

ORIGINAL ARTICLE

Exploring Perceptions of Hand Hygiene Compliance Among Neonatal and Pediatric Care Unit Nurses in Nigeria: A Qualitative Study

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ABSTRACT

Introduction: Hospital-acquired infections are considerably known to raise mortality and morbidity rates, lengthen hospital stays and increase medical expenses. Yet, there is little knowledge about nurses' perspectives on hand hygiene compliance in the low-and middle-income countries. This study aimed to explore neonatal and pediatric care unit nurses' perceptions regarding compliance with hand hygiene in a Nigerian Federal Tertiary Teaching Hospital.

Methods: A qualitative study using an ethnographic approach was utilized in this study. In-depth, semi-structured interviews and shadowing were conducted among neonatal and pediatric nurses at a federal tertiary teaching hospital in the southeastern region of Nigeria between November 2021 and March 2022. Purposive sampling was performed until data saturation was achieved. Data were compiled, thematically coded, and analyzed. **Results:** Twenty-two nurses participated in this study. Most were female (91%), and the mean age was 44.9 years. Four themes emerged: leadership, administrative accountability, prompt, and hand hygiene monitoring. **Conclusion:** Observed hand hygiene compliance among nurses is poor, highlighting the need for further efforts to improve hand hygiene practices. Leadership, administrative accountability, prompt reminder and hand hygiene monitoring were strategies for enhancing nurses' compliance with hand hygiene. All these were thought to be the driving force in adopting hand hygiene guidelines and preventing hospital-acquired infections.

Keywords: Hand hygiene; Cross infections; Compliance; Neonatal nurses; Pediatric nurses

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INTRODUCTION

Handwashing procedures were first implemented in healthcare settings in the early 19th century. However, the practice with a combination of other hand hygiene (HH) measures has led to a reduction in nosocomial or hospital-acquired infections (HAI) (1). HH has been recommended in all healthcare delivery systems as the simplest and most affordable method for preventing and controlling HAI among hospitalized patients (2). HAI impact on quality care and treatment has become a significant global safety issue for patients, healthcare workers, and nurses (3).

Given the child's vulnerability, particularly in neonatal and pediatric units, HAI Prevention is challenging. Disease severity and poor nutritional status are intrinsic risk factors for HAI in hospitalized children.

In contrast, extrinsic risk factors include exposure to multi-resistant bacteria in healthcare through clinical contact with invasive devices such as central line catheters (4). Hence, it is important to highlight the important strategy to minimize HAI through a robust HH practice.

Studies have shown a need for improvement and updated feedback on infection control programmes and surveillance procedures (4,5). The primary preventative approach to control HAI is HH. However, compliance with HH is still low in various settings highlighting the necessity to make greater efforts to improve compliance with HH practises (6,7,8). Poorly implemented protocol-driven HH applications were the cause of the low HH compliance (7).

In addition to the universal difficulties in implementing effective HH measures, such as hospital overcrowding and poorly available alcohol-based hand rubs, hospitals in low- and middle-income countries face various obstacles. A larger burden of hospital infections is a recognized key risk factor

in low- and middle-income countries' healthcare centres. Exposure to healthcare-related infection rates is at least twice higher than in high-income countries (9). Following the literature review, we determined a dearth of qualitative studies on Nigeria's neonatal and pediatric nurses' HH compliance. Thus, this study aimed to explore various qualitative aspects of HH from Nigeria's neonatal and pediatric nurses' perspectives.

MATERIALS AND METHODS

Study Design

An ethnographic approach was utilized in this present study to explore HH practice among neonatal and pediatric nurses. Although there are various qualitative methodologies, one that enables the researcher to benefit from relative immersion and produce a thick description is ethnography. For example, in-depth analysis of HH practice and infection prevention control guidelines within the context of neonatal and pediatric care units in hospitals. Hence, this gives the ethnographic approach its greatest strength (10). Since nursing practices, including HH, occur within the natural clinical setting where the nurses and patients interact, these interactions might be shaped by nurses' prior experiences and some elements from the organization. Understanding the complexity of human behaviour and interaction and the richness of its data is the main emphasis of qualitative research to analyze, describe, and explain occurrences and make sense of a complicated reality (10).

