



Assessing awareness of Postnatal Care services among women in rural and urban communities in Delta State, Nigeria.

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Abstract

Background statement: Postnatal care (PNC) is necessary in maintaining and promoting the health of the mother and baby. The World Health Organization (WHO) recommends 4 postnatal visits within the first 6 weeks after delivery in order to ensure optimal physical and mental well-being of the woman (World Health Organization, 1998). However, studies in developing countries shows that 7 out of 10 women do not receive any postpartum care, and often only seek PNC in the event of complications after birth (Fort et al., 2006; Grace Mano et al., 2022).

Objective of study: To assess the level of awareness of PNC services among women of childbearing age (WCA) in rural and urban communities in Delta State, Nigeria.

Methods: A cross-sectional community-based survey was conducted among 768 women of childbearing age (15-49 years). Data was collected using a semi-structured, interviewer-administered questionnaire consisting of 32 items and analyzed using descriptive statistics and correlation analysis.

Result: Respondents were predominantly unaware of PNC services (Urban: 26.6%; Rural: 19.4%). Source of PNC information revealed a higher reliance of rural respondents on information from health care providers (85.1%) while only 24.5% and 18% of the respondents knew how and when to access PNC services in urban and rural communities respectively.

Conclusion: Findings from the study shows low awareness of PNC services with marked variations between urban and rural areas. This calls for strategic efforts to further increase PNC awareness at all levels, particularly at the rural level in a bid to improve health-seeking behavior and health outcomes.

Keywords: Postnatal care, Awareness, Postnatal schedule, Health promotion, Health workers.

1.0 Introduction

There is an urgent need to comprehend details of maternal medical, physical and mental health, newborn health, social support system, barriers to breast feeding, contraception and sexual activity following child birth (Kumar et al., 2022). Postnatal care is necessary in maintaining and promoting the health of the mothers as well as provides an opportunity for health care workers, to identify, monitor, diagnose, and manage health outcomes that may develop in the mother during the postnatal period (World Health Organization, 2010). There is a large spectrum of aftermath of childbirth which includes anaemia, hypertensive disorders, diabetes, obesity, Perineal pain, dyspareunia, low libido, loss of desire, loss of vaginal lubrication, postcoital bleeding, itching, musculoskeletal pain and burning, which, if persistent and untreated, may lead to long-term physical, psychological and emotional disorders (American College of Obstetricians and Gynecologists, 2018; Kingsbury et al., 2018; Metzger et al., 2010; Podymow & August, 2010). Certain complications that may arise during the postpartum period include urinary tract infections, postpartum hemorrhage, breast complications, puerperal sepsis, thrombophlebitis, as well as psychological disorders (Schrey-Petersen et al., 2021). Studies found that about 40% of women face post-delivery complications (Ronsmans & Graham, 2006; Singh et al., 2022), while about 75% of neonatal deaths occurred within one week after birth (Lawn et al., 2014). According to the Nigeria Demographic Health Survey (NDHS) 2018, only 38 % of women and 42% of newborns received a postnatal check in the first 2 days after birth (Akinsola et al., 2023). A comprehensive postnatal care entails the evaluation of physical, social and psychological well-being, offering of advice on contraception and birth spacing, chronic disease management and health maintenance in order to prevent impairments and disabilities as well as to reduce maternal mortality (Grace Mano et al., 2022). Quality postnatal care provided to women will not only reduce maternal morbidity and mortality, but also improve their quality of life (Rai et al., 2023). Postnatal care services may include advice to mothers on breastfeeding, nutrition, family planning, and hygiene (Schrey-Petersen et al., 2021) as well as recovery from childbirth, care of the newborn and immunization (Umar et al., 2017).

