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[Research Article]

Assessment of Factors Influencing Surgical Hand Scrubbing Practices Among Surgical Team Members at State Specialist Hospital, Maiduguri, Nigeria

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Abstract:

This study examines the knowledge, attitude, and practice of surgical hand scrubbing among surgical team members at the State Specialist Hospital, Maiduguri, Nigeria. The primary objective was to assess the level of knowledge, attitude, practice, and factors influencing surgical hand scrubbing practices. A descriptive, non-experimental research design was employed, utilizing a self-constructed questionnaire administered to 89 respondents through a face-to-face approach. Data analysis was conducted using IBM SPSS version 23, with results presented in tables and figures. The findings indicate that knowledge of surgical hand scrubbing among the respondents was high (81%), and their attitude and practice were generally positive. However, factors such as overcrowded work environments, insufficient healthcare workers, heavy workload, and a lack of commitment by health facilities towards infection control programs were identified as significant barriers to compliance. Statistical analyses revealed a significant relationship between knowledge and practice, years of service and attitude, as well as education level and practice of surgical hand scrubbing. Based on these findings, it is recommended that government agencies, non-governmental organizations, and hospital management provide greater support for operating theaters through workshops, training, and the provision of essential equipment to enhance adherence to surgical hand scrubbing practices among surgical team members.

Keywords: Surgical hand scrubbing, Surgical Team, knowledge, attitude, practice, infection control.

Introduction:

Surgical site infections (SSIs) continue to be a major global health issue, leading to increased patient morbidity, extended hospital stays, and elevated healthcare expenditures (Pluck, 2017). In spite of advancements in surgical technology, SSIs still present challenges, especially in low-resource environments. The World Health Organization (WHO, 2016) reports that SSIs occur in roughly 1-3% of all surgical procedures globally, with infection rates soaring to as much as 20% in healthcare settings within Africa, including Nigeria. These

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infections rank among the most prevalent hospital-acquired infections, representing 38% of all nosocomial infections in surgical patients (Spagnolo, Ottria, Amicizia, Perdelli & Cristina, 2013). A crucial preventive strategy against surgical site infections (SSIs) is effective surgical hand scrubbing, which aims to eradicate transient microorganisms and lessen the resident microbial load prior to surgical procedures (Gama & Oliveira, 2016). Efficient hand antisepsis, together with the use of sterile surgical gloves, is a key tactic in reducing contamination of surgical wounds and preventing infections (Gebremariam & Declaro, 2014). Nevertheless, the adherence to proper surgical hand scrubbing techniques is often inconsistent due to various factors, such as lack of awareness, insufficient training, and limited resources (Kolade, Abubakar, Adejumoke, Funmilayo & Tijani, 2017). At the State Specialist Hospital in Maiduguri, adhering to surgical hand scrubbing practices is crucial for maintaining infection control measures. However, several obstacles, including overcrowded operating rooms, a heavy workload, a lack of healthcare personnel, and insufficient commitment from hospital management concerning infection prevention initiatives, have been recognized as factors hindering compliance (Yakob, Lamaro & Henok, 2015). Moreover, research indicates a notable correlation between the education level of healthcare workers, their years of experience, and their adherence to appropriate surgical hand scrubbing procedures (Nair, Hanumantappa, Hiremath, Siraj & Raghunath, 2014).Given the impact of SSIs and the critical role of hand hygiene, this study seeks to assess the factors influencing surgical hand scrubbing practices among surgical team members at the State Specialist Hospital, Maiduguri. By evaluating their knowledge, attitude, and practice, as well as the barriers to compliance, this research aims to provide evidence-based recommendations to improve infection control measures and enhance patient safety in the surgical environment.

