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Factors Affecting Midwives' Compliance with Infection Prevention and Control Guidelines in Federal Medical Center Umuahia, Abia State

Onuigbo, Sylverlyn Adaeze[1*]; Ogaji, Daprim Samuel[2]

[1,2]Africa Centre of Excellence in Public Health and Toxicological Research, University of Port Harcourt, Choba, H Nigeria

Corresponding Author: Onuigbo, Sylverlyn Adaeze[1*]

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Abstract:

- ***Background:***

Midwives' compliance with infection prevention and control (IPC) guidelines remain a major challenge in many hospitals. This study investigates the factors influencing midwives' compliance with IPC guidelines at the Federal Medical Centre (FMC), Umuahia, Abia State, Nigeria.

- ***Methods:***

A cross-sectional design with data collected using structured questionnaires among 200 midwives working at the FMC, Umuahia. Data on the knowledge, attitude, training, availability of resources, and institutional support that may impact the compliance of midwives with infection prevention and control guidelines were collected using structured self-administered questionnaire. Descriptive and inferential analyses were conducted with the IBM SPSS version 29 with statistical significance set at $p \leq 0.05$.

- ***Results:***

Midwives possess a moderate level of knowledge about infection control guidelines, with significant gaps identified in their understanding of some protocols. Significantly higher IPC compliance scores were associated with decreasing age, midwives who are single (0.85; 95%CI:0.48, 1.21, p<0.001) and married (0.83; 95%CI: 0.48, 1.17, p<0.001) when compared with those who are divorced/widowed. Direct positive relationships were observed between all the subscales in the bivariate analyses but when adjusted for possible confounders in the multivariate analysis, availability of IPC resources in the facility (0.07; 95%CI:-0.02, 0.17, p = 0.127) and Midwives' perception on IPC (0.09; 95%CI:-0.04, 0.23, p = 0.180) were not significantly associated with IPC compliance among midwives.

- ***Conclusion:***

The study revealed the level and factors associated with midwives' compliance with IPC guideline in a tertiary health facility in Nigeria. Improving midwives' compliance with infection control guidelines requires addressing gaps in training, resource availability, and institutional support.

Keywords: *Midwife, Compliance, Infection Prevention and Control, IPC, Guideline, Federal Medical Centre, FMC, Umuahia.*

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I. INTRODUCTION

Infectious diseases continue to be among the leading cause of morbidity and mortality as reflected in the World Health statistics WHO, (2025). This is keenly relevant to patients visiting health facilities and the health workers. Nigeria bears a considerable quotient of the global burden of diseases attributable to the range of communicable, non-communicable and accident. Murray, (2024). Leading global causes of health loss from diseases, injuries and risk factors also include infectious diseases (Murray, 2024).

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There is increasing emphasis on the contribution of infection prevention and control (IPC) to reducing hospital acquire infections (HAI). HAIs impose a considerable economic burden, prolonged hospital stays, increased treatment costs, and added strain on an already resource-limited healthcare system. Therefore, enhancing compliance with infection control guidelines is not only a clinical necessity but also a strategic imperative for reducing healthcare costs and improving service delivery outcomes.

In this regards, frontline health workers including midwives' adherence to infection prevention protocols is a vital component of healthcare delivery, especially when delivering maternal and newborn care. Implementing effective infection control strategies in healthcare facilities is crucial in reducing the transmission of infections and safeguarding patient health.

Hospitals, which admit individuals with various infectious conditions, have become hotspots for disease propagation. Patients with infections pose risks to fellow patients, healthcare staff, and visitors within these facilities (Sydnor & Perl, 2011). Hospital-Acquired infections (HAIs), also termed nosocomial infections, are a major cause of death and are responsible for extended hospital stays and elevated treatment costs (WHO, 2015). According to WHO (2010), HAIs are infections that emerge during a patient's care in a medical facility but were neither present nor incubating upon admission. Typically, these infections appear 48 to 72 hours post-admission and can manifest up to ten days after discharge (Collins, 2008).

The continuous influx of patients infected with a variety of pathogens has exposed hospital environments to highly dangerous organisms such as Staphylococcus aureus, Streptococcus pyogenes, Escherichia coli, Pseudomonas aeruginosa, and Hepatitis viruses. These pathogens can cause a wide range of illnesses, from mild skin issues to life-threatening conditions like sepsis (Sydnor & Perl, 2011). The widespread presence of such infections highlights the urgent need for stringent infection prevention and control protocols in Nigerian healthcare institutions.

As a result, improving preparedness in infection control efforts has become increasingly essential. The effectiveness of Nurses in executing infection prevention is largely determined by their level of knowledge, attitudes, and practical application of standard procedures. The Nigerian Public Health Act, Cap 295, mandates that healthcare facilities provide a safe setting for patients. Nurses play a central role in infection control efforts and have the potential to either reduce or contribute to the spread of infections. Damani (2012) emphasizes the significance of carefully designing patient care areas to reduce infection risks. The core goal of infection control is to protect susceptible patients from acquiring infections during treatment (Damani, 2012). When Nurses lack knowledge, hold unfavorable attitudes, or practice improper techniques, the likelihood of hospital-acquired infections increases.

