ensure patients' safety, quality of care and optimal therapeutic outcome. These services include patient education and counseling, health promotion and prevention of diseases, managing various disease conditions, providing specialized clinical recommendations to other healthcare professionals, and managing medication therapy. (Ahmed Abousheishaa, 2020).

Although the role played by every pharmacist centers around ensuring the responsible use of medicines, pharmacy practice is modeled

around different cultures, health systems, resources, and education (Law et.al 2019). The scope of hospital pharmacy practice varies from country to country, especially in developing countries where there are more challenges partly due to economic hardships. (LeBlanc & Dasta, 2005)

Despite this, the application of clinical pharmacy duty is in its early stages in many developing countries. (Pande et.al, 2013)

The International Pharmaceutical Federation (FIP) is the global body representing about 4 million pharmacists and pharmaceutical scientists around the world through 137 national organizations, as well as academic, institutional, and individual membership (Hague, 2015). In 2008, Hospital pharmacists from around the world met in Basel, Switzerland to discuss the future of their sector (Law et.al 2019). The result of this historic meeting was the release of 75 consensus statements reflecting a unified vision of hospital pharmacy practice, known as the Basel statements in both developed and developing countries. These statements tactically structured the role of clinicall pharmacists regarding their influence on rational prescribing and was developed as the future of the hospital pharmacy practice

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Since the creation of Basel statements, intentions have been looming to incorporate them into hospital practice around the world. The statements have also been made available in 21 languages, including the official languages of the United Nations (Cousins, 2009). These statements provide a guideline for hospital pharmacy practice, as they are truly global and ruminative of ideal standards and were extensively reviewed in 2014, to ensure that they remained current and applicable to practice.

The Basel Statements are organized under several “overarching guidelines” and six themes, which are a list of best practices that cover all areas of responsible medicine use process in hospitals, from procurement, influences on prescribing, preparation, and delivery to administration, monitoring of medicine use, Human Resources, training, and development. (FIP 2009).

The World Hospital Pharmacy Practice Research Consortium (WHoPREC) was set up to monitor global hospital practice according to the Basel statements and ongoing international research has shown that the Basel statements are applicable for both developed and developing countries. (Moles, Chaar & Penm, 2014). The assessment of the level of conformity of hospital pharmacists in Nigeria with the

2014 revised FIP Basel statements represents an important opportunity to identify gaps in hospital pharmacy practice and priority areas for intervention.

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Aim/Objectives

This study aims to evaluate hospital pharmacy practice in Nigeria based on the revised (2014) FIP Basel Statement.

Objectives

The objectives are:

1. To identify the Basel statements that are currently being implemented in Nigeria Hospitals.
2. To assess the degree to which hospital pharmacists' practices align with the Basel Statements
3. To determine gaps and barriers that may affect adherence to the Basel Statements
4. To provide recommendations to address the identified gaps

The expansion of pharmacists' role in the hospital setting is still lacking uniformity all over the world (Aya Ahmed Abousheishaa et. al 2020). and there is limited literature on the awareness and incorporation of the revised Basel statements in resource-limited nations such as Nigeria. A study documented a few responses from Nigeria but these were not categorized according to the respectives States. (Lawal , 2019). Since adopting the Basel statement is vital for the practice of the pharmacy profession in Nigeria to meet up with world best practices and improve patient care, this study is essential to assess the level of implementation of these statements in our practice settings. It will serve as a baseline for improving and implementing the FIP Basel statement for best Pharmacy practice in Nigeria.

Methods

Study Design

This is the first stage of a 3-part interventional study. It is a cross-sectional descriptive survey that investigated hospital pharmacy practice in Nigeria based on the revised Basel Statements. The study

utilized the modified Basel Statement Self-Assessment tool which was converted to google form questionnaires.

