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Midwives Knowledge and Attitude on Infection Prevention and Control (IPC)

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ABSTRACT

Infection prevention and control (IPC) is essential in reducing healthcare-associated infections, particularly in maternal and newborn care. Midwives play a critical role in ensuring adherence to IPC protocols in primary healthcare settings. This study aims to assess the knowledge, attitudes, and practices of midwives toward IPC in selected primary health care centers in Osogbo Local Government, Osun State, Nigeria. A cross-sectional survey was conducted among 52 midwives using a structured questionnaire to assess their knowledge and attitudes on IPC. The data were analyzed using descriptive statistics, with results presented as frequencies and percentages. The study found high IPC knowledge among midwives, with 96.2% classified as having good knowledge. Most participants demonstrated a strong understanding of key practices, such as hand hygiene, PPE use, and waste disposal. For example, 98.1% correctly identified the proper order for donning PPE, and all understood its primary purpose. However, 84.6% were aware of the recommended frequency for disinfecting high-touch surfaces, highlighting a gap in daily IPC practices. Midwives showed a positive attitude, with 88.5% agreeing that IPC guidelines reduce infection rates. Despite this, 9.6% felt resources were inadequate, and 84.6% called for more IPC training. The study shows strong IPC knowledge and positive attitudes among midwives, though gaps in resources and daily practices exist. Continuous training, better resource allocation, and fostering accountability are recommended to maintain high IPC standards. Targeted interventions should address these gaps and support midwives in effective IPC implementation.

Keywords
Attitude
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Introduction

Infection prevention and control is a crucial aspect of the healthcare system. World Health Organization (WHO) estimates that 7%–12% of hospitalized patients worldwide experience healthcare-associated infections (HAIs), with more than 1.4 million people facing infectious complications during their hospital stay at any given time [1]. When infection prevention measures are not adhered to, infections may ensue. An important risk factor for poor compliance with infection prevention guidelines is the limited availability of facilities like the one for hand hygiene and others [2]. HAIs lead to longer hospital stays, higher mortality rates, increased healthcare running costs, and substantial economic strain on families, communities, and entire countries. Therefore, the prevention and control of HAIs remain a critical public health challenge [3].

Women are at risk of healthcare-associated infections (HAIs) during childbirth, with sepsis-related deaths estimated to account for approximately one-tenth of the global maternal mortality burden [4]. Nearly all sepsis-related maternal deaths occur in low- and middle-income countries (LMICs) [5]. Nigeria, in particular, has one of the highest maternal mortality rates in the world, with 576 deaths per 100,000 live births and a neonatal mortality rate of 37 per 1,000 births [6]. Nationally, above one-third of births in Nigeria take place in healthcare facilities (HCFs), and increasing facility-based births is a national priority. However, efforts to encourage more women to give birth in HCFs must be accompanied by robust, evidence-based infection prevention and control (IPC) measures to minimize the risk of HAIs.

Despite the critical role of Infection Prevention and Control (IPC) in safeguarding maternal and neonatal health, studies indicate significant variations in knowledge, awareness, attitudes, and practices among healthcare workers, particularly in developing countries such as Nigeria [7][8]. Midwives, who are pivotal in maternal healthcare and frequently manage deliveries, face heightened risks of exposure to infectious agents [9]. This underscores the importance of their adherence to IPC protocols, as lapses can directly contribute to increased maternal and neonatal morbidity and mortality.

However, existing research on IPC practices among midwives in Nigeria is limited, with many studies focusing on broader healthcare worker populations or tertiary healthcare

settings. There is a paucity of data specifically addressing midwives' knowledge and attitudes towards IPC in primary healthcare settings, which are often the first point of contact for many women during childbirth.

This study aims to assess the knowledge, and attitudes of midwives on IPC in selected primary healthcare centers in Osogbo local government, Osun State, Nigeria. By identifying gaps in knowledge and practice, the findings from this research can inform strategies to strengthen IPC implementation and adherence, enhance training, and also to improve overall healthcare outcomes in this region.

Material and Methods

This study used a cross-sectional descriptive design to assess the knowledge and attitude of infection prevention and control among registered midwives in selected primary health care PHCs in Osogbo local government, Osun State, Nigeria The selected PHCs are Oke Abesu PHC, Oke baale PHC, Ogo Oluwa PHC, and Oke Osun PHC). The population for this study consisted of registered midwives employed at these PHCs. Eligible participants were those with at least one year of professional experience. A convenient sampling method was used to recruit study participants, a total sample size of 50 nurses was determined via Slovin's formula, from the total number of midwives working in these selected PHCs.