Clinical observations have shown that some Nurses handle soiled linen without using protective gear, dispose of needles in-patient beds, overlook cleaning stethoscopes after use, and skip proper hand hygiene. Such unsafe practices are associated with a higher incidence of HAIs. Since hand hygiene is a fundamental measure to reduce infection risks, healthcare providers must treat it as a critical standard. Failure to adhere to hand washing routines may heighten infection rates in hospitals. A study by Nair et al. (2013) in India reported poor awareness, attitudes, and hand hygiene practices among Medical and Nursing students in a tertiary care setting.

Midwives serve a critical function in providing healthcare to mothers and newborns. Their commitment to infection control protocols is crucial in preventing infections during childbirth and postnatal care. Nonetheless, several elements influence their compliance with these protocols. Infection control is a key aspect of healthcare delivery, aiming to curb the spread of contagious diseases in clinical environments. Healthcare workers' adherence, particularly that of midwives, to these practices is instrumental in ensuring the safety of both mothers and infants throughout the childbirth process. In Nigeria, this issue is particularly pressing given the elevated levels of maternal and infant illness and death, often linked to HAIs.

Infection prevention guidelines consist of standardized procedures meant to lower infection risks in healthcare settings. These include practices like hand sanitation, proper use of Personal Protective Equipment (PPE), instrument sterilization, waste management, and thorough cleaning of patient environments. The Federal Ministry of Health in Nigeria has set infection control policies for healthcare centers, yet practical implementation varies significantly. Research shows that poor training and limited opportunities for ongoing education are key barriers affecting midwives' effectiveness in infection control. Many Nigerian midwives lack consistent access to current information and training resources, impeding the adoption of standard practices.

While an earlier study by Onyedibe et al. (2012) revealed that many Nigerian midwives are inadequately trained in IPC, more recent student revealed high knowledge and attitude among midwives to IPC, Gbadamosi, (2024). Essential tools such as PPE, sterilizers, and accessible hand-washing stations are often in short supply across healthcare institutions in Nigeria. Nwankwo and Emmanuel (2016) noted that the unavailability of these critical resources is a major hindrance, resulting in non-adherence among healthcare personnel, including midwives. It is imperative to address factors influencing midwives' non-compliance may perpetuate poor infection control practices, leading to persistently high rates of HAIs, increased morbidity and mortality, and diminished public confidence in the healthcare system. The research was guided by the need to uncover factors that influence midwives' adherence to IPC guidelines in a tertiary health facility in Abia State.

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II. METHOD

➢ *Settings of Study*

The research was conducted at the Federal Medical Centre (FMC), Umuahia, a renowned medical institution with a rich legacy dating back to its establishment as a colonial dispensary in 1903. FMC Umuahia has expanded considerably and has grown into a major healthcare provider achieving status of a Federal Medical Centre in 1995. It is currently a 700-bed capacity, providing a broad range services to residents in Abia state and beyond. Midwives play pivotal roles in maternal/neonatal care, handling diverse medical cases within the facility's 700-bed capacity. Their work is supported by stringent Infection Prevention and Control (IPC) protocols, which include hand hygiene, the use of Personal Protective Equipment (PPE), sterilization of medical instruments, proper biomedical waste management.

➢ *Study Population*

The study's population comprises the 489 licensed midwives employed at Federal Medical Centre (FMC), Umuahia. These midwives work in various critical departments, including the operating room, surgical rooms, and labor wards. Midwives who were on any form of leave (sickness, casual, training, maternity etc) were excluded from the study.

➢ *Research Methods and Study Design*

Quantitative research with cross-sectional survey design was adopted. A questionnaire was used as the primary data collection tool, enabling direct gathering of relevant information from respondents in their natural setting (Mouton, 2011). This approach not only ensures the relevance and accuracy of the data, also enhances the ability to generalize findings across the larger population.

➢ *Sample Size Determination*

Considering the dynamic work shifts of midwives at the Federal Medical Centre Umuahia, the research adopted convenience sampling approach to select participants from the maternity and neonatal units. The sample size of 200 from a finite population of 489 midwives was calculated using the Cochran's formula (Cochran, 1940) and correcting for finite population with proportion of compliant midwives taken as 52% (Komuhangi et al, 2019).

- *Study Instrument:*

Self-structured questionnaire adapted from established infection prevention and control frameworks from notable authorities like the International Confederation of Midwives (ICM) – Frameworks for midwifery practice, including infection control principles (ICM, 2024) and the World Health Organization (WHO) – Core Components of Infection Prevention and Control Programs at the National and Acute Health Care Facility Level (WHO, 2018), and tailored for the context of midwifery practice in maternal and neonatal care settings. This primary tool for data collection questionnaire was designed to comprehensively capture relevant information from the participants.