Study Setting

Nigeria has an estimated population of 192 million people (UN est. in 2017), making it the seventh most populous country in the world. The capital city is Abuja, located in the Centre of the nation, while Lagos is the country's primary port, economic hub, and the largest city. Nigeria has a growth rate of 3.54% (Nigeria, National Bureau of Statistics, 2022) and it is located in the Southeastern part of West Africa, with a coast of the Bight of Benin and the Gulf of Guinea. Nigeria is bordered by Benin, Cameron, Chad and Niger. It shares a Maritime border with Equatorial Guinea, Ghana, and São Tomé. With an area of 923,768 km2, the country is almost four times the size of the United Kingdom or slightly more than twice the size of the US California. Spoken languages are English (official), Yoruba, Hausa, and Igbo. it is estimated that Nigeria has about 250 different ethno-linguistic groups. Islam (41%) and Christianity (58%) are the country's major religions. There are 203 tertiary, 4768 secondary, and 36127 primary healthcare facilities in Nigeria

Study Population.

A convenience sample of registered pharmacists practicing in Nigerian primary, secondary, and tertiary healthcare facilities was obtained from the Association of Hospital and Administrative Pharmacists of Nigeria official database in July 2023 and was utilized for the study.

Sample size Determination

It was not necessary to calculate the sample size. The sample population constitutes the sample size since the questionnaire was administered to all hospital pharmacists

Data collection and analysis

The FIP Basel Statement self-assessment tool which was converted to Google form was sent to 946 Hospital Pharmacists via email and on individual WhatsApp with occasional reminders to 946 registered hospital Pharmacists. Manual questionnaires were administered to hospital pharmacists who participated in the Association of Hospital and Administrative Pharmacists of Nigeria Conference and who had

not previously completed the online questionnaires. The filled questionnaires were later transferred to the google form.

The google form explored the pharmacists daily activities like in patient and out patient clinical activities, medication safety practices, supply chain and information management. The collected data was extracted from the google form , coded using R, cleaned and analyzed using SPSS V23 statistics tools. Data were evaluated by proportion of achievement of Basel Statement.

Ethical approval

The study was approved by National Health Research Ethics Committee of Nigeria (NHREC) approval number NHREC/01/2007-06/07/2023 in July 2023.

Informed Consent

The first section of the survey tool provided potential participants with relevant information on the study, its objectives and benefits and required them to indicate their willingness to participate in the study. Participants were assured that any information linked to their identity

will be kept confidential. Participants were required to check the consent form and understand such and tick the “I consent” box before proceeding to answer the research questions.

Outcome (s) and impact

Adopting the Basel Statements is vital to the practice of hospital pharmacy in Nigeria to meet up with world best practices and improve patient care.

RESULTS

Demographic Characteristics of the Responders

Responses were received from 383 hospital pharmacists out of 946 representing a 40.5% respondent rate.

4.7% of the responses were from the primary healthcare, 48% from secondary, and 45.4% from the tertiary healthcare facilities.

13.2% of the pharmacist respondents practice in a community with over 500,000 population surrounding the hospital community while 44.4% practice in a community with less than 50,000 population.

23.1% of respondents practice in hospitals having between 501-1000 hospital beds, 28.4% in 100-250 beds while 28.5% practice in hospitals with less than 100 beds

The respondents reported that 68.1% of the hospitals have 1-100 physicians, 11.7% have 101-200 physicians and 9.9% have 700-900 physicians (See Table 1)

TABLE 1: INSTITUTION DEMOGRAPHY

VARIABLE	**FREQUENCY**	**PERCENT**
INSTITUTION LEVEL OF CARE (N=383)		
Primary	18	4.7
Secondary	184	48.0
Tertiary	174	45.4
Others	7	1.8
POPULATION SURROUNDING HOSPITAL COMMUNITY (N=383)		
Over 500,000	51	13.2
100,000 – 499,000	48	12.5
50,000 – 99,000	113	29.5

Less than 50,000	171	44.4
NUMBER OF HOSPITAL BEDS (N=383)		
≤100	109	28.5
100-250	101	26.4
251-500	73	19.0
501-1000	89	23.1
>1000	11	2.9
NUMBER OF PHYSICIANS		
0	15	3.9
1-100	261	68.1
101-200	45	11.7
201-300	13	3.4
301-400	4	1.0
401-500	3	.8
501-600	4	1.0
601-700		
701-800	38	9.9

TABLE 2: PRACTICE SETTING AND SERVICES.