A well-structured questionnaire, self-developed from publicly available instruments, was used to collect data on the attitudes and practices of infection prevention and control among midwives in the selected primary healthcare centers in Osogbo local government, Osun State. The questionnaire consists of four sections—A, B, C, and D, comprising a total of 35 open and closed-ended questions. Section A focuses on socio-demographic data with questions. Section B assesses respondents' knowledge of IPC, Section C evaluates respondents' attitudes towards IPC. An introduction letter was obtained from the Osun State School of Midwifery, Osogbo, and the questionnaires were distributed to respondents in the selected healthcare centers, with an explanation of the research purpose. Verbal consent was sought from the study population, and each respondent was guided on how to complete the questionnaire, which was retrieved after completion. A total of 52 questionnaires were collected for data analysis over two weeks and data was analyzed using SPSS 26.

We assessed knowledge of IPC using a 10-item scale. We provided 1 point for each right answer and 0 points for each wrong answer. The maximum possible score was 10 points with a range from 0 to 10 points. The level of knowledge was classified as poor(< 5 points), average (5–7 points), and good (8–10 points)

We used 12 statements to assess their attitude towards IPC. Each statement was assessed on a five-point Likert-type scale (strongly disagree to strongly agree). The maximum

possible score was 12 points with a range from 0 to 12 points. Attitudes were classified as negative (<6 points), or positive (>6 points).

Results

A. Sociodemographic characteristics of study participants

Table 1 shows the sociodemographic characteristics of study participants. A total of 52 midwives participated in the study. The age distribution of respondents shows that the majority were aged between 25-34 years (38.5%), followed by those aged 34-44 years (34.6%). The remaining participants were aged 45-54 years (19.2%) and under 25 years (7.7%).

Table 1. The characteristics of participants

Characteristics		Freq.	Percentage
Age(Years)	Under 25	4	7.7
	25-34	20	38.5
	34-44	18	34.6
	45-54	10	19.2
Highest level of Education	Diploma	24	46.2
	Bachelors degree	21	40.4
	Masters degree	2	3.8
	Others	5	9.6
How many years of experience do you have as a midwife?	Less than 1 year	0	0
	1-5 years	18	34.6
	6-10 years	28	50
	11-15 years	5	9.6
	More than 15 years	3	5.8
Have you received any formal training on infection prevention and control (IPC)?	Yes	49	94.2
	No	3	5.8
If yes, when was your last training on IPC?	Within the last year	5	9.6
	1-2 years ago	20	38.5
	More than 2 years ago	25	48.1
	I can't remember	2	3.8
Total number of participants: n=52			

Regarding level of education, almost half of the respondents held a diploma (46.2%), while 40.4% had a bachelor's degree. A smaller proportion had obtained a master's degree (3.8%), and 9.6% had other forms of educational qualifications. In terms of years of experience as a midwife, half of the respondents had between 6-10 years of experience (50%), while 34.6% had 1-5 years of experience. Those with 11-15 years of experience accounted for 9.6%, and only 5.8% had more than 15 years of experience. Formal training on infection prevention and control (IPC) was received by 94.2% of respondents, while 5.8% had not undergone any formal training. Among those who had received IPC training, the majority (48.1%) completed their last training more than two years ago, 38.5% had training 1-2 years ago, and 9.6% had training within the last year. A small proportion (3.8%) could not recall when they last received IPC training.

B. Midwives' Knowledge of Infection Prevention and Control

A significant portion, 96.2% (50 out of 52), exhibited good knowledge. Only 3.8% (2 participants) demonstrated average knowledge, and none had poor knowledge. Table 2 represents this result.

Table 2. Participant's knowledge

Knowledge class	Freq. (f)	Percentage
Good	50	96.2
Average	2	3.8
Poor	0	0.0
Total	52	100

C. Midwives' Attitude Towards Infection Prevention and Control

A large majority, 94.3% (49 out of 52), held a positive attitude towards IPC. In contrast, 5.7% (3 participants) exhibited a negative attitude. Table 3 shows this result.

Table 3. Participant's Attitude

Attitude	Freq. (f)	Percentage
Positive Attitude	49	94.3
Negative Attitude	3	5.7
Total	52	100

Discussion

The assessment of midwives' knowledge of infection prevention and control (IPC) revealed a generally high level of awareness, with 96.2% of participants classified as having good knowledge. This result is notably higher compared to other studies in Nigeria [10] and other countries [11][12]. A possible explanation for this disparity lies in our questionnaire, which assessed basic, general knowledge of IPC rather than focusing on more specialized or technical aspects, as may have been the case in other studies.