- *Data Collection:*

Before initiating data collection, ethical approval was received from the University of Port Harcourt ethics committee, formal permission was sought from the unit heads of the relevant departments at FMC Umuahia. This ensured that the study adhered to the hospital's protocols and received necessary administrative support. Data collection occurred over one month, specifically on Mondays and Wednesdays, to accommodate the varying work schedules of midwives. These days were chosen to maximize participation, ensuring representation from midwives across different shifts and departments.

Data was collected using four points rating scale to assess all six objectives related to the level of compliance among midwives with IPC guidelines. Section A was used to collect demographic information such as age, gender, years of experience, and the specific department of work. This demographic data will help provide context for the analysis of how different factors may influence compliance with IPC guidelines. Section B focused on identifying and understanding factors affecting midwives' compliance with infection control protocols. It includes six sections of eight questions each with each question followed by a 4-point response scale ("Strongly Agree" to "Strongly Disagree") aimed at exploring various aspects such as awareness, training received, and availability of resources, and institutional support, which may impact adherence to these critical healthcare practices.

➢ *Validation of Test Instrument*

To assess the reliability of the instrument, a pre-test was conducted involving 10% (20 midwives) of the midwifery staff at FMC Umuahia. The reliability test, which measured the internal consistency of the factors affecting compliance with infection control guidelines, yielded a Cronbach's Alpha value of 0.821 across six subscales. Face and content validation was done by the researcher and the supervisor who carefully review the instrument, ensuring that each question is clear, relevant, and aligned with the study's objectives.

➢ *Data Analysis*

Data were entered into the Statistical Package for the Social Sciences (version 29) and checked for completeness before undertaking descriptive (frequency, mean, SD) and inferential (bivariate and multivariate generalized linear regression analysis) as the dependent variables did not meet the assumptions for Normally distributed data from the Shapiro Wilk's test, that would have allowed the conduct of parametric analysis. The generalized linear regression analysis with categorical factors and continuous covariates is expressed as follows: IPC compliance.

$$= \alpha + L_n b_0 + b_1 L_n x_1 + b_2 L_n x_2 + b_3 L_n x_3 + b_4 L_n x_4 + b_5 L_n x_5 + b_6 L_n x_6 + b_7 L_n x_7 + b_8 L_n x_8 + e_i.$$

- *Where:*

Factors were Age, gender, marital status, educational status, years of experience, years working in the health facility, employment status, units working in the facility, number of training sessions on IPC in the last one year while

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the covariates were IPC recourses, training needs, staff workload, organizational support and perception of midwives towards IPC compliance. Both the bivariate and multivariate regression were conducted and reported. The B coefficients and 95%CI as well as the p-values were reported. Significant associations were determined with p-values less than or equal to 0.05

➢ *Ethical Clearance*

Ethical approvals were obtained from the Research Ethics Committee (REC) of the University of Port Harcourt Rivers State and Federal Medical Centre Umuahia Abia State which is the study domain before embarking on the study.

III. RESULTS

Response rate for this survey was 100% and as shown in Table 1, most of the study participants were female (98%), aged 31 – 40 years (34.5%), married (73%), in full time employment (84.5%) with bachelor's degree (54%) and have worked in the present facility for at least 10 years (77.5%).

Table 1 Socio-Demographic Characteristics of the Study Participants

Item	Frequency (N=200)	Percentage (%)
Age		
Less than 30 years	52	26.0
31-40 years	69	34.5
41-50 years	51	25.5
51 years and above	28	14.0
Sex		
Male	4	2.0
Female	196	98.0
Marital Status		
Single/in a relationship	46	23.0
Married	146	73.0
Divorced/Widowed	8	4.0
Employment Status		
Full-time	169	84.5
Part-time	22	11.0
Contract	9	4.5
Educational Level		
Diploma	50	25.0
Bachelor	108	54.0
PGD	18	9.0
Master	15	7.5
Others	9	4.5
Years of Experience		
<6	71	35.5
6 – 10	44	22.0
11 – 15	39	19.5
16 – 20	23	11.5
21 and above	23	11.5
Years working in facility		
<6	84	42.0
6 – 10	71	35.5
11 – 15	14	7.0
16 – 20	27	13.5
21 and above	4	2.0
Department/Unit		
Maternity unit	93	46.5
Neonatal Care unit	54	27.0
Other	53	26.5
Training Sessions on Infection Control		
None	23	11.5
1-2	106	53.0
3-4	55	27.5
5 or more	16	8.0
Awareness of Guidelines		
Yes	200	100.00