To enable the provision of the essential postnatal care package, the foundation of the WHO model is the recommendation of at least four postnatal care contacts (fig 1). First, ongoing care and monitoring in the first 24 hours after birth is essential, as part of continuous care in the health facility or home. A minimum 24-hour length of stay following a facility-based vaginal birth is recommended to allow sufficient time to complete comprehensive maternal and newborn assessments, and to provide orientations for the transition of the woman and the baby to care in the home. The second contact occurs between 48 and 72 hours after birth; the third between 7 and 14 days, and the fourth contact should be about 6 weeks after birth (World Health Organization, 2022).

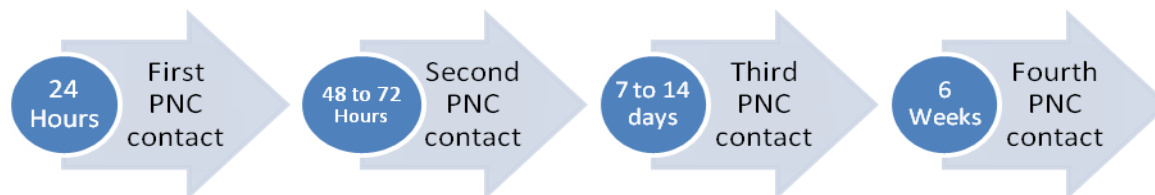


Fig. 1: WHO Postnatal Care Schedule

Despite this recommendation, studies done on postpartum care in developing countries shows that 7 out of 10 women do not receive any postpartum care, and mothers often only seek postnatal care in the event of complications after birth (Fort, et al 2006; Grace Mano et al., 2022). Several studies identified factors affecting postnatal care services utilization to include number of antenatal care visits, place of delivery, mother's education level, household wealth index, birth order and educational level of the partner (Eshetu et al., 2019; LeFevere et al., 2015; Limenih et al., 2016; Titaley et al., 2009; Yeneabat, 2015).

1.1 Statement of Problem: It has been reported how for decades that considerable efforts have been made to ensure skilled birth attendance, with the aim of reducing morbidity and mortality among mothers and newborns. However, poor knowledge regarding the purpose of postnatal care and low uptake of postnatal care could partly contribute to the persisting high rates of maternal and neonatal mortality (Afnan-Holmes, 2015; Konje *et. al.*, 2021b). Furthermore, a lack of maternal healthcare utilization frequently occurs, primarily in low- and middle-income countries,

including Nigeria, with considerable disparities between urban and rural dwellers (Agus, 2018; Flanagan *et. al.*, 2019; Paul & Chouhan, 2019; Ilesanmi & Akinmeye, 2018). However, there is limited research and paucity of data on postnatal care (PNC) service utilization and its associated barriers in Delta State.

2.0 Objective of study

Assess the level of awareness of PNC services among women of child-bearing age (WCA) in rural and urban communities in Delta State, Nigeria.

3.0 Methods

3.1 Study design:

The study is an exploratory sequential mixed-study design involving qualitative and quantitative sampling. Edmonds and Kennedy (Edmonds & Kennedy, 2017) defined the exploratory sequential technique as a progressive strategy that is used anytime that quantitative (QUAN) results are augmented by qualitative (QUAL) results in succession. The exploratory sequential technique is distinct because it explores a concept before validating it, allowing for greater versatility in discovering novel ideas offered by the QUAL approach (Cooper & Schindler, 2013). The qualitative method will involve the analysis of 20 randomly selected Auto-biological case reports on postnatal care experiences from women of child bearing age (15-49 years) while a comparative, community-based cross-sectional study will be conducted using a semi-structured interviewer-administered questionnaire to investigate the prevalence and perceived barriers to utilization of postnatal care services among a larger mixed-sample of women of reproductive age.

3.2 Study Area:

Delta State, carved from the former Bendel State on August 27th 1991 is situated in the South South geopolitical zone of Nigeria. It is an oil producing State with its capital located at the Northern end, Asaba. The State is divided into three senatorial districts- Delta North, Delta South and Delta Central with a total of twenty-five (25) local government areas, having an estimated population of 6,037,667 (males: 3,079,210; females: 2,958,457). The study was conducted in 12

randomly selected communities (6 urban and 6 rural) within 6 randomly selected LGAs across the 3 senatorial districts in the State.