VARIABLES	FREQUENCY	PERCENT
PRIMARY SERVICES OF THE HOSPITAL		
Surgery	320	83.6
Medicine	344	89.8
Paediatrics	305	79.6
Oncology	161	42.0
Emergency room	323	84.3
Primary Care	272	71.0
Orthopaedics	231	60.3
Psyciatry	163	42.6
Others	5	1.3
CLINICS COVERED BY THE ASSESSMENT		
Primary care only	40	10.4
Specialty care	37	9.7
Both Primary and Specialty care	291	76.0
No Clinic Included	15	3.9

PHARMACY RESIDENCY		
Yes	129	33.7
No	254	66.3
MEDICAL RESIDENCY		
Yes	211	55.1
No	172	44.9
How many Pharmacy Student Does your facility take on rotation yearly		
0	129	33.7
1 – 50	234	61.1
51-100	13	3.4
101-150	4	1.0
151-200	2	.5
200 AND ABOVE(351-400)	1	.3
TYPE OF PRACTICE SETTING		
Mostly Distributive	17	4.4
Clinical Generalist	139	36.3
Separate Clinical and Distributive	30	7.8
Comprehensive Model	193	50.4

Others	4	1.0

TABLE 3: OVERARCHING STATEMENTS: 65.8% of Pharmacists have access to full official patient record and 84.5% are accessible at all times as point of contact for HCPs. 22.7% have never documented interventions in official patient records

VARIABLES	**FREQUENCY**	**PERCENT**
Do hospital Pharmacists have access to full official patient record		
Yes	252	65.8
No	98	25.6
Other	33	8.6
Frequency of Pharmacists documentation of intervention in hospitals patient's official records?		
Always	81	21.1
Most times	53	13.8

Sometimes	70	18.3
Rarely	47	12.3
Never	30	7.8
No Access	87	22.7
Others	15	3.9
Extent of Patient /Care giver education by Pharmacists		
Every patient on new medication	294	76.8
Only high risk patient or high risk medication	37	9.7
No patient counseling provided	1	.3
Others	51	13.3
To what extent do Pharmacists engage in research or auditing involving new methods and systems to improve use of medicines		
Majority of hospital Pharmacists	96	25.1
Minority of hospital Pharmacists	184	48.0
Not engaged in research	90	23.5
Other	13	3.4

To what extent do Pharmacists engage in research or auditing involving new methods and systems to improve Human Resources Needs		
Majority of hospital Pharmacists	88	23.0
Minority of hospital Pharmacists	177	46.2
Not engaged in research	112	29.2
Other	6	1.6
How accessible are hospital Pharmacists as a point of contact for HCPs		
Accessible to all HCP at all times	325	84.9
Accessible only at certain times of the day to only certain HCP	42	11.0
Currently do not serve as a point of contact	11	2.9
Other	5	1.3

TABLE 4: Their degree of alignment with the basic overarching statement

Review, interpretation, and validation of all prescriptions before dispensing or administration (91.9%). Ensuring proper storage to maintain the quality, safety, and security of medicines across the supply chain (84.9%). Providing orientation, drug information, and education to nurses, physicians, and other hospital staff regarding best practices for medicine use (75.5%), Maintenance of technologies that support the medicine use process (41.3%).

VARIABLES	**FREQUENCY**	**PERCENT**
To what extent is the pharmacy/ hospital pharmacist responsible for the following		
Selection of technologies that support the medicine use process	170	44.4
Implementation of technologies that support the medicine use process	187	48.8
Maintenance of technologies that support the medicine use process	158	41.3
Assessment of clinical decision support systems and informatics used for guiding the medicine use process	206	53.8