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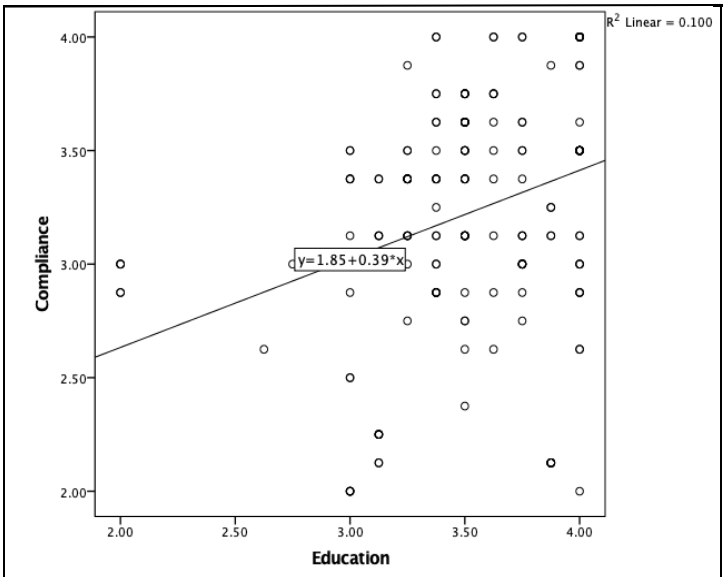
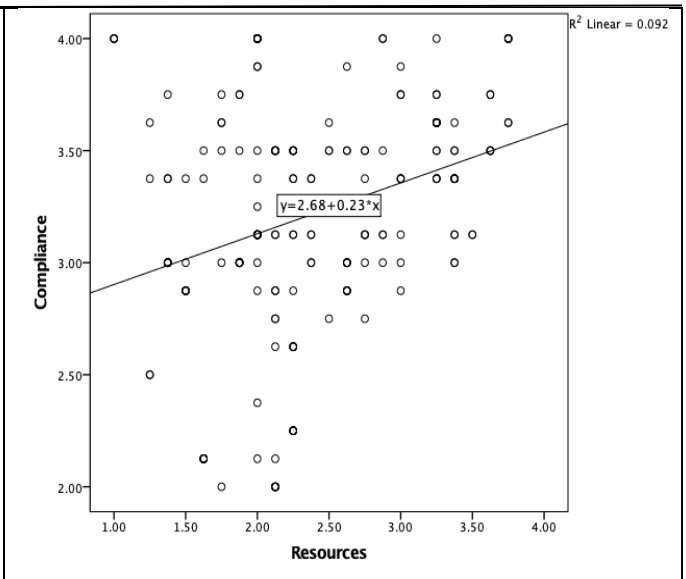
Table 2 score Characteristics of the Subscales in the IPC Scale

Subscale	# Items	Cronbach's alpha	Mean (SD)	Shapiro Wilks – statistics (p-value
Compliance	8 items	0.880	3.22 (0.51)	0.940 (0.000)
Education	8 items	0.866	3.51 (0.42)	0.884 (0.000)
Resources	8 items	0.935	2.41 (0.69)	0.960 (0.000)
Workload	8 items	0.748	2.92 (0.46)	0.960 (0.000)
Organizational support	8 items	0.861	2.81 (0.53)	0.955 (0.000)
Staff Perception	8 items	0.877	3.42 (0.45)	0.912 (0.000)

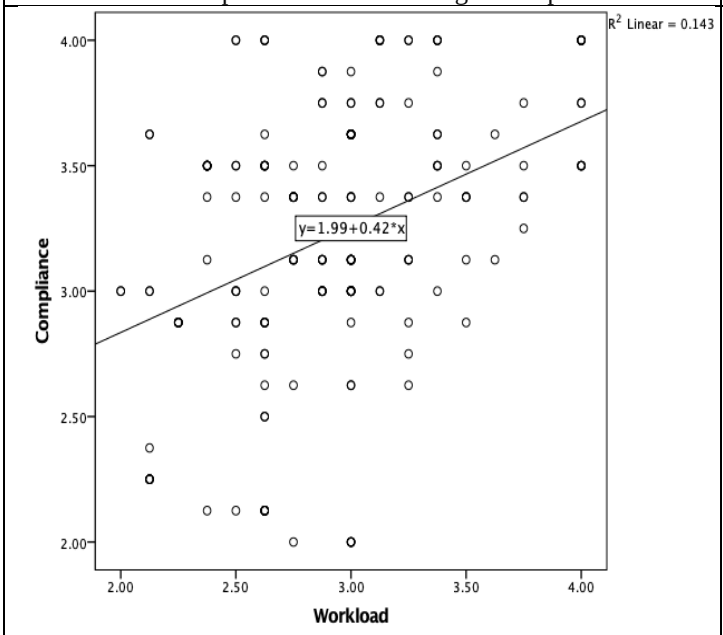
Table 2 shows the score characteristics of the subscales in the IPC instrument indicating score for training/educational needs as highest 3.51±0.42 and least for Resources available for IPC in the hospital at 2.41±0.69. The internal consistency reliability of this scale measured by the Cronbach's alpha ranged from 0.75 (workload) to 0.94 (resources for IPC). The score distribution for all subscales were did not meet the assumption for Normal distribution with the statistically significant Shapiro Wilks statistics.