Key areas of IPC, such as hand hygiene, the use of personal protective equipment (PPE), and waste disposal, were well understood by most respondents. For instance, 98.1% correctly identified the proper order for donning PPE, and all participants (100%) accurately answered questions on the transmission of infections via improper hand hygiene and the primary purpose of using PPE. These findings underscore a strong foundation in fundamental IPC principles, which are critical in preventing healthcare-associated infections.

Additionally, 90.4% of respondents knew the standard precautions, and 88.5% correctly identified the most effective method for preventing the spread of infections. However, despite the generally high knowledge, a slightly lower percentage (84.6%) were aware of the frequency at which high-touch surfaces should be disinfected, suggesting a potential gap in daily IPC practices that may need further emphasis in training.

The attitude of midwives regarding infection prevention and control (IPC) was notably positive. A significant majority (88.5%) strongly believed that following IPC guidelines can effectively reduce infection rates, with the remaining 11.5% agreeing. This consensus highlights the strong understanding of IPC's role in infection control among midwives. However, when asked about workplace resources, 51.9% strongly agreed, and 34.6% agreed that their workplace provides adequate resources, while 9.6% were neutral, and 3.8% disagreed. This suggests that while most midwives feel supported, some experience gaps in resource availability, which could impact IPC implementation. Previous studies also highlighted inadequate funding and resources as a hindrance to IPC implementation [13]-[17].

Moreover, the need for continuous IPC training was strongly emphasized, with 84.6% of respondents strongly agreeing that more training is necessary. High confidence levels in adhering to IPC guidelines were reported, with 73.1% feeling very confident and 26.9% feeling confident. This confidence is vital for effective implementation but must be supported by adequate training and resources.

Interestingly, while 50% of respondents were very likely to report colleagues who do not follow IPC practices, 17.3% were neutral, and 5.8% were unlikely to report non-compliance. This finding points to a need for fostering a culture of accountability within healthcare settings.

In summary, the study shows a high level of IPC knowledge and positive attitudes among midwives. Most participants demonstrated strong knowledge of key practices like hand hygiene and PPE use, with 96.2% having good knowledge. These results are higher than other studies, possibly due to this study's focus on basic IPC knowledge. However, gaps were identified in the regular disinfection of high-touch surfaces and resource availability, pointing to areas for improvement. Midwives expressed a strong need for ongoing IPC training and showed high confidence in following guidelines. Strengthening resources and fostering accountability are crucial for maintaining effective IPC practices.

Study Limitations and Further Suggestions

The study tool was adapted from previous research [18] and, while pre-tested and validated by the authors, it may still be prone to bias. Additionally, good knowledge of IPC does not necessarily guarantee positive behavior or practice toward healthcare-associated infections (HAIs). Further research is encouraged to examine this relationship. The small sample size, drawn from selected primary health centers, may limit the generalizability of the findings, although it remains a representative sample.

Future research should be conducted across a broader range of primary healthcare centers in Nigeria to validate these results and assess the effectiveness of various educational strategies on midwives' practical IPC skills. Interventions should focus on closing the identified

gaps, such as ensuring consistent knowledge about high-touch surface disinfection and addressing occasional shortages of IPC resources in the workplace.

Conclusion

The study highlights a strong foundation of knowledge and positive attitudes toward infection prevention and control (IPC) among midwives, with most participants demonstrating good understanding and adherence to essential IPC practices. However, About half of the participant has had training on IPC for over two years, refresher courses on IPC to update their knowledge are encouraged, gaps in daily IPC practices and resource availability suggest the need for ongoing training and improved workplace support. Enhancing these areas will further strengthen IPC implementation and ensure sustained infection prevention efforts in healthcare settings.

Conflict of Interest

The authors declare that there is no conflict of interest.

References

[1] J. Chiwuzie, A. U. Oronsaye, C. Okolocha *et al.*, "Factors associated with high maternal morbidity and mortality in Ekpoma, Nigeria," *Afr. J. Med. Pract.*, vol. 5, pp. 187–193, 1998.

[2] O. O. Adetoro, K. S. Adeyemi, B. Parakoyi *et al.*, "The application of operational research procedures to maternal mortality from puerperal sepsis in a rural community," *Soc. Sci. Med.*, vol. 33, pp. 1385–1390, 1991.