Study Setting and Sampling

We conducted this study in a selected tertiary teaching hospital in the southeastern region of Nigeria. The hospital provides regional neonatal and pediatric care, with a capacity of 720 beds and employs over 4000 healthcare staff. Selected participants were neonatal and pediatric nurses recruited through purposeful sampling to identify the similarities or relationships within the population rather than generalization (11).

The inclusion criteria were (i) nurses based in neonatal and pediatric units (Pediatric Medical and Surgical Units, Children Outpatient Unit, Children Emergency Unit and Neonatal and Intensive Care Unit) and (ii) nurses who have had six months and above years of clinical experience. These selected nurses were considered competent in direct patient care. Exclusion criteria were nurses on maternity or study leave.

The sampling procedure was carried out until the data became saturated. In qualitative research, the appropriateness of the data, which is more about the data's capacity to offer a rich and complex account of the phenomenon under study, determines the sample size. Data saturation's impact on the sample size determination in qualitative research is considered (12).

Data Collection

Data were collected between November 2021 and March 2022. The first author personally approached participants after consultation with the nursing ward managers. Two qualitative research techniques were applied iteratively in this investigation which combined the collection and analysis. The methods were in-depth individual interviews and shadowing nurses.

In-depth Individual Interview

A semi-structured interview question was used based on the World Health Organization (WHO) guideline. All interviews were conducted in English, the official language for health professionals in Nigeria. Hence, language was not considered a barrier to the interviewed participants. We utilized the Theory of Planned Behavior model (13,14), which postulated that attitudes are jointly determined on the behavioural intention. A positive or negative judgement of behaviour is referred to as attitude (e.g., hand hygiene is good). Subjective norms are when someone feels pressured to act in a certain way by others (e.g., a significant other wants me to perform hand hygiene). The notion of how easy or difficult it is to carry a behaviour of interest is referred to as perceived behavioural controls (e.g., it would be easy to perform hand hygiene).

The conceptualization of the interview guide and the interpretation of the data was guided by the theory, which included opinions on HH compliance, clinical experiences with HH compliance, and difficulties with HH compliance in clinical settings. The researchers (two nursing lecturers and one pediatrician) reviewed and double-checked the initial draft of the interview guide using inductive analysis. The aim was to ensure the interviews reflected the clinical context of nurses' HH compliance and to guarantee that the interview guide was clear and useful in recovering vital information. The interview guide was pretested by conducting pilot interviews with six nurses not included in this study.

After participants completed passing over a shift, the in-depth interview was performed face-to-face and individually. The method allowed participants to discuss their opinions and experiences with HH during data collection. Additionally, ample time was given for each participant to narrate their own stories, done with their consent and audio recorded. All interviews were done in an allocated room with a quiet and private atmosphere. The interview lasted approximately 30 to 60 minutes, held by the first author using predefined interview guidelines. Before the interview started, the participants' demographic data were obtained, and open-ended questions were asked, including "How do you perform hand hygiene?". As the conversation proceeded, more specific questions about HH compliance were asked. For example:

“Can you tell me how you evaluate hand hygiene compliance?” The interviews were transcribed verbatim and anonymized.

Transferability was achieved with probing where necessary during the interview to ensure that responses were clear and allowed them to describe their HH compliance in detail completely. In a qualitative study, it is the researcher’s responsibility to provide thorough descriptions and ensure that the research method is traceable, logical, and recorded by using a well-established audit trail of all the processes, including assuring the reliability of the results (15,16,17). When the researcher was certain that data saturation had been reached, data gathering ended (15,16). Saturation was reached after the 17th interview. The recognized patterns of similarity among the participants were seen, and we decided to extend five further interviews to confirm the data saturation (n=22). A total of twenty-two interviews were conducted for the study.

Shadowing Nurses

Shadowing nurses were involved in the participant observations without actively engaging them. Participant observations produced a more in-depth understanding of nurses’ HH compliance practice. This approach helps the researchers understand the phenomenon of interest (15,16). During the observation, notes were documented and worked into detailed reports to cover organizational factors such as ward policies (15,16). Participants’ narration through verbatim quotes was carefully checked to establish confirmability (15,16,17). Triangulating the several data sources to assure consistency of findings and data saturation on a specific issue was reached, furthering the assurance of rigour.