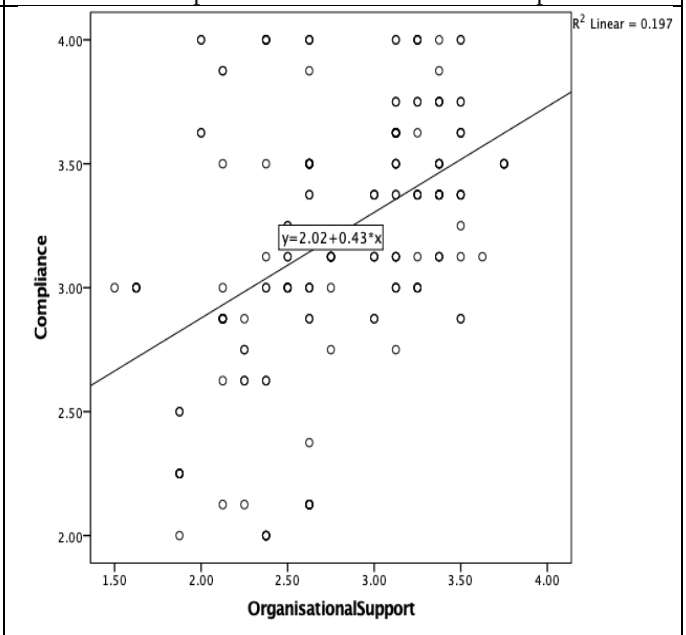
Relationship between IPC training & compliance



Relationship between IPC resources & compliance



Relationship between workload regulation & compliance



Relationship between organizational support for & compliance

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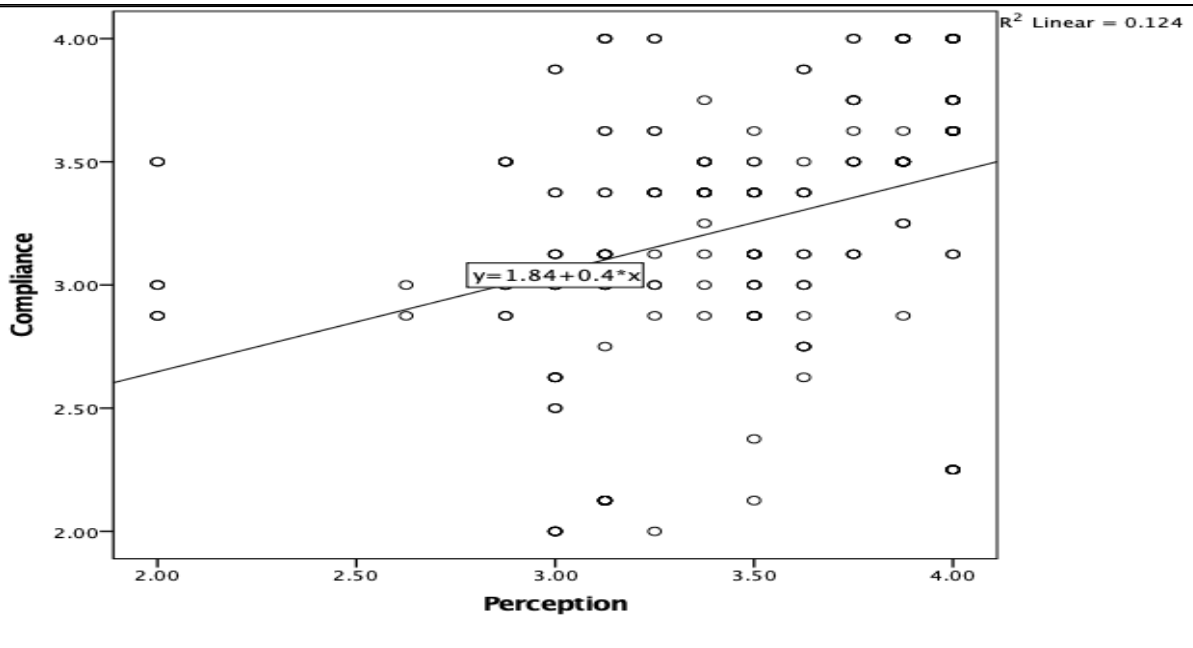

Relationship between Training & IPC compliance

Fig 1 Relationship between midwives and organizational characteristics and IPC compliance

Figure 1 shows the linear relationship between subscales in the IPC scale and the compliance with IPC guidelines with these factors being able on their own to explain between 9.2 – 19.7% of the variance of IPC compliance among midwives. The most significant of IPC compliance was Organisational support where a 1-unit improvement in organization support have the potential to improve IPC compliance among midwives by 0.43 units (y = 2.02 + 0.43x).