3.3 Participants:

The study population included women of child-bearing age (15-49 years) residing in Delta State, Nigeria. This is estimated at 650,860 i.e. 22% of the total female population. This study focused on awareness of postnatal care services among women of childbearing age in rural and urban communities in Delta State, exploring factors such as socio-demographic characteristics, health system factors and regional disparities.

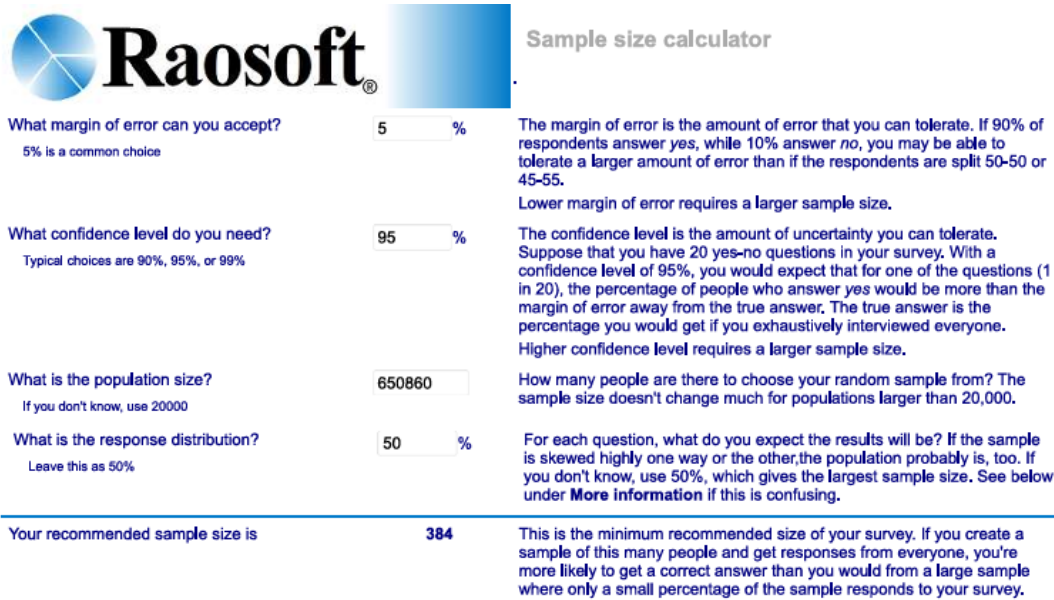
Table 1: Inclusion and exclusion criteria of selecting study participants

S/N	Inclusion	Exclusion
1	Women of childbearing age (15-49) years who had given birth previously.	Women of childbearing age (15-49) who have never given birth.
2	Women of childbearing age (15-49) years who have resided in the community for a minimum of six months.	Women of childbearing age (15-49) years who have resided in the community for less than six months.
3	Those willing to participate	Those not willing to participate

3.4 Data:

3.4.1 Sample Size:

The minimum sample size for this study was estimated using the Roasoft formula for normal distribution (Raosoft, 2004). The minimum sample size was estimated at 384 people. This was doubled to 768 for rural and urban sampling (Fig 2).



Sample size calculator

What margin of error can you accept? %
5% is a common choice

What confidence level do you need? %
Typical choices are 90%, 95%, or 99%

What is the population size?
If you don't know, use 20000

What is the response distribution? %
Leave this as 50%

Your recommended sample size is **384**

The margin of error is the amount of error that you can tolerate. If 90% of respondents answer yes, while 10% answer no, you may be able to tolerate a larger amount of error than if the respondents are split 50-50 or 45-55.
Lower margin of error requires a larger sample size.

The confidence level is the amount of uncertainty you can tolerate. Suppose that you have 20 yes-no questions in your survey. With a confidence level of 95%, you would expect that for one of the questions (1 in 20), the percentage of people who answer yes would be more than the margin of error away from the true answer. The true answer is the percentage you would get if you exhaustively interviewed everyone.
Higher confidence level requires a larger sample size.