Concept of Surgical Hand Scrubbing:

Surgical hand scrubbing is an essential infection control practice designed to lower the microbial presence on the hands of surgical personnel prior to invasive procedures. This process entails cleaning the hands and forearms with an antimicrobial solution to eradicate transient microorganisms and decrease resident flora, thus reducing the likelihood of surgical site infections (SSIs) (Gama & Oliveira, 2016). The World Health Organization (WHO, 2016) underscores that effective hand hygiene is one of the most powerful methods for preventing SSIs, which represent a considerable percentage of hospital-acquired infections globally.

Knowledge of Surgical Hand Scrubbing:

Surgical hand scrubbing knowledge among surgical team members has been evaluated in a number of studies. According to a research by Kolade et al. (2017) in Nigeria, 68.1% of surgical nurses knew a lot about SSI prevention, including how to wash their hands. Similarly, 97.8% of nursing students and 91.3% of medical students in India knew how to properly scrub their hands, according to Nair et al. (2014). These results imply that maintaining adherence to suggested practices requires a basic level of expertise. Nevertheless, gaps in adherence continue despite increased awareness because of a number of obstacles, such as lack of institutional support and time restrictions. Surgical team members' compliance with surgical hand cleaning procedures is greatly influenced by their attitude. 70.5% of nurses in Iran who participated in a study by Sharif et al. (2016) expressed a favorable opinion of hand hygiene and emphasized its significance in infection control. In a similar vein, Kolade et al. (2017) discovered that 97.9% of Nigerian surgical nurses thought that hand hygiene was essential to avoiding SSIs. But according to Nair et al. (2014), 65% of medical students expressed a negative attitude toward hand cleanliness, showing that compliance is not always a direct result of knowledge alone. Improving compliance requires promoting a positive outlook through frequent instruction and reaffirmation of infection control protocols.

Practice of Surgical Hand Scrubbing:

Research has indicated that although attitudes and understanding of hand cleaning may be favorable, actual practice frequently falls short of suggested levels. According to Kolade et al. (2017), 71.4% of surgical nurses in Nigeria followed recommended hand hygiene protocols, however Swenne & Alexandren (2012) discovered

that surgical team members' compliance varied in Sweden. Additionally, Yakob, Lamaro, and Henok (2015) pointed out that in Ethiopia, issues like insufficient monitoring and restricted access to hand hygiene facilities led to low adherence among healthcare professionals.

Factors Influencing Surgical Hand Scrubbing Practices:

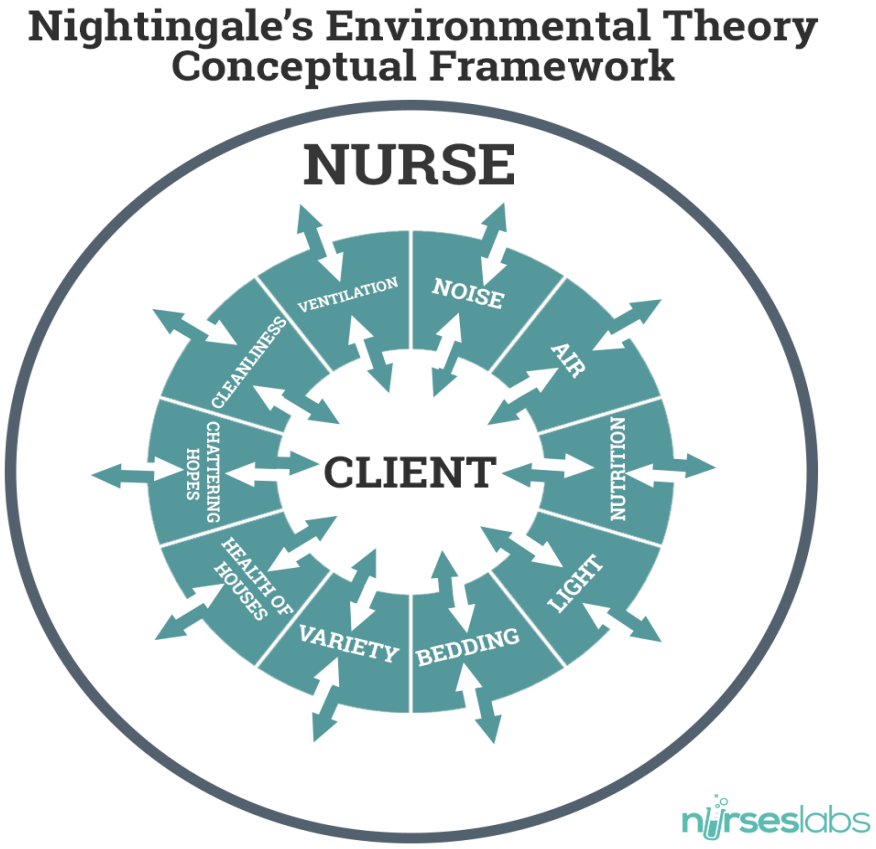
Surgical team members' compliance with hand cleaning procedures is influenced by a number of factors. These elements fall into three categories: environmental, institutional, and individual barriers.