Table 3 Staff and Organisational Factors Associated with Compliance with IPC

Variables	Mean IPC score	Bivariate analysis		Multivariate analysis	
		B(95%CI)	p-value	B(95%CI)	p-value
Age in years					
<30	3.25	0.60(0.39, 0.80)	0.000	0.44(0.11, 0.77)	0.010
31-40	3.42	0.77(0.57, 0.97)	0.000	0.61(0.29, 0.92)	0.000
41-50	3.24	0.59(0.38, 0.79)	0.000	0.56(0.28, 0.85)	0.000
51 and above	2.65	-		-	
Sex					
Male	3.66	0.44(-0.06, 0.95)	0.084	0.32(-0.02, 0.65)	0.061
Female	3.21	-		-	
Marital Status					
Single	3.27	0.85(0.48, 1.21)	0.000	0.40(0.05, 0.75)	0.026
Married	3.25	0.83(0.48, 1.17)	0.000	0.51(0.19, 0.83)	0.002
Divorced/Widowed		-		-	
Educational Level					
Diploma	3.47	1.05(0.72, 1.38)	0.000	0.54(0.21, 0.87)	0.001
Bachelor		0.76(0.44, 1.08)	0.000	0.44(0.12, 0.77)	0.008
PGD	3.18	0.87(0.50, 1.24)	0.000	0.70(0.37, 1.03)	0.000
Master	3.13	0.72(0.33, 1.10)	0.000	0.37(0.01, 0.74)	0.045
Others	2.42	-		-	
Years of Experience					
<6	3.31	0.60(0.38, 0.82)	0.000	-0.05(-0.39, 0.29)	0.758
6 – 10	3.36	0.65(0.42, 0.88)	0.000	-0.04(-0.35, 0.28)	0.819
11 – 15	3.35	0.64(0.40, 0.88)	0.000	0.04(-0.24, 0.33)	0.768
16 – 20	2.96	0.25(-0.02, 0.51)	0.073	-0.13(-0.37, 0.11)	0.294
21 and above	2.71	-		-	
Years working in facility					
<6	3.27	-0.11(-0.57, 0.35)	0.645	-0.29(-0.74, 0.16)	0.207

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6 – 10	3.36	-0.01(-0.47, 0.45)	0.964	-0.48(-0.93, -0.03)	0.035
11 – 15	3.25	-0.13(-0.64, 0.39)	0.632	-0.62(-1.08, -0.15)	0.009
16 – 20	2.67	-0.71(-1.19, -0.23)	0.004	-0.17(-0.60, 0.26)	0.447
21 and above	3.38	-		-	
Employment Status					
Full-time	3.22	0.67(0.34, 0.99)	0.000	0.11(-0.20, 0.42)	0.490
Part-time	3.48	0.93(0.55, 1.30)	0.000	0.16(-0.17, 0.48)	0.354
Contract	2.56	-		-	
Service Unit					
Maternity unit	3.32	0.31(0.15, 0.48)	0.000	-0.12(-0.18, 0.15)	0.839
Neonatal Care unit	3.,26	0.25(0.06, 0.43)	0.000	-0.09(-0.25, -.08)	0.300
Other	3.01	-		-	
Annual Training IPC Sessions					
None	3.36	-0.02(-0.35, 0.30)	0.884	0.12(-0.15, 0.39)	0.373
1-2	3.20	-0.18(-0.44, 0.09)	0.182	-0.13(-0.40, 0.14)	0.332
3-4	3.16	-0.23(-0.51, 0.05)	0.113	-0.16(-0.43, 0.10)	0.225
5 or more	3.38	-		-	
IPC Training Needs	-	0.39(0.23, 0.55)	0.000	0.17(0.01, 0.33)	0.046
IPC Resources	-	0.23(0.13, 0.33)	0.000	0.07(-0.02, 0.17)	0.127
Staff Workload	-	0.42(0.28, 0.56)	0.000	0.30(0.16, 0.45)	0.000
Organisational Support	-	0.43(0.31, 0.55)	0.000	0.18(0.05, 0.32)	0.007
IPC Perception	-	0.40(0.26, 0.55)	0.000	0.09(-0.04, 0.23)	0.180

The determination of individual and organizational factors associated with level of IPC compliance among midwives are shown in Table 3. Decreasing age of midwife was associated with significantly higher IPC compliance scores. Significantly higher IPC compliance scores were also associated with midwives who are single (0.85; 95%CI:0.48, 1.21, p<0.001) and married (0.83; 95%CI: 0.48, 1.17, p<0.001) when compared with those who are divorced/widowed. The bivariate analysis also demonstrated significant difference in the IPC compliance scores across categories of midwives based on educational level, years of experience, years of working in the facility and employment status.

The multivariate regression analysis that controlled for the effects of confounders in the model showed that decreasing age, being married (0.51; 95%CI: 0.19, 0.83, p = 0.002) or single (0.40; 95%CI:0.05, 0.75, p = 0.026) compared to being divorced/widowed. Also, those with known qualifications such as diploma, bachelor, PGD and masters related to nursing had significantly higher scores compared to those with unknown qualification. While early career workers less than 6 years in the facility did not show significant difference in IPC compliance compared wot those who had worked for over 21 years (-0.29; 95%CI: -0.74, 0.16), p=0.207), staff who had worked for 6 – 10 years (-0.48; 95%CI:-0.93, -0.03, p = 0.035) or 11 – 15 years (-0.62; 95%CI:-1.08, -0.15, p = 0.009), had significantly lower IPC compliance level than those who had worker for over 20 years in the facility.