How many people are there to choose your random sample from? The sample size doesn't change much for populations larger than 20,000.

For each question, what do you expect the results will be? If the sample is skewed highly one way or the other, the population probably is, too. If you don't know, use 50%, which gives the largest sample size. See below under **More information** if this is confusing.

This is the minimum recommended size of your survey. If you create a sample of this many people and get responses from everyone, you're more likely to get a correct answer than you would from a large sample where only a small percentage of the sample responds to your survey.

Fig. 2: Sample size calculation outcome indicating basis for N = 384 estimation.

3.4.2 Sampling Technique.

A multi-stage random sampling technique was used in this study (fig 3). In the first stage, four (2) local Government Areas (LGAs) were randomly selected from each of the three senatorial districts in the State. In the second stage, one (1) rural community, one (1) urban community were randomly selected from the total of twelve (6) LGAs selected, thereby making a total of twelve (12) communities for the study. In the third stage, thirty-two (64) women of childbearing aged 15-49 years were randomly selected from each of the twelve enumerated communities making a total of 768 participants (Fig 3).

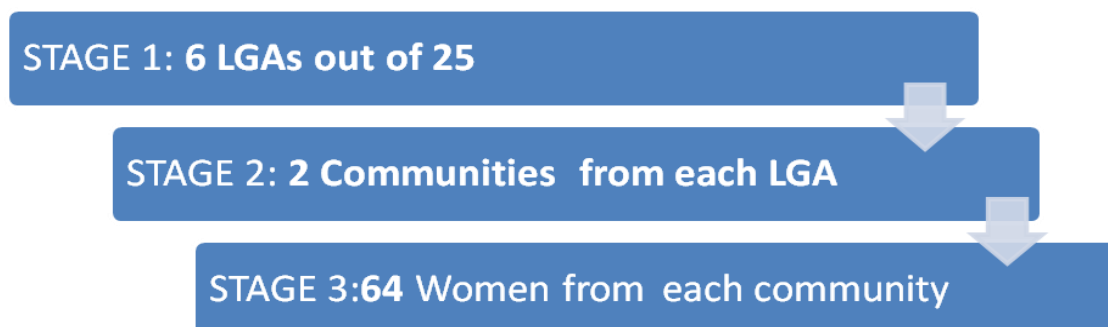


Fig. 3: Multi-staged random sampling of QUAN study participants.

Table 2: Randomly selected communities and sample size distribution

S/N	Senatorial District	LGAs	Communities	N
1	Delta North	Oshimili South, Ika South	Oko anala, Umuagu, Agbor Obi, Emuhu	128 128
2	Delta South	Bomadi, Isoko South	Bomadi, Akugbene, Oleh, Olomoro	128 128
3	Delta Central	Ughelli North, Uvwie	Uwheru , Ekiugbo Orhorhe, Ugberikoko	128 128
	Total			768

N = No. of Participants (Women 15-49 yrs)

3.4.3 Data tools:

Qualitative data: Qualitative (QUAL) data was collected using Semi-structured interviews with mainly open-ended questions. The interview guide contained open-ended questions created by the authors, focused on demographic characteristics, knowledge, utilization and barriers to skilled postnatal (Omatsuli & Ofili, 2026). Before use, the interview guide was evaluated by experts and pre-tested.

Quantitative data: Quantitative [QUAN] data was collected using a semi-structured, interviewer-administered questionnaire consisting of 32 items assessing details such as demographic characteristics, knowledge, and barriers to skilled postnatal care and PNC utilization. The data collection tool is a standard reliable and validated resource adapted partly from the World Health Organization (WHO) Maternal VOICE tool on postnatal care (Takada et. al., 2019) as well as identified thematic areas in the QUAL study. Pre-testing was done on 15 women of reproductive age not among the study population.