Data Analysis

Iterative data collection and inductive thematic analysis were performed (15,16). The first author coded the theoretical notions regarding HH compliance and the data (i.e., observation reports and in-depth interviews). The research team then discussed the codes until an agreement was reached. Next, thematic coding was performed based on observation (actions and interactions). After the data analysis, codes were organized and reorganized until the researchers had a coherent view. Qualitative coding allows a researcher to reflect and simplify the data to the criteria needed (15,16). The coding process stopped once all the data and information were covered. These coded data were collated and organized into preliminary themes. Then, all themes were reviewed, revised, and defined to answer the research questions (15,16). The review process involved checking all the data to prevent misinterpreting the findings (15,16). The finalization of all coded data and themes was performed critically by the research team members. The aim is to enhance the trustworthiness of the findings (15,16)

and credibility (17) and aid in confirming the reliability and transferability of the study (15). A discussion was done to avoid potential bias and provide insight into data analysis using a reflexive approach.

Ethical Approval

The Chair of the Research Ethics Committee, Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State, Nigeria (AE-FUTHA/REC/VOL 3/2020/044) and the Human Research Ethics Committee, Universiti Sains Malaysia (USM/JEPeM/20070359) approved this study.

RESULTS

Twenty-two nurses from neonatal and pediatric care units participated in this study. Most were female (91%), age range between 29 to 59 years and the mean age was 44.9 years. Fourteen participants (64%) held bachelor’s degrees in nursing sciences. Six (27%) had an ordinary nursing diploma, whereas two (9%) held a master’s degree. Of these, three (14%) in the Pediatric Medical Department, seven (31%) in the Pediatric Surgical Department, four (18%) in the Neonatal Intensive Care Unit (NICU), five (23%) in the Children’s Outpatient Unit and three (14%) in the Children Emergency. Most participants (55%) had at least 15 years of clinical work experience. Three (14%) were nursing officers (NO), and seven (32%) were chief nursing officers (CNO). Senior Nursing Officers (SNO), Assistant Chief Nursing Officers (ACNO), and Principal Nursing Officers (PNO) made up the remaining four (18%) (Table I).

Four themes that emerged from the qualitative analysis were: 1) Leadership, 2) Administrative accountability, 3) Prompt, and 4) Hand hygiene monitoring. Table II presents the identified emergent themes and subthemes from this study.

Theme 1: Leadership

Most participants narrated leadership matters in all healthcare settings and impacted total patient care. Leadership qualities and commitment played vital roles in influencing the work culture of their hospitals and communicating with front-line health professionals. For example, in driving a change, especially when championing HH compliance. Exceptional nurse leaders helped to inspire and motivate their existing nursing team members and support them as they pursued their in-service training and careers paths, as expressed by two participants:

“Some of them (the leaders) are not motivating, and some are very motivating... and I motivate myself (to comply)”. (SN8)

“You know some leaders have lazier fair attitude is in them whether they supply or they did not supply they don’t care but if they stand in the middle to speak for their nurses.” (SN3)

Table 1 : Demographic characteristics of nurses (n=22)

Name*	Age	Gender	Nursing Educational Qualification	Years of Experience	Area of Workplace	Nursing Designation
WM1	59	Male	BNS	30	Children Outpatient	ACNO
WM2	50	Female	BNS	25	Children Outpatient	CNO
WM3	58	Female	OND	29	Pediatric Surgical	CNO
WM4	49	Female	OND	22	Pediatric Medical	ACNO
WM5	50	Female	BNS	29	Neonatal Intensive Care Unit	CNO
SN 1	42	Female	BNS	14	Children Emergency	PCO
SN2	46	Female	BNS	20	Children Outpatient	CNO
SN3	36	Female	BNS	5	Pediatric Surgical	NO
SN4	34	Female	BNS	7	Pediatric Surgical	SNO
SN5	29	Female	OND	14	Pediatric Surgical	SNO
SN6	47	Female	BNS	20	Pediatric Medical	CNO
SN7	42	Female	Master	8	Neonatal Intensive Care Unit	SNO
SN8	44	Female	BNS	13	Children Emergency	SNO
SN9	35	Female	BNS	1	Children Outpatient	NO
SN10	46	Female	BNS	19	Pediatric Surgical	CNO
SN11	48	Female	BNS	21	Neonatal Intensive Care Unit	CNO
SN12	45	Female	BNS	16	Children Emergency	PNO
SN13	50	Female	OND	20	Children Outpatient	ACNO
SN14	43	Female	OND	10	Pediatric Surgical	NO
SN15	48	Female	OND	20	Neonatal Intensive Care Unit	PNO
SN16	42	Female	BNS	14	Pediatric Medical	ACNO
SN17	45	Male	Master	10	Pediatric Surgical	PNO