IV. DISCUSSION

This study was designed to uncover factors associated with midwives' compliance with institutional IPC guidelines. The finding noted that infection control guidelines are effectively implemented during neonatal care underscores the commitment of healthcare providers to ensuring a sterile and safe environment for newborns, thereby reducing neonatal morbidity and mortality (Okafor et al., 2021). Regular monitoring and training were also highlighted as significant factors influencing compliance. Furthermore, training was identified as a key enabler of compliance which was consistent with previous public health studies that emphasize the importance of continuous professional education in maintaining high standards of infection control (Adegoke & Atiyaye, 2018). The study suggests areas for improvement, particularly in ensuring uniform application of guidelines across different units. In contrast with the findings, Williamson, et al., (2008) found that lack of proper adherence to infection prevention and control precaution standards, among many of the health workers in Kenya, they have high rates of exposure to microorganisms among health care workers via several modes (needle sticks, hand contamination with blood, exposure to air transmitted microorganisms). Efstathiou et al., (2011) noted that compliance/ implementation of infection control is influenced or controlled by a variety of factors like culture, economic and social factors, self-efficacy, and lack of knowledge or means.

- *Areas of Additional Training and Education on Enhanced Knowledge and Skills in Related to Infection Control Practices:*

The results of the findings show urgent need for education on the latest infection control research (3.62), reflecting midwives' recognition of the dynamic nature of infection prevention strategies. Integrating current research findings into practice is essential for improving healthcare delivery and reducing infection-related complications in maternal and neonatal settings (Eze et al., 2022).

Availability and adequacy of essential resources and sterilization supplies that support infection control practices among midwives: Frequent shortages of essential infection

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control supplies were noted suggesting inefficiencies in supply chain management, which can lead to inconsistent infection control practices. In corroboration with the study, Ogunleye et al., (2019) reported inconsistent procurement and supply of infection control materials were linked to increased infection rates.

Workload and Patient-to-midwife ratio impact influence the ability on adherence to IPC guidelines. The study confirms that the ability to comply with infection control guidelines decreases with increased workload suggesting that while midwives make efforts to uphold infection control standards, excessive workload remains a barrier, further highlighting the need for better staff-to-patient ratios in maternal and neonatal healthcare. Similar findings have been reported in studies where midwives in overcrowded facilities struggled with infection control compliance due to limited time and resources (Adebayo et al., 2022). Interestingly, some midwives agreed that effective infection control practices are maintained even with high patient volumes and that workload does not significantly impact adherence. This indicates that while workload is a major challenge, individual commitment, experience, and institutional policies help midwives mitigate some of the negative effects (Eze et al., 2021).

Results show a moderate level of organizational support but while some supportive structures exist, there are still gaps that need to be addressed to strengthen IPC practices. Adebiyi et al. (2017) highlights that availability of essential resources is a significant determinant of healthcare workers' ability to follow infection control protocols. Among the listed responses, the highest-rated item was “Policies are regularly updated to reflect current infection control practices” indicating that the hospital management makes efforts to keep infection control policies up to date. Timely policy updates are essential in healthcare settings as they ensure that midwives follow the latest best practices for preventing infections (WHO, 2021). The response on “Organizational support facilitates effective implementation of infection control guidelines” also followed suite suggesting that some institutional structures are in place to aid adherence. These findings align with Eze et al. (2022), which found that health facilities with strong policy enforcement experience lower rates of healthcare-associated infections (HAIs) due to better compliance among staff. Okoro et al. (2020) also reported that healthcare facilities with better-managed IPC resources demonstrated higher levels of adherence to IPC guidelines. Effective resource management systems within healthcare settings ensure supplies are adequately stocked and replenished promptly. The sustained investment in infection control resources is essential for maintaining a safe working environment and ensuring that healthcare providers can execute their duties without unnecessary hindrances (Asogwa and Nwachukwu, 2021).

Organizational support for IPC also requires increased role of hospital leaders (Okafor et al., 2021) and enforcement mechanisms (Adejumo et al., 2018) in creating a culture of IPC in the hospital. Adejumo et al. (2018) emphasized that the failure to ensure consistent availability of essential infection control resources leads to lapses in infection prevention practices, thereby increasing the risk of cross-contamination.

The findings showed adequacy of staffing levels to ensure compliance although it remains relatively low compared to other responses, indicating that staffing shortages may pose a barrier to infection control compliance. Understaffing has been linked to increased workload and reduced adherence to hygiene protocols in healthcare settings (Adebayo et al., 2022). Onah et al. (2020) identified inadequate staffing and insufficient training as major obstacles to compliance with infection control protocols in healthcare settings.

While training opportunities exist, they may not be sufficient or consistent. Regular and comprehensive training is essential for improving midwives' knowledge and skills in infection control (CDC, 2021).