I. Conditions at Work: High patient loads and congested operating rooms have been found to be significant barriers to appropriate hand hygiene compliance (Yakob et al., 2015). Surgical team members may put efficiency ahead of following hand hygiene guidelines in hectic hospital environments.
II. Resource Availability: Compliance can be severely hampered by the absence of basic hand hygiene supplies such sterile gloves, flowing water, and antiseptic treatments (Nair et al., 2014). Adherence rates have been observed to be greater in hospitals with well-equipped operating rooms than in those with subpar equipment.
III. Teaching and Awareness: Promoting adherence to hand hygiene requires ongoing teaching and training. According to studies, surgical team members are more likely to follow correct procedures if they receive formal training in hand scrubbing (Kolade et al., 2017).
IV. Institutional Support and Policy Enforcement: Ensuring adherence to infection control strategies depends on healthcare institutions' dedication to them. Higher compliance rates are typically found in hospitals with stringent hand hygiene regulations and frequent monitoring (Gebremariam & Declaro, 2014).
V. Years of Experience and Education Level: Studies have indicated a strong correlation between years of service, education level, and compliance with hand cleaning guidelines (Nair et al., 2014). Because they are more accustomed to infection control procedures, healthcare professionals with greater experience tend to be more compliant.

Theoretical Framework:

The Health Belief Model (HBM) and Florence Nightingale's Environmental Theory serve as the foundation for this investigation.

I. Environmental Theory: In order to prevent illnesses, Nightingale highlighted the importance of a hygienic and clean atmosphere. This notion is supported by the fact that good hand hygiene directly helps to keep a surgical environment sterile (Wayne, 2014).
II. The HBM, or Health Belief Model: According to this concept, people's perceptions of disease severity, vulnerability, the advantages of preventive actions, and perceived barriers all have an impact on their health-related behavior. Surgical team members are more likely to follow best practices when it comes to surgical hand scrubbing if they are aware of the dangers of surgical site infections and the advantage of good hand cleanliness (Croyle, 2005).



Major Concepts:

Nursing: "The role of nursing is to best position the patient for nature to work on him" (Nightingale, 1859/1992). "The proper use of fresh air, light, warmth, cleanliness, quiet, and the proper selection and administration of diet – all at the least expense of vital power to the patient" is what Nightingale called nursing. In her comment that "the art of nursing, as now practiced, seems to be expressly constituted to unmake what God had made disease to be, viz., a reparative process," she mirrored the nursing profession.

Methods:

Research Design:

In order to evaluate the factors influencing surgical hand scrubbing procedures among surgical team members at the State Specialist Hospital, Maiduguri, this study used a cross-sectional non-experimental descriptive survey. Because it effectively captures respondents' opinions and experiences about their knowledge, attitude, and practice of surgical hand scrubbing at a specific moment in time, this design was chosen.