Development of clinical decision support systems and informatics used for guiding the medicine use process	185	48.3
Implementation of clinical decision support systems and informatics used for guiding the medicine use process	206	53.8
Maintenance of clinical decision support systems and informatics used for guiding the medicine use process	192	50.1
To what extent is the pharmacy/ hospital pharmacist responsible for the following		
Review, interpretation and validation of all prescriptions prior to dispensing or administration	352	91.9
Providing orientation, drug information and education to nurses, physicians and other hospital staff regarding best practices for medicine use	289	75.5
Management and disposal of waste related to medicine use process	224	58.5
Providing advice on the disposal of human waste from patients receiving medicines	122	31.9

Ensuring proper storage to maintain the quality, safety and security of medicines across the supply chain	325	84.9
Which of the following best practices are employed		
A contingency plan for medicine shortages or emergency purchases	249	65.0
Procurement of standard concentrations of high-risk medicines, including electrolytes	130	33.9

TABLE 5: PROCUREMENT

Table 5 shows hospital Pharmacists' involvement in procurement. 50.4% **review and adapt procurement monthly to fit different settings and emerging needs**. 93% are responsible for the Procurement of strong quality assurance medicine, and 79.4% of the time, they ensure a transparent process of procurement of medicines and health products, in line with best practices and national legislation

VARIABLES	FREQUENCY	PERCENT
How often is procurement reviewed and adapted to fit different settings and emerging needs		
Daily	32	8.4
Weekly	52	13.6
Monthly	193	50.4
Yearly	38	9.9
Never	16	4.2
Quaterly	24	6.3
Other	28	7.3
.How often are you confident that the procured medicine has met strong quality stsndards including during stock outs		
Daily	122	31.9
Weekly	63	16.4
Monthly	148	38.6
Yearly	17	4.4
Never	16	4.2

Quaterly	3	.8
Other	14	3.7
To what extent is the pharmacy/ hospital pharmacist responsible for the following		
Procurement of strong quality assurance medicine	356	93.0
Ensuring a transparent process of procurement of medicines and health products, in line with best practices and national legislation	304	79.4
Which of the following best practices are employed		
A reliable information system for procurement that provides accurate, timely and accessible information	272	71.0

TABLE 6: INFLUENCES ON PRESCRIBING

Table 6 shows that Hospital Pharmacists are actively involved in Multidisciplinary teams within patient care areas or wards in all care areas (10.2%), most care areas (26.9%), and no care area (19.3%). 27,7% are not

trained to participate in collaborative prescribing and 77.3% are responsible for Educating prescribers on the access to and evidence for optimal and appropriate use of medicines.

VARIABLES	**FREQUENCY**	**PERCENT**
To what extent are pharmacists actively involved in Multidisciplinary team within patient care areas ot wards.		
All care area	39	10.2
Most care area	103	26.9
Some care area	96	25.1
A few care area	69	18.0
No care area	75	19.6
Others	1	.3
To what extent are Pharmacists trained to participate in collaborative prescribing?		
All	69	18.0
Most	61	15.9
Some	73	19.1

A few	70	18.3
None	106	27.7
Others	4	1.0
To what extent is the pharmacy/ hospital pharmacist responsible for the following		
Transferring patient medicines information as patients move between and within sectors of care	151	39.4
Educating prescribers on the access to and evidence for optimal and appropriate use of medicines	296	77.3
Which of the following best practices arme employed		
A formulary system (local, regional and/or national)	246	64.2
Policies addressing off-label use	116	30.3

TABLE 7: PREPARATION AND DELIVERY

Table 7 addresses preparation and delivery. 87.7% are responsible for ensuring the proper dispensing of medicines, 39.9% of the pharmacists managed the preparation of hazardous medicines including cytotoxic ones,

while 44.4% employ a system for tracing medicines dispensed by the pharmacy.