3.4.4 Strengths and limitations: The mixed-methods approach provides for comprehensive insight into the subject matter. Furthermore, the large sample size enhanced representativeness, while data triangulation ensured validity. However, cross-sectional design limits causal inference and there is arguable sampling bias potential, which is unavoidable and unintended, hence a limit to generalizability.

3.4.5 Statistical analysis: All statistical analysis was performed using SPSS version 25.0. Distribution of the socio-demographic characteristics and awareness PNC utilization was represented using descriptive statistics. Measurement of the relationship among variables was

performed using spearman Rho correlation analysis and at a 95% confidence interval (CI). Significant variables were expressed with a p-value less than 0.05.

3.5 Ethical considerations: Ethical clearance for the study was obtained from the ethical committee, Novena University, Ogume as well as State Ministry of Health Research Ethical Committee (MOHREC) and Delta State Primary Health Care Development Agency, Asaba. Informed consent was also obtained from each participant after explaining the goal and nature of the study. Participants were informed of their right to discontinue their participation at any stage of the study, and confidentiality and privacy of the respondents were fully ensured.

4.0 Results

4.1 Qualitative (Exploratory)

Inductive thematic analysis elicited key concepts that were evident in the data. These categories have been labeled as “Postnatal care awareness,” “Utilization of Skilled Postnatal Care Services,” “Barriers to Postnatal Care utilization,” “Health-seeking behavior,” and “Cultural Practices. Overall, the themes highlighted a complex interplay of factors influencing the utilization of skilled postnatal care among respondents.

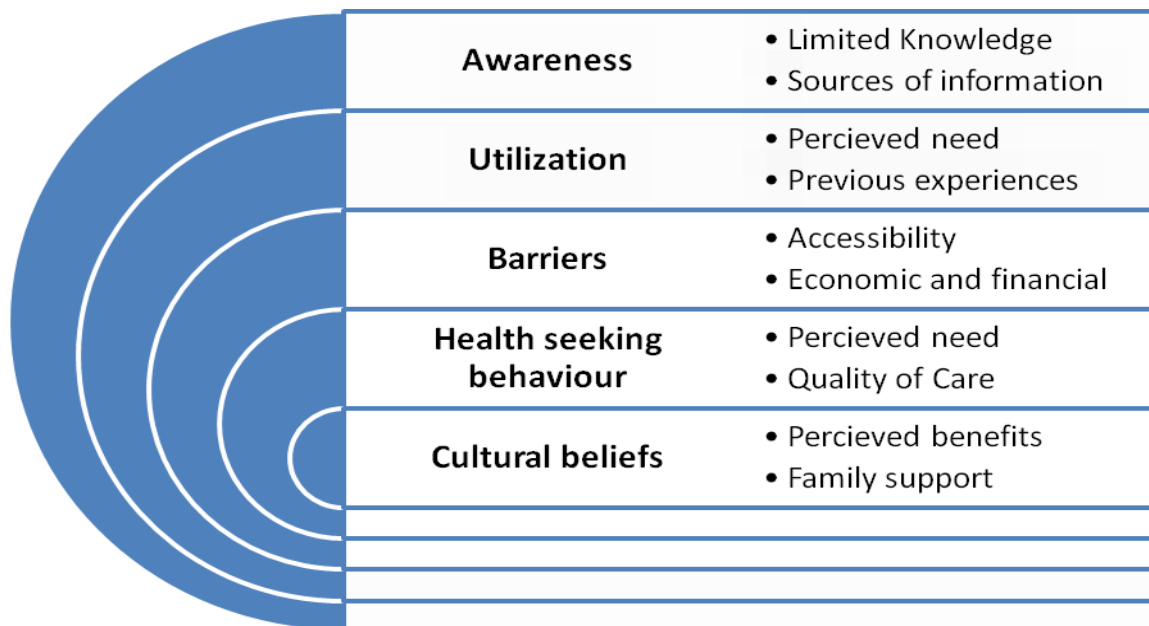


Fig 4: Themes and sub-themes on Postnatal care services utilization.