Study Setting:

The study was carried out in Borno State, Nigeria, at the State Specialist Hospital in Maiduguri. The hospital is a large medical facility located on Maiduguri Expressway's Post Office Road. It was put into service in 1983 and has multiple departments, including five operating rooms:

1. The main operating room, which has five operating rooms

2. One suite in the Labor Ward Theater

3. One suite in the ophthalmic theater

4. One suite for the Accident and Emergency Theater

5. The Kidney Theatre, which has two surgical rooms

The study's focus was the hospital's main operating room, which is situated on the east end and is where most surgeries are performed.

Target Population:

The target population comprised surgical team members working in the main operating theater of the hospital. The population included:

- Surgeons (30)
- Perioperative Nurses (40)
- Anesthetists (20)
- Total: 90 surgical team members

Sample and Sampling Technique:

All members of the surgical team who were in the operating room when the data was being collected were included in the study since a census sampling technique was employed. This method improves the accuracy of results and guarantees thorough coverage of the target population.

Instrument for Data Collection:

Data was collected using a self-developed questionnaire, which consisted of five sections:

- Section A: Demographic variables of the respondents
- Section B: Knowledge of surgical hand scrubbing
- Section C: Attitude towards surgical hand scrubbing
- Section D: Practice of surgical hand scrubbing
- Section E: Factors affecting the practice of surgical hand scrubbing

A Likert scale was used to assess respondents' attitudes and perceptions, with response options ranging from Very Good (4) to Very Bad (1)**.**

Validity and Reliability of the Instrument:

By sending the questionnaire to the project manager for assessment of the accuracy and clarity of the content, face validity was carried out to guarantee validity. Five respondents were given the questionnaire twice over the course of a week in order to ensure reliability using the test-retest procedure. A reliability coefficient of 0.84, which indicates good consistency, was obtained by applying Pearson's correlation coefficient to the data from both rounds.

Procedure for Data Collection:

The research idea was presented to the hospital's Head of the Main Theater after receiving ethical clearance. The responders were then given the self-made questionnaires in the theater. To help with the distribution and collection of the questionnaires, a research assistant was hired. A 100% response rate was guaranteed since every respondent filled out the questionnaire in person.

Method of Data Analysis:

IBM SPSS Version 23 was used to analyze the data. Responses to the research questions and demographic data were analyzed using descriptive statistics (frequency and percentages), and the study hypotheses were tested at a 0.05 level of significance using inferential statistics (Pearson's Product Moment Correlation).

Result

This section summarizes the results of the study on the Assessment of Factors Influencing Surgical Hand Scrubbing Practices among Surgical Team Members at State Specialist Hospital, Maiduguri, Nigeria. The data is presented using tables, charts, and graphs for clarity, and the results are arranged in accordance with the research questions and hypotheses.

Table 4.1: Demographic Information of the Respondents (n =89)

Variables	Frequency	Percentage (%)
Age		
18-25 years	5	5.6
26-35 years	38	42.7
36-45 years	40	44.9
46 and above	6	6.8
Educational Qualification	**89**	**100.0**
Diploma	16	18.0
B.Sc	23	25.8
Specialty	50	56.2
Profession	**89**	**100.0**
Surgeons	39	43.8
Peri-operative Nurses	40	44.9
Anesthetists	10	11.2
Working Experience (in years)	**89**	**100.0**
0 -10	43	48.3
11-20	23	25.8
21-30	13	14.7
31-40	10	11.12
Religion	**89**	**100.0**
Islam	52	58.4

Christianity	37	41.6
Gender	**89**	**100.0**
Male	67	75.3
Female	22	24.7
Total	**89**	**100.0**

Table 4.1: The majority of respondents (44.9%) were between the ages of 36 and 45, and the majority (56.2%) had a specialist certification, according to the demographic data provided by the respondents. The majority of responders (75.3%) were male, and the profession distribution revealed that 44.9% were perioperative nurses, 43.8% were surgeons, and 11.2% were anesthetists.