To what extent is the pharmacy/ hospital pharmacist responsible for the following		
Determining which medicines are included in ward stock	291	76.0
Ensuring proper dispensing of medicines	336	87.7
Which of the following best practices are employed		
Pharmacist managed preparation of hazardous medicines including cytotoxic	153	39.9
Policies addressing the use of medicines brought into the hospital by patients	160	41.8
Policies addressing the use of herbal and dietary supplements	111	29.0
Automated prescription filling	86	22.5
Unit dose distribution	129	33.7
A bar coding system or other machine scan able codes at administration	37	9.7
System for tracing medicines dispensed by pharmacy	170	44.4

Storage of concentrated electrolyte products outside of patient ward	78	20.4

TABLE 8: ADMINISTRATION

The extent to which prescriptions require transcriptions between original prescription and medicine administration is (22.7% all, 21.9% Most, 19.8% some, and 13.6% none). 53.3%. Label individual patient medicine with at least two patient identifiers. Pharmacists ensure that all HCPs responsible for administering injectable medicines and Chemo receive education /training on the use of medicine (73.6), Hazards involved with the medicines (61.7%)

VARIABLES	**FREQUENCY**	**PERCENT**
To what extent do prescriptions require transcriptions between original prescription and medicine administration		
All	87	22.7
Most	84	21.9

Some	76	19.8
A few	77	20.1
None	52	13.6
Other	7	1.8
Pharmacists ensure that all HCP responsible for administering injectable medicines and Chemo receive education /training on		
Use of medicine	282	73.6
Hazards involved with the medicines	236	61.6
Necessary precautions with the medicines	280	73.1
Other	26	6.8
To what extent is the pharmacy/ hospital pharmacist responsible for the following		
Ensuring patient's medication allergies, drug interactions, contraindications and past adverse events are accurately recorded and evaluated prior to medicine administration	271	70.8
Packaging of medications	336	87.7
Labeling of medications	345	90.1

Which of the following best practices are employed		
Policies and strategies to prevent wrong route errors (e.g. Enteral feeding catheters, labeling of intravenous tubing near the insertion site	132	34.5
Labeling individual patient medicine with at least two patient identifiers (example: patient name and date of birth), name of medicine, route, and dose	204	53.3
Appropriate and current information resources to ensure safe preparation and administration	158	41.3
Independent checking of chemotherapy doses against the original prescription by a pharmacist and one additional health care professional at the point of care prior to administration	88	23.0
Utilization of the observation method at drug administration to detect errors and identify potential areas for improvement	129	33.7

TABLE 9: MONITORING OF MEDICATION USE. Hospital Pharmacists monitor patients' medication for safety, appropriate use, and optimal outcome in varying degrees, ranging from some patients based on patient selection criteria (35%) to all patients daily (31.9%). 91.6% are responsible for safe medication use and 89.9% of utilize a reporting system for ADRs.

VARIABLES	**FREQUENCY**	**PERCENT**
To what Extent do hospital pharmacists monitor patient's Medication for safety, appropriate use and optimal outcome?		
All patients on a daily basis	122	31.9
All patients when changes are made to patient's therapy	77	20.1
Some patients based on patient selection criteria	134	35.0
No patient monitoring	33	8.6
Others	17	4.4
Does the hospital utilize reporting system for the following		

Defective medicines	149	38.9
Adverse drug reactions	344	89.8
Medication error	264	68.9
Others	12	3.1
Is the pharmacy/hospital pharmacist responsible for the following		
Safe medication use	351	91.6
Appropriate medication use	351	91.6
Cost effective medication use	340	88.8
Others	7	1.8
Which of the following best practices are employed		
Trigger tools for adverse drug events and optimal medicine use	114	29.8
Data collected and trended against internal benchmarks and/or best practices in other institutions	72	18.8
Review of hospital medication practices by an external quality assessment accreditation program	124	32.4

TABLE 10: HUMAN RESOURCES, TRAINING AND DEVELOPMENT

32% employ human resource information systems that contain basic data for planning, training, appraising, and supporting the workforce

VARIABLES	**FREQUENCY**	**PERCENT**
Which of the following best practices are employed		
A human resource information system that contains basic data for planning, training, appraising and supporting the workforce	126	32.9

DISCUSSION

The study has evaluated hospital pharmacy practice in Nigeria based on the revised Basel Statements. Basel Statements are a set of global recommendations developed to guide hospital pharmacists in advancing pharmacy practice. The statements serve as a cornerstone for enhancing the quality, effectiveness, and efficiency of hospital practice with the patients, healthcare system, and the healthcare providers being beneficiaries.