4.2 Quantitative (Explanatory)

The final analytical sample consisted of 768 women of child-bearing age (WCA) in Delta State, Nigeria. To determine the level of awareness of PNC services among WCA in rural and urban areas in Delta State the following questions were asked; have you heard of PNC services, main source of information about PNC services and knowledge on how to access PNC services. Below are the findings:

Table 3. Characteristics respondents in Rural and Urban Localities in Delta State (N = 768)

Variable	Category	Urban n (%)	Rural n (%)	Total n (%)
Educational Level	Primary	20 (5.2)	65 (16.9)	85 (11.1)
	Secondary	162 (42.2)	239 (62.2)	401 (52.2)
	Tertiary	199 (51.8)	61 (15.9)	260 (33.9)
	None	3 (0.8)	19 (4.9)	22 (2.9)
Heard of PNC Services	Yes	204 (53.1)	149 (38.8)	353 (46.0)
	No	180 (46.9)	235 (61.2)	415 (54.0)
Main Source of Information*	Healthcare Provider	158 (77.1)	126 (85.1)	284 (80.5)
	Internet	19 (9.3)	9 (6.1)	28 (7.9)
	Family/Friends	28 (13.7)	11 (7.4)	39 (11.0)
	Other	0 (0.0)	2 (1.4)	2 (0.6)
Knowledge to Access PNC	Yes	188 (49.0)	138 (35.9)	326 (42.4)
	No	196 (51.0)	246 (64.1)	442 (57.6)