Figure 4.1: Level of Knowledge of Surgical Team Members on Surgical Hand Scrubbing (n=89)

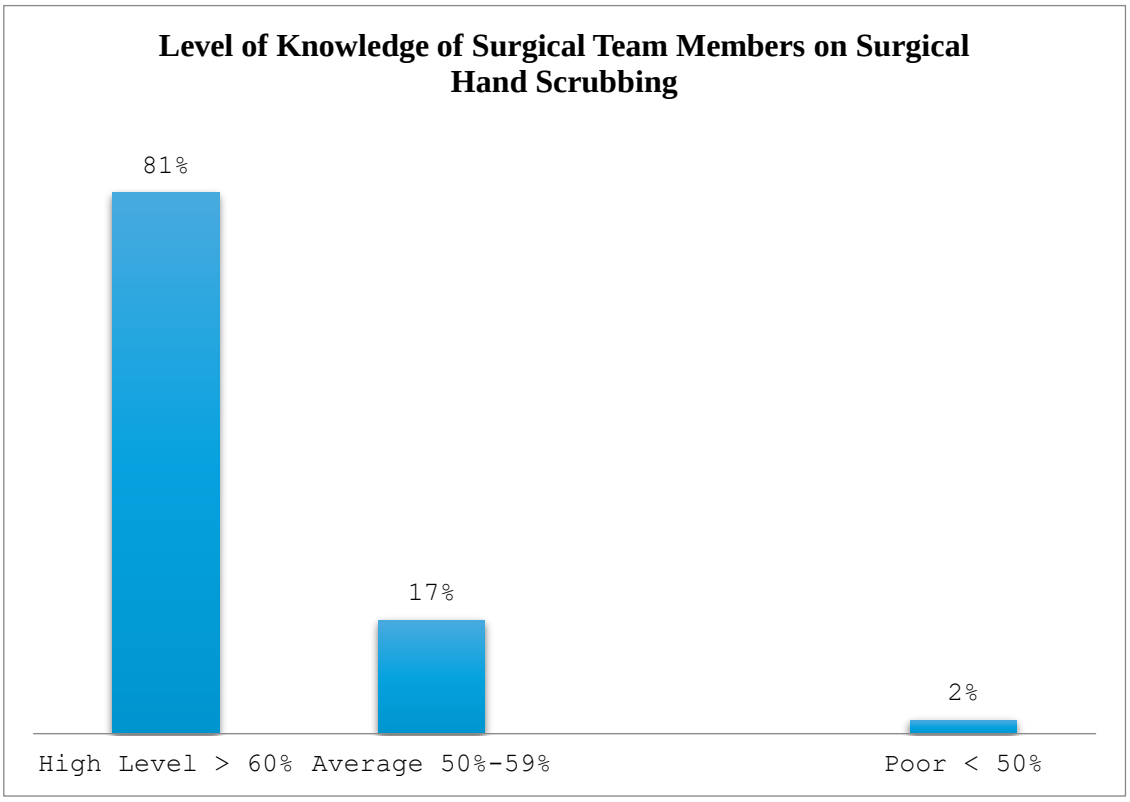


Figure 4.1 Uses the McDonald's scale to show the surgical team members' level of understanding about surgical hand scrubbing at the State Specialist Hospital in Maiduguri. According to the results, the majority of respondents (81%) reported having a high degree of knowledge, followed by average knowledge (17%), and inadequate comprehension (2%). This implies that the majority of the surgical team members are well-versed in hospital surgical hand cleansing procedures.