*All the names are pseudonyms.

Nursing Educational Qualification: BNS (Bachelor of Nursing Science), OND (Ordinary Nursing Diploma), Master (Master in Nursing).

Nursing Designation: ACNO (Assistant Chief Nursing Officer), CNO (Chief Nursing Officer), PCO (Principal Chief Officer), NO (Nursing Officer), SNO (Senior Nursing Officer), PNO (Principal Nursing Officer)

Theme 2: Administrative accountability

Participants believe strong nursing leadership can influence practice and patient care throughout an organization. Capable nurse leaders can prevent systemic care failures, for example, by establishing a culture of accountability to address problems as they happen. Nurses believed the ward managers had no power to contribute at the board meeting regarding problems with HH supplies. They opined that hospital politics was an issue since the hospital has appointed similar

ward managers to manage ward supplies. Pinpointing excuses might show unfathomable managerial loopholes and weaknesses. The following quote represents two participants' views:

"There was a time that every sink outside spoilt ...two of them spoilt are the same time, it stays....over two months for them to repair it, ... a challenge, especially during COVID-19 pandemic... so they keep on writing management to repair it." (SN13)

Table II : Synthesized themes and subthemes of nurses' hand hygiene compliance

Themes	Subthemes
Leadership	<ul style="list-style-type: none"> ▪ Hand hygiene program and training ▪ Communication ▪ Quality and commitment ▪ Hand hygiene champions
Administrative accountability	<ul style="list-style-type: none"> ▪ Managerial support ▪ Hand hygiene facilities and maintenance ▪ Autonomy ▪ Resources
Prompt	<ul style="list-style-type: none"> ▪ Teamwork ▪ Cues ▪ Consequences ▪ Images
Hand hygiene monitoring	<ul style="list-style-type: none"> ▪ Auditing and feedback ▪ Reward

"Sometimes, because they are being appointed ... so they will try to be shy ...and will not feel that they are attacking them, even meas we are talking because you won't like them to say you are the one pinpointing at their loopholes." (SN12)

Theme 3: Prompt

One common contributor, as cited by participants, was the nature of poor HH compliance. Participants cited that colleagues who failed to comply were immediately reported to the supervisor after being corrected. The result also showed positive working relationships and communication among the team members. From the nurses' point of view, several things reminded them to perform HH. These things made them develop their self-consciousness about HH practice, as expressed by two participants that their colleagues failed to comply with HH:

"I will call the person (colleagues) to order; if the person does not change, I will report to the immediate supervisor or the unit head". (SN 6)

"Will tell the person if the equipment (HH resources) is there, but if there is not, there is no need to tell the person because if there is no water and hand sanitizer, you cannot be telling the person to do it (perform HH) since it is not there." (SN12)

Theme 4: Hand hygiene monitoring

The primary preventative approach for HAIs is hand hygiene (HH) practice among nurses. Infection prevention and control aim is to prevent patients and healthcare professionals from being harmed by avoidable infections. Observation reveals that

compliance with HH is still poor in various clinical settings. Most participants agreed that HH monitoring needs frequent, actionable auditing and feedback. The hospital management, according to the participants, would benefit from full participation in the analysis of the factors which had caused low HH compliance and from the long-term solutions to the issues identified, as narrated in the following participant's comments:

"When I started, I told you that we don't have any monitoring team, that they are supposed to provide a monitoring team that will monitor this hand hygiene to know whether it is being complied with...she came and asked us, how do you handle this ... I answered all the questions... and she said, okay". (WM5).