4.2.1 Educational characteristics of respondents – graphical results, only

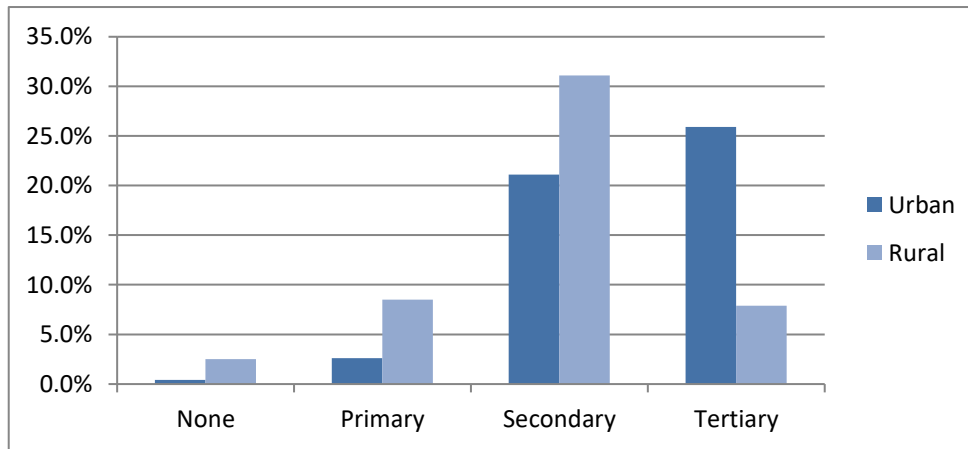


Fig. 5: Level of education by locality

4.2.2: Awareness of PNC Services – graphical results, only

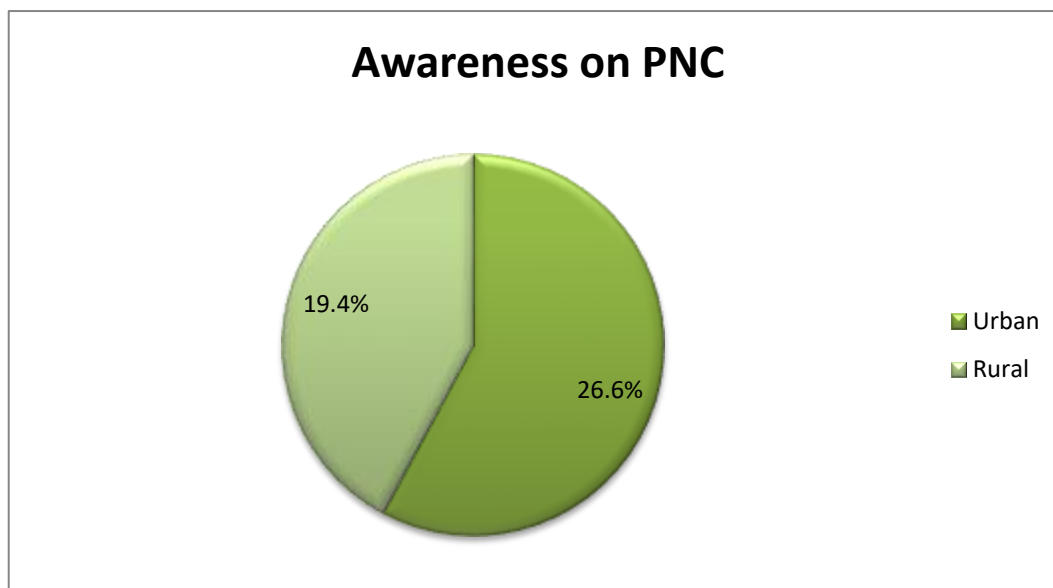


Fig. 6: Awareness on PNC services amongst WCBA

4.2.3: Main source of Information – graphical results, only

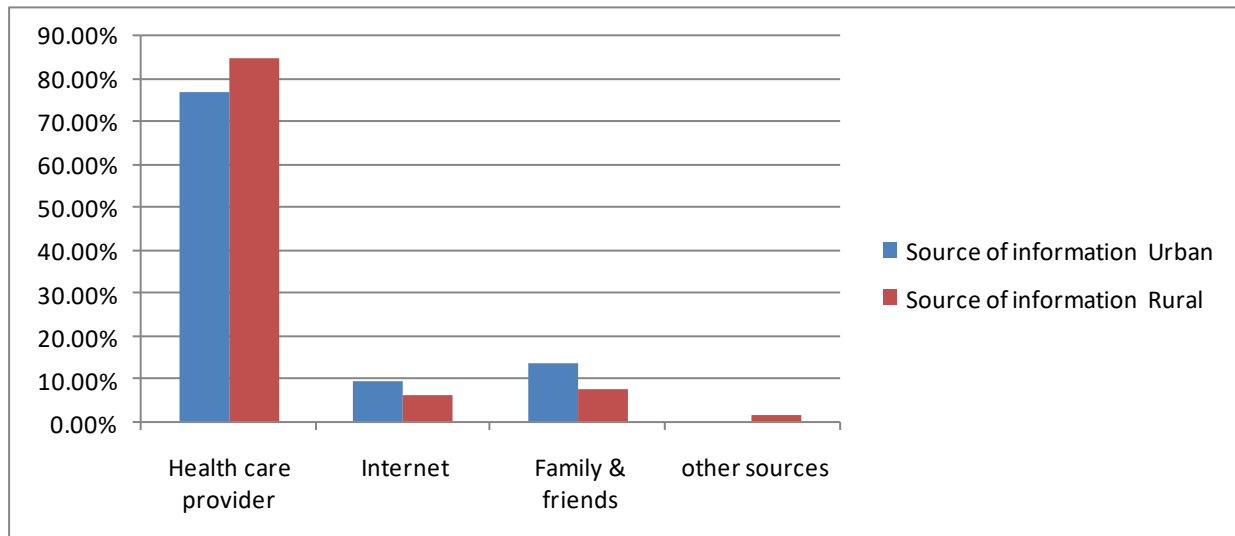


Fig 7: Main sources of information about PNC

4.2.4: Knowledge on how and when to access PNC Services – graphical results, only