Table 4.2: Attitude of Surgical Team Members towards Surgical Hand Scrubbing in state specialist Hospital Maiduguri

S/N	Statement	SA	A	DA	SDA	Total
1.	Surgical hand scrubbing is very important in the theatre	36(40.9%)	44(50.0%)	7(8.0%)	1(1.1%)	89(100.0%)
2.	Surgical hand scrubbing must be practiced by everybody in the theatre.	19(21.6%)	50(56.8%)	12(13.6%)	7(8.0%)	89(100.0%)
3.	Surgical hand scrubbing is not always necessary	19(21.6%)	6(6.8%)	38(43.2%)	25(28.4%)	89(100.0%)
4.	Surgical hand scrubbing prevents surgical site infections	61(69.3%)	20(22.5%)	8(8.2%)	0(0.0%)	89(100.0%)

Source: Field Survey, 2018

Table 4.2 shows how members of the surgical team feel about cleaning their hands during surgery. The findings show that: 78.4% (21.6% strongly agreed, 56.8% agreed) agreed that surgical hand scrubbing should be practiced by all theater staff, while 21.6% disagreed. 90.9% (40.9% strongly agreed, 50% agreed) agreed that surgical hand scrubbing is important in the operating room, with only 9.1% disagreeing. 91.8% of respondents (69.3% strongly agreed, 22.5% agreed) acknowledged that surgical hand cleaning helps prevent surgical site infections, whereas 71.6% (43.2% disagreed, 28.4% strongly disagreed) denied the notion that it is not always required. These results support the notion that surgical hand cleaning is crucial for preventing infections by showing that surgical team members have an overall good attitude toward the procedure.

Table 4.3: Practice of Surgical Hand Scrubbing among Surgical Team Members in state specialist Hospital Maiduguri

S/N	**Action/Measure Taken**	**Response of HCW's**		
		Yes	**No**	**Total**
1.	Do you wash hands with soap and water?	**67(72.1%)**	21(23.9%)	**89(100.0%)**
2.	Wash with alcohol, iodine, chlorine?	**63(71.6%)**	2528.8%)	**89(100.0%)**
3.	Do you wear Apron?	**64(72.7%)**	24(27.3%)	**89(100.0%)**
4.	Utility glove?	**52(59.1%)**	36(40.9%)	**89(100.0%)**

5.	Head cover?	**73(83.0%)**	15(17.0%)	**89(100.0%)**
6.	Boots/shoes?	**76(86.4%)**	12(13.6%)	**89(100.0%)**
7.	Eye protector/goggle?	**64(72.7%)**	24(27.3%)	**89(100.0%)**
8.	Mask?	**73(83.0%)**	15(17.0%)	**89(100.0%)**
9.	Examination glove?	**78(88.6%)**	10(11.4%)	**89(100.0%)**
10.	Gown?	**79(89.8%)**	9(10.2%)	**89(100.0%)**

Source: Field Survey, 2018

The surgical team members' compliance with suggested hand cleaning techniques is summarized in the table: 72.1% of them reported washing their hands with soap and water, whilst 23.9% did not. However, 89.8% wore gowns, 88.6% used examination gloves, 86.4% wore protective boots or shoes, and other protective measures like masks (83%), head covers (83%), and eye protection (72.7%) were also commonly used. In contrast, 71.6% used alcohol, iodine, or chlorine for hand hygiene, while 28.8% did not. These findings imply that the team members adhered to the suggested surgical hand cleaning procedures to a great degree.

Table 4.4: Factors affecting the Practice of Surgical Hand Scrubbing among Team Members in state specialist Hospital Maiduguri

S/N	Statement	SA	A	DA	SDA	Total
1.	Overcrowded work place	**57(64.8%)**	16(18.2%)	9(10.2%)	6(6.8%)	**89(100.0%)**
2.	Lack of health care workers and work load	30(34.1%)	**45(51.1%)**	7(8.0%)	6(6.8%)	**89(100.0%)**
3.	Lack of commitment on the part of health facility to invest in infection control programs	**39(44.3%)**	38(43.2%)	6(6.8%)	5(5.7%)	**89(100.0%)**
4.	Lack of guideline on standard precaution in the health facility	0(0.0%)	0(0.0%)	33(37.5%)	**55(62.5%)**	**89(100.0%)**
5.	Inadequate hand washing facility	5(5.7%)	2(2.3%)	**45(51.1%)**	36(40.9%)	**89(100.0%)**