Overarching Statements:

Over half of the pharmacists have access to official patient records, this percentage indicates a significant opportunity for improvement. Greater access could enhance pharmacists' ability to make informed decisions and collaborate more effectively with other healthcare professionals but unfortunately, the low percentage of pharmacists documenting their interventions in patient medical records is disturbing as proper documentation is essential for tracking the impact of pharmaceutical care, ensuring continuity of care, and demonstrating the value of pharmacists' contributions. The low rate suggests a need for improved practices or systems to facilitate and encourage documentation.

The high percentage of pharmacists being accessible to other healthcare professionals indicates strong communication and collaboration within the healthcare team. This accessibility is crucial for ensuring coordinated care and improving patient outcomes.

With only a quarter of pharmacists involved in research or auditing, there is substantial room for growth in this area. Expanding research and auditing activities could lead to innovations and improvements in medication use practices and patient outcomes.

This is critical for advancing pharmaceutical practices, It is also useful in identifying best practices, addressing gaps in medication use, and adapting to new evidence. Increasing participation in these activities could help standardize and improve the quality of care across the board.

Involvement in research and auditing can contribute to professional development and keep pharmacists updated on the latest advancements and methods in medicine. This can also enhance their role in multidisciplinary teams by bringing evidence-based insights to practice.

The relatively low engagement rate suggests a need for increased support and encouragement for pharmacists to participate in research and auditing. This

could involve providing more resources, training, and opportunities for pharmacists to get involved in these activities.

The finding that over half of hospital pharmacists are involved in managing the disposal of waste related to medicine use highlights the role of pharmacists in ensuring the safe and effective management of pharmaceutical waste. This responsibility is essential for minimizing environmental impact and ensuring compliance with regulatory standards.

There may be a need for further training and resources for pharmacists in this area to enhance their effectiveness. Improved guidelines and support could help pharmacists manage waste more efficiently and address any emerging challenges.

With nearly 42% not currently involved, expanding their role could enhance overall waste management practices in hospitals. The findings on the overarching statements are similar to the findings from similar studies by Lyons *et.al* 2016, Law *et.al* 2019 and Barre *et.al* 2021

Theme 1: procurement

Findings from our study revealed the existence of strong procurements practice, reporting of Adverse drug reactions and ensuring appropriate labeling and use of medicines. Pharmaceutical procurement is a core component of the healthcare delivery system and the availability of affordable, quality, safe, and efficacious medicines in the hospital depends on the procurement practices of the hospital pharmacists.

Our study result revealed that a good number of hospital pharmacists in Nigeria align their procurement practices with the global standards being advocated by the FIP Basel Statement. Hospital pharmacists review and adapt procurement monthly to fit different settings and emergency needs. They are responsible for the procurement of quality medicines and they ensure a transparent process of procurement in line with best practices and national legislation. The findings are similar to the findings by Law *et.al* 2019, in their tier 3 construct and Lyons *et.al* 2016 in their tier 1 construct of procurement. This implies that a significant number of hospital pharmacists in Nigeria are responsive to the dynamic nature of healthcare settings and emergencies. They actively assess and adjust their procurement practices to ensure that medicines are available and suitable for various patients' needs even in unexpected situations and this will ultimately lead to operational efficiency

Theme 2: influences on prescribing

Pharmacists' involvement in interdisciplinary care by providing expertise in medication management, and increasing Pharmacist involvement in multidisciplinary teams, particularly across all areas of care can enhance patient safety, medication adherence, and overall healthcare outcome

Our study revealed variability in integration into patient care teams with a very low proportion of hospital pharmacists involved in all areas of care and a higher proportion in most areas of care. This is consistent with the findings from similar studies by Kayley et al in 2016, Barre *et.al* in 2021, and Law *et.al* in 2019 which showed variability in pharmacists' involvement across areas of care.

The overall limited involvement of Pharmacists in multidisciplinary teams may impact negatively on the quality of patient care leading to suboptimal treatment outcomes even if the best medicines are made available.