[3] W. O. Chukwudebelu and B. C. Ozumba, "Maternal mortality in Anambra state of Nigeria," *Int. J. Gynecol. Obstet.*, vol. 27, pp. 365–370, 1988.

[4] N. J. Kassebaum, A. Bertozzi-Villa, M. S. Coggeshall *et al.*, "Global, regional, and national levels and causes of maternal mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013," *Lancet*, vol. 384, pp. 980–1004, 2014.

[5] L. Say, D. Chou, A. Gemmill *et al.*, "Global causes of maternal death: a WHO systematic analysis," *Lancet Global Health*, vol. 2, pp. e323–e333, 2014.

[6] National Population Commission (NPC) [Nigeria] and ICF International, *Nigeria Demographic and Health Survey 2013*, Rockville, MD and Abuja: NPC and ICF International, 2014.

[7] O. O. Amali and R. H. VAN Wyk, "Infection prevention knowledge and practices among healthcare workers at a health facility in Makurdi, Benue State, Nigeria," *J. Public Health Afr.*, vol. 14, no. 10, p. 2497, 2023, doi: 10.4081/jphia.2023.2599.

[8] C. N. Ochie, E. C. Aniwada, E. K. Uchegbu *et al.*, "Infection prevention and control: knowledge, determinants, and compliance among primary healthcare workers in Enugu metropolis, south-east Nigeria," *Infection Prevention in Practice*, vol. 4, no. 2, p. 100214, 2022, doi: 10.1016/j.infpip.2022.100214.

[9] T. Bianchi *et al.*, "Occupational risks in midwifery: from Bernardino Ramazzini to modern times," *Safety and Health at Work*, vol. 10, no. 2, pp. 245–247, 2019, doi: 10.1080/15459624.2019.1628350.

[10] E. F. Okechukwu and C. Motshedisi, "Knowledge and practice of standard precautions in public health facilities in Abuja, Nigeria," *Int. J. Infect. Control.*, vol. 8, 2012, doi: 10.3396/ijic.v8i3.022.12.

[11] A. Abalkhail, M. H. Al Imam, Y. M. Elmosaad *et al.*, "Knowledge, attitude and practice of standard infection control precautions among health-care workers in a university hospital in Qassim, Saudi Arabia: a cross-sectional survey," *Int. J. Environ. Res. Public Health*, vol. 18, no. 22, p. 11831, 2021, doi: 10.3390/ijerph182211831.

[12] G. Abuduxike, S. Acar Vaizoglu, O. Asut, and S. Cali, "An assessment of the knowledge, attitude, and practice toward standard precautions among health workers from a hospital in Northern Cyprus," *Saf. Health Work*, vol. 12, pp. 66–73, 2021.
[13] H. Buxton, E. Flynn, O. Oluyinka *et al.*, "Barriers and opportunities experienced by staff when implementing infection prevention and control guidelines during labor and delivery in healthcare facilities in Nigeria," *J. Hosp. Infect.*, vol. 103, no. 4, pp. 428–434, 2019, doi: 10.1016/j.jhin.2019.07.018.
[14] C. Bammigatti, S. Doradla, H. N. Belgode *et al.*, "Healthcare-associated infections in a resource-limited setting," *J. Clin. Diagn. Res.*, vol. 11, pp. OC01–OC04, 2017, doi: 10.7860/JCDR/2017/23076.9150.
[15] C. Houghton, P. Meskell, H. Delaney *et al.*, "Barriers and facilitators to healthcare workers' adherence with infection prevention and control guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis," *Cochrane Database Syst. Rev.*, vol. 4, p. CD013582, 2020, doi: 10.1002/14651858.CD013582.
[16] L. T. Phan, D. Maita, D. C. Mortiz *et al.*, "Personal protective equipment doffing practices of healthcare workers," *J. Occup. Environ. Hyg.*, vol. 8, pp. 575–581, 2019.
[17] C. Houghton, P. Meskell, H. Delaney *et al.*, "Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis," *Cochrane Database Syst. Rev.*, vol. 4, p. CD013582, 2020.
[18] M. D. Frank, G. C. Robinson-Bassey, and S. E. Ibudeh, "Knowledge and compliance with standard precautionary measures among nurses in Madonna University Teaching Hospital, Elele, Rivers State," *Int. J. Nursing Didactics*, vol. 6, pp. 21–26, 2016.

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