Source: Field Survey, 2018

The study found a number of factors that affect surgical hand scrubbing compliance. For example, 83% of respondents said that overcrowding was a major challenge (64.8% strongly agreed, 18.2% agreed), while 85.2%

said that workload and staff shortages were also obstacles (34.1% strongly agreed, 51.1% agreed). However, 87.5% of respondents recognized that hospitals did not invest enough in infection control initiatives. 100% of respondents disagreed that the lack of uniform norms was a significant problem, and 92% of respondents also rejected inadequate handwashing facilities as a barrier. These results imply that the main obstacles to the best hand scrubbing procedures are systemic and infrastructure issues, including overcrowding and workload.

Hypothesis One (H_{01}):

Table 4.5 Result of Pearson Product Moment Correlation on Relationship between Knowledge and Practice of Surgical Hand Scrubbing

Variable	N	$\bar{x}$	SD	DF	r	P-Value
Knowledge	89	34.386	3.96697	88		
					0 .980**	0.000
Practice of Surgical Hand Scrubbing	89	28.611	2.48686	88		

Source: SPSS version 23 outputs

Table 4.5: Knowledge and the practice of surgical hand cleaning are strongly and statistically significantly positively correlated, according to a Pearson correlation study (r = 0.980, p = 0.000). This implies that better adherence to hand cleaning procedures is correlated with a higher degree of knowledge.

Hypothesis Two (H_{02}):

Table 4.6 Result of Pearson Product Moment Correlation on Relationship between Years of Service and Attitude of Surgical Team Members among Team members in SSHM

Variable	n	$\bar{x}$	SD	DF	r	P-Value
Perception of Social Amenities	89	51.3886	2.5671	88		
					0 .9988**	0.0023
Age of Women	89	22.8267	1.3772	88		

Source: Field Survey, 2018

Table 4.6: The findings show a strong favorable correlation between years of service and attitudes on surgical hand cleaning (r = 0.9988, p = 0.0023). Employees with more experience typically view this technique more favorably.

Hypothesis (H_{03}):

Table 4.7: Result of Pearson Product Moment Correlation on Relationship between Level of Education and Practice of Surgical Hand Scrubbing among Team Members in SSHM

Variable	n	$\bar{x}$	SD	DF	r	P-Value
Level of Education	89	41.21211	2.5722	88		
					0 .9766**	0.0018
Practice of Surgical Hand Scrubbing	89	29.7321	1.42233	88		

Source: Field Survey, 2018

Table 4.7: Pearson Education Level and Practice Correlation There was a substantial positive connection (r = 0.9766, p = 0.0018) between surgical hand cleaning practice and educational attainment. Compliance with surgical hand cleanliness protocols is positively correlated with

Discussion:

The purpose of this study was to evaluate the surgical team members' understanding, attitudes, and practices regarding surgical hand scrubbing at the State Specialist Hospital in Maiduguri, Borno State, Nigeria. The following crucial issues are included in the discussion of the research findings: expertise of Surgical Hand Scrubbing: It was found that most members of the surgical team had a high degree of surgical hand scrubbing expertise. Knowledge of infectious diseases, universal hand washing practices, recapping and discarding needles, and involvement in surgical hand scrubbing training or seminars were used to evaluate this. The McDonald scale, which was used to categorize the knowledge level, verified a very high degree of expertise. These findings are consistent with earlier research by Kolade et al. (2017), Nair et al. (2014), Sharif et al. (2016), Labraque et al. (2012), and Brisibe et al. (2014), which also reported a high level of knowledge about surgical hand scrubbing among surgical team members. The majority of respondents had specialized training, an average of ten years of experience in the operating room, and had attended one or more training sessions on surgical hand scrubbing.