Pharmacists are key educators for patients and patient education is critical in ensuring medication safety and promoting adherence.

The finding of this study on Pharmacists' involvement in educating prescribers on access to and appropriate use of medicines highlights a positive aspect of

current hospital pharmacy practice in Nigeria that should be further strengthened. The finding is consistent with the Namibian hospital finding and Lyon's finding that revealed that a high percentage of hospital pharmacists are involved in educating prescribers on access to and appropriate use of medicines.

Despite the encouraging involvement of pharmacists in influencing prescribing through education of prescribers on access and appropriate use of medicines, our study revealed a training deficiency with more than a quarter of the Hospital Pharmacists respondents not trained to participate in collaborative prescribing. This is suggestive of the need for training that will equip the pharmacists with the competencies required for collaboration to optimize medication therapy and lacking this training could hinder effective teamwork and patient care outcomes. This collaboration is currently limited as seen from the study result.

The training deficiency observed in this study is consistent with the findings of Barre's Namibian Hospitals study in 2021

Theme 3: preparation and delivery

The fact that a large proportion of hospital pharmacists are responsible for ensuring the proper dispensing of medicines as revealed by this study underscores pharmacists' critical role in medication distribution. This highlights

a strong alignment with the Basel statement's emphasis on the pharmacist's role in ensuring safe and accurate dispensing practices. However, it also suggests that resources and support systems should be robust enough to handle this responsibility effectively, ensuring patient safety and medication accuracy.

The preparation of Hazardous Medicines is a significant area of specialized practice hence not many pharmacists manage the preparation of hazardous medicines, including cytotoxic drugs. This finding is consistent with that of Lyons *et.al* 2016, Law *et.al* 2019, and Barre *et.al* 2021. This responsibility aligns with the Basel statement's focus on handling and preparing medications safely, particularly those that pose risks to healthcare workers and patients. The implication here is the need for stringent protocols, training, and safety measures to protect both pharmacy staff and patients from potential harm associated with handling hazardous substances.

A sizeable number of pharmacists employ systems for tracing medicines dispensed by the pharmacy which is crucial for ensuring medication safety and accountability. Traceability systems are essential in tracking medications throughout their journey from the pharmacy to the patient, which is vital for detecting and preventing medication errors, identifying recalls, and ensuring regulatory compliance. This finding suggests a good starting point, but it also

highlights the need for more widespread implementation of robust traceability systems across hospital pharmacies to enhance patient safety and meet international standards. The traceability findings are an improvement on the average from the Six Sub Sahara African countries study by Law *et.al.* 2019.

Theme 4: Administration

Basel statements underscore the critical role of hospital pharmacists in ensuring safe and effective medication administration. It guides practices related to patient safety, documentation, communication, training, and quality improvement within hospital pharmacy settings, ultimately aiming to enhance patient outcomes and healthcare quality.

The fact that more than half of the pharmacists label patient medicines with at least two identifiers and a very high number ensured documentation of allergies, contraindications, and adverse drug reactions before administration indicates a positive trend towards enhancing patient safety. Proper labeling and documentation are critical in preventing medication errors and ensuring that patients receive appropriate treatments. Overall, the findings on administration are consistent with findings from similar studies by Lyons *et.al* 2016, Law *et.al* 2019 and Andrea *et.al* 2021.

The study findings suggest that a significant portion of pharmacists are involved in educating other healthcare providers on medicine use, ensuring that healthcare professionals are trained on the hazards associated with medicines. This highlights the role of pharmacists not only in direct patient care but also in educating and supporting other healthcare professionals, which is crucial for improving overall medication safety and efficacy. While the reported percentages show positive practices in many areas, they also highlight areas where improvement is needed. For instance, if only half of pharmacist respondents are labeling medicines with at least two identifiers, there is room to enhance this practice to further reduce the risk of medication errors. Similarly, ensuring that all healthcare providers are adequately trained on medication hazards is essential for comprehensive patient care.