V. LIMITATIONS OF THE STUDY

Some limitations of this study include the fact that it was conducted at a single healthcare facility, which may not be representative of other regions or healthcare settings. Additionally, the study relies on individual’s data, which may be influenced by individual biases or social determinants, particularly when midwives are reporting their own practices. The sample size, although adequate, could be expanded for further research to provide a comprehensive knowledge on the issues at hand. Moreover, the study does not explore the perception of other healthcare professionals, such as Doctors and Pharmacists, whose roles may also influence infection control practices. A more holistic approach, involving input from all healthcare workers, would provide a clearer picture of the challenges faced in maintaining infection control guidelines.

➢ *Implications of the Findings of this Study*

There are pertinent research, practice and policy implications of the findings of this research.

- *Research Implications*

Future research should consider the following areas:

✓ *Comparative Studies across Different Healthcare Facilities:*

Further studies could compare the factors affecting infection control compliance across various healthcare facilities in Nigeria to identify regional or institutional differences in compliance levels and barriers.

✓ *Impact of Policy Changes on Infection Control Compliance:*

Research could explore how changes in national health policies or institutional guidelines impact midwives' compliance with infection control protocols.

✓ *The Role of Other Healthcare Professionals:*

Future studies should examine the role of other healthcare professionals, such as doctors, nurses, and

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laboratory technicians, in infection control practices to understand the collective impact of these professionals on compliance.

✓ *Longitudinal Studies on Infection Control Practices:*

Long-term studies could track changes in infection control practices over time and assess the impact of training programs, resource management, and staffing improvements on compliance.

✓ *Exploring Technological Innovations in Infection Control:*

Research could investigate the role of technology, such as automated hand hygiene monitoring systems, in improving infection control compliance. The study finds strong correlation between resources availability and infection control compliance. To ensure efficient resource allocation, hospitals should adopt strategic planning models that assess current supply levels, forecast future needs, and allocate budgets effectively. Investment in infection control infrastructure—such as automated hand hygiene stations, sterilization units, and digital monitoring tools—should be prioritized. Public-private partnerships can also be explored to secure funding and improve healthcare facilities' capacity to maintain high infection control standards.

✓ *Patient and Public Perceptions of Infection Control Practices:*

Future research could explore how patients and the public perceive infection control practices and their role in supporting healthcare workers' efforts.

- *Practice Implications*

✓ *Availability of Essential Hospital IPC Commodities:*

Non-availability of essential hospital resources significantly impacts midwives' compliance with infection control protocols. To address this, health institutions should prioritize procurement and distribution of critical materials such as Personal Protective Equipment (PPE), sterilization supplies, and hand hygiene facilities. Hospital management should establish efficient supply chain systems to prevent shortages and ensure timely replenishment of infection control materials. This will enhance compliance and reduce the risk of Healthcare-Associated Infections.

✓ *Midwives' Density:*

To reduce the impact on heavy workloads and high patient-to-midwife ratios as major barriers to infection control compliance, healthcare authorities should implement policies to recruit more midwives and redistribute workload more effectively. Increasing the number of midwives per shift will allow for better adherence to infection control practices, reducing errors caused by fatigue and time constraints. Additionally, workload management strategies such as task-sharing and improved scheduling should be adopted to optimize efficiency and maintain quality care.

✓ *Continuous Professional Development:*

The study calls for regular update and education of midwives to demonstrate better compliance with infection control guidelines. Healthcare institutions should implement continuous education programs, refresher courses, and workshops on infection prevention and control. Training should emphasize emerging infection control challenges, proper use of PPE, hand hygiene, and sterilization techniques. Additionally, integrating infection control education into midwifery curricula and professional licensing requirements will sustain knowledge and reinforce adherence. Efforts to address these gaps should include government intervention, increased hospital funding, and public-private partnerships to ensure the sustainable provision of infection control materials. Training programs should also incorporate resource management strategies to help midwives maximize the effective use of available supplies.

✓ *Midwives' Attitudes:*

Midwives' personal attitudes, beliefs, and perceptions significantly influenced compliance with infection control protocols. To foster a culture on adherence, hospitals should implement behavioral change strategies such as motivational training, peer influence programs, and mentorship initiatives. Leadership should actively promote the importance of infection control, while success stories and best practices should be shared to reinforce positive attitudes. Engaging midwives in infection control decision-making and policy reviews will also enhance their sense of responsibility and commitment to compliance.

- *Policies Implication*

Healthcare institutions should reinforce infection control policies through strict monitoring and accountability mechanisms. Management should conduct regular compliance audits, provide incentives for adherence, and enforce disciplinary measures for non-compliance. Furthermore, hospital administrators should ensure that all midwives receive clear guidelines and are consistently supported in implementing infection control measures.

VI. CONCLUSION

The study highlights the important factors and determinants of midwives' compliance with infection control guidelines at FMC Umuahia. The findings reveal personal, and system factors associated with midwives' compliance with IPC regulation that could be useful for future interventions aimed at improving IPC practices among midwives in tertiary healthcare facilities. Future research should consider all frontline professional and how home-grown intervention can be developed to improve IPC practices.

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