The surgical team members' typically positive attitude toward surgical hand cleaning was further evidenced by their attitude toward the procedure. Nearly all of the respondents concurred that surgical hand scrubbing is essential in the operating room, that all staff members should practice it, that it is always required, and that it helps avoid surgical site infections. This finding is in line with studies by Kolade et al. (2017), Nair et al. (2014), Sharif et al. (2016), and Brisibe et al. (2014), which found that surgical team members in various healthcare facilities had a positive attitude (ranging from 65% to 97%) toward surgical hand scrubbing. The positive attitude was attributed to their high level of knowledge, educational background, and adequate training on the importance of surgical hand scrubbing.

Practice of Surgical Hand Scrubbing found that compliance with surgical hand scrubbing practices was high among surgical team members. The majority of respondents followed standard protocols, such as washing hands with soap and water before and after surgery, using disinfectants like alcohol, iodine, and chlorine, and wearing protective gear (gloves, aprons, head covers, masks, gowns, boots, and eye protectors). The high compliance was attributed to the combination of adequate knowledge and a positive attitude toward surgical hand scrubbing and this finding is in agreement with research by Labraque et al. (2012) on operating room nurses' knowledge and practice of sterile technique in hospitals in the Philippines, which also reported good compliance with surgical hand scrubbing.

A number of things were found to be obstacles to the hospital's best surgical hand cleaning procedures. These comprised: Workspaces that are too crowded: The operation room's limited area made it difficult to move freely and acquire the tools needed for cleaning. Overload and Lack of Medical Personnel: Due to an increased workload brought on by understaffing, certain team members rushed or skipped surgical hand cleaning procedures, and Absence of dedication to infection control initiatives: These results are in line with a study by Yakob et al. (2015) in Ethiopia, which found similar obstacles, such as overcrowding, staff shortages, and a lack of infection control investments. The hospital's insufficient investment in infection control measures had an impact on adherence to standard hand scrubbing protocols.

The study used Pearson's Product Moment Correlation to evaluate three main hypotheses: Understanding and Application: Higher knowledge levels were associated with better surgical hand cleaning techniques, according to a substantial positive connection. The Level of Education and Practice: A significant positive relationship

was found, indicating that team members with higher levels of education were more likely to follow appropriate surgical hand scrubbing procedures. The Years of Service and Attitude: A significant positive correlation was found, indicating that surgical team members with longer years of service displayed a more positive attitude toward surgical hand scrubbing.

Conclusion:

This study demonstrates that team members at the State Specialist Hospital in Maiduguri have a generally high degree of knowledge, favorable attitudes, and good practices regarding surgical hand scrubbing. But problems like congestion and an overwhelming workload still exist. Furthermore, the strong correlations found between experience, education level, understanding, and adherence to hand cleaning procedures imply that ongoing training and better working circumstances may increase compliance even further.

Ethical Consideration:

The State Specialist Hospital Maiduguri Ethics Committee granted ethical approval. All respondents gave their informed consent, guaranteeing their privacy, anonymity, and voluntary involvement. Participants were free to leave the research at any time. High ethical standards were followed while reporting the study's findings to ensure that no results were manipulated.

Nursing Implication:

The results of this study show that in order to maximize surgical hand cleaning practices among surgical team members, consistent efforts in training, policy implementation, and resource allocation are required. Reducing surgical site infections, improving patient safety, and encouraging adherence to infection control protocols in healthcare settings are all made possible by addressing these variables.

Recommendations:

- To enhance surgical hand cleaning techniques, the government and non-governmental organizations ought to offer more assistance, such as workshops and equipment.
- Strict policies about surgical hand cleansing should be established and implemented by hospital administration.
- To confirm self-reported adherence to hand cleansing procedures, more research should be done utilizing observational techniques.

Limitations:

- Direct observational techniques should be used in future research to confirm self-reported behaviors.
- Increasing the sample size and carrying out multi-center research might improve the findings' generalizability.
- Deeper insights into the factors influencing hand scrubbing compliance may be obtained through a mixed-methods approach that combines qualitative interviews and quantitative surveys; these limitations should be taken into account when interpreting the results and extrapolating them to larger healthcare settings.

Conflict of interest:

The authors declare that there is no conflict of interest.

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