Theme 5: Monitoring of Medicines Use

The varying percentages of pharmacists who monitor patients daily based on selection criteria or only when changes are made to medications highlight different approaches to medication monitoring. A similar medication monitoring pattern was observed in the findings of similar studies by Barre *et.al* 2021, Law *et.al* 2019 and Lyons *et.al* 2016

The finding that only a few pharmacists monitor when changes are made to medications suggests a more reactive approach to monitoring. Hospital pharmacy practice should emphasize proactive monitoring strategies that encompass regular, systematic checks of medication use for all patients, rather than relying solely on reactive responses to changes. This proactive approach helps prevent adverse events and improves overall medication management.

Consistent and systematic monitoring of all patients daily is crucial for identifying issues early, such as adverse drug reactions and medication errors. Increasing the percentage of pharmacists who monitor daily and implementing standardized monitoring criteria can enhance patient safety by detecting and addressing medication-related issues promptly.

The high percentages of pharmacists reporting defective medicines, adverse drug reactions, and medication errors indicate a strong culture of reporting within hospital pharmacy practice. This is beneficial as it promotes transparency, allows for root-cause analysis of errors, and enables continuous quality improvement. It is important to further encourage reporting and establish robust feedback loops to ensure that reported issues are effectively addressed and learnings are shared across the organization.

The findings underscore the need for ongoing education and training of pharmacists and other healthcare providers on effective medication monitoring practices. This includes training on the importance of daily monitoring, criteria for selecting patients for monitoring, and recognizing and reporting medication-related issues. Continuous professional development in these areas can standardize practices and improve the consistency of medication monitoring across healthcare settings. Hospital pharmacy practice should use these findings to review and update policies and protocols related to medication monitoring. This may involve establishing clear guidelines on when and how to monitor patients, incorporating best practices from the Basel statements, and ensuring compliance with regulatory requirements. Standardizing monitoring practices can mitigate risks associated with medication use and enhance patient care outcomes.

The implications of the findings on monitoring of medicine use highlight opportunities for improving medication monitoring practices within hospital pharmacy settings. By promoting proactive monitoring, enhancing reporting mechanisms, supporting continuous education, and updating policies, hospital pharmacies can strengthen medication safety efforts and ultimately improve patient outcomes.

Theme 6: Human Resources, Training and Development

Our study revealed a limited adoption of utilizing human resource information systems indicating a gap in leveraging technology for workforce management. With this finding, there is an opportunity for enhancing the use of human resource information systems to improve workforce planning, training, and better resource management. With only 32% adoption of human resource information systems, the majority of Pharmacists may not be benefits and functionalities of human resource information system

Conclusion

The Basel Statement is a basic standard of hospital practice that, when applied, contributes to the enhancement of both patient safety and favorable outcomes, in as much as there are areas where the practice can be scored above average, most especially in monitoring medicine use, medication labeling, packaging, procurement of quality assured medicines and degree of responsibilities to the basic overarching statement. A poor or below-average score on influence on prescribing and administration, human resource, training and development was noted. Pharmacy practice has evolved into direct patient care involving multidisciplinary teamwork where pharmacists are expected to be experts in

medication use; the study shows that Pharmacists are lacking in contributing immensely to this aspect of practice. There is, therefore, the need for Pharmacists to up their game in meeting the requirements of the Basel statement standard of training to be and maintain relevance in the healthcare team and ultimately enhance patient treatment outcomes.

Recommendation

It is therefore recommended that every hospital should adopt the FIP Basel statement as a standard for planning, training, and appraising their practice and processes.

There is a need to establish clear practice guidelines on best practices from the Basel statements and ensure compliance.

Periodic Quality Improvement of practice and process should be anchored on this statement

There is a need for continuous training and capacity building of the Pharmacists with exchange programs with identified institutions that are rated high in

standard to enable practical learning of possible ways of measuring up to the required practice standard. This exchange programme can be made possible by FIP.

Limitation of study

The study recorded low respondent rates, and as such, the findings may not reflect the true Nigeria picture.

The study was unable to discuss all the sixty-five overarching 2014 revised Basel statements but the ones of important interest to the researchers were highlighted for discussion

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