DISCUSSION

The present qualitative study explored nurses' perceptions regarding compliance with HH in a Nigerian Federal Tertiary Teaching Hospital. We found that HH compliance was poor. Four themes have emerged: leadership, administrative accountability, prompt and HH monitoring.

In the present study, leadership involvement was reported by the nurses, where the head of a unit strived to ensure provision for HH resources was available. However, there is sometimes little leadership effort or no control over HH resources. Nurses tended to be non-compliant with the HH procedures and resorted to self-protection, using minimal resources and short cut whilst performing HH, particularly after patient care. There is a need to lead the way regarding quality, commitment, training, education, and

communication improvement in championing HH compliance tailored to local needs. An effective strategy includes engaging the front-line healthcare professionals (18) and fostering collective mindfulness across all organizational levels on the best practices model (19). Leadership is an organizational factor that could influence other factors through training, leading by example, motivating, being a role model to subordinates, and thorough commitment towards the organization's goals (20). Similar to previous studies (21), leadership was cited as a driving force for HH practice. This finding is consistent with where physician leadership could influence followers' exemplifying HH practice, which could significantly be influenced by the HH habit by the leader (22) and positively affect HH compliance (23). Leadership can be described as a key component of a leader's ability to exercise autonomy and maintain respect within an organization's climate. The capacity to persuade is a crucial asset for a leader.

Administrative accountability for HH has successfully improved HH rates (24). Patient safety may be hampered if there is no administrative support. A lack of managerial and resource support for HH compliance has been noticed in a previous study (25). Our study is in line with a previous study which found administrative accountability support the organization's value of HH. A gross lack of managerial commitment and organizational priority on HH was noted in Nigeria, where the HH facilities were damaged and non-functional, and the HH resources were inadequately maintained (26). Lack of priority to healthcare funding, lack of functional infrastructure and a bad maintenance attitude were some of the problems commented on in the current study (26, 27). The plausible explanation could be inadequate funding for low-income countries such as Nigeria. Most lower-middle-income countries face a daunting issue in ensuring appropriate HH practice and confronting the risk of HAIs. Given HH resources availability and lack of administrative accountability could be seen in our setting, it is not surprising that poor compliance was observed in the present study.

The prompt has been acknowledged to promote overall compliance with HH. For example, an intervention study conducted among healthcare workers in Nigeria revealed that the prompt reminder provides constant awareness of HH practice in hospital settings and effectively promotes HH practice (28). Considering the greater HH compliance, this may help to explain how prompt can encourage beneficial behaviour change.

HH is a crucial and worldwide infection prevention strategy in all healthcare settings. The nurse acknowledged that HH monitoring serves in

compliance and required frequent checks with feedback to enhance HH performance. Various methods can be employed for HH monitoring. Conducting a direct observation of healthcare professional HH practices is said to be the gold standard (29). However, this approach captures a small fraction of total HH events and poses other constraints as exposed to the Hawthorne Effect or observer bias. Comprehensive data can be provided when this method is supplemented with other monitoring technologies much more than a human observer action. However, this may be impossible in Nigeria, where funding is constrained. Direct observation of HH practice has been recommended as the technique is a simple and inexpensive monitoring method (29).

We sought to comprehend and explore neonatal and pediatric nurses' experiences with HH compliance. In general, the present ethnography study has revealed these nurses' perceptions and experience. However, the study participants were recruited from a single hospital or healthcare system culture, which might have posed a limitation in this study. It is recommended similar studies could be done on the nurses coming from other low- and middle-income states in Nigeria. The data were solely based on interviews, which sometimes offered uncomplimentary information and experiences provided by participants. Our study had inherent limitations and was exposed to observation (Hawthorne effect) and other types of observer bias. To reduce this, we recommend observations should be done in all shifts and every day of the week during the data collection and study period. Data saturation was achieved after obtaining all participants' opinions to enhance the study's reliability and understanding.

CONCLUSION

In this study, observed compliance with HH among nurses is poor, highlighting the need for further efforts to improve HH practices. Leadership, administrative accountability, and prompt reminder, including monitoring strategies, would improve neonatal and pediatric nurses' HH compliance. These determinants may be a driving force in adopting HH guidelines, thus preventing HAI.

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