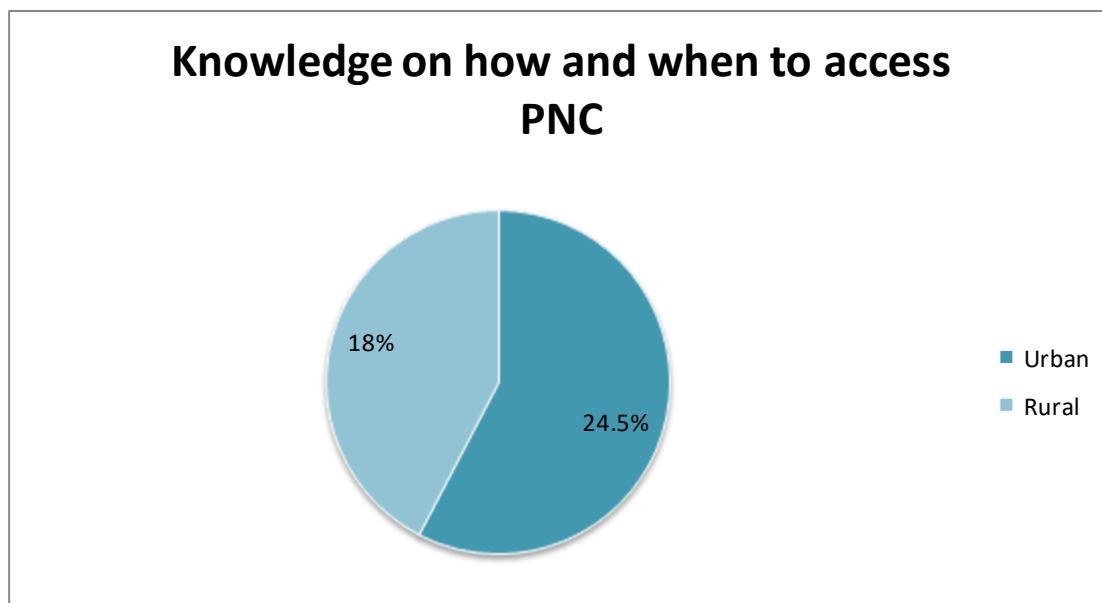


Fig. 8: Knowledge on how and when to access PNC services

5.0 Discussions

The study reveals that awareness of postnatal care (PNC) services among women of child-bearing age in Delta State was generally low, with fewer than half of the respondents (46.0%) reporting that they had heard about PNC services (Table 3). This is similar to findings from a study conducted in South-West, Nigeria which showed that the correct knowledge of PNC and its components was low as about 7 in 10 respondents had poor knowledge of postnatal care components and only a few participants had in-depth knowledge of PNC (Akinsola *et. al.*, 2023). This is further corroborated by Olajubu *et. al.*, who stated that despite the fact that the majority of mothers were aware of PNC services, less than one third of the respondents had good knowledge about it (Olajubu, *et. al.*, 2019). However, a marked disparity was observed between urban and rural communities, as awareness was higher among urban women (53.1%) than among rural women (38.8%). This suggests that geographical location continues to play a significant role in determining access to maternal health information and may subsequently influence the utilization of postnatal healthcare services. The higher level of awareness in urban areas may be explained by better access to healthcare facilities, higher exposure to health promotion activities, greater educational opportunities, and increased access to information through digital and social networks. Urban women are more likely to interact with healthcare professionals and benefit from multiple channels of communication, thereby enhancing their knowledge of maternal health services. In contrast, women in rural communities may experience challenges related to inadequate health infrastructure, limited health education programmes, and poorer access to information, which could account for their lower awareness levels. This finding is consistent with previous studies that reported substantial urban-rural disparities in maternal healthcare utilization across Nigeria and other low- and middle-income countries (Agus, 2018; Flanagan *et al.*, 2019; Paul & Chouhan, 2019; Ilesanmi & Akinmeyer, 2018). Another factor that may potentially explain the low level of knowledge in this study is the level of education of respondents as sociodemographic reports show respondents in the urban communities had higher level of education (Tertiary 25.9%) than their rural counterpart (Tertiary 7.9%). Previous studies have identified maternal education, healthcare exposure, and access to information as important predictors of postnatal service uptake (Eshetu *et al.*, 2019; LeFevere *et al.*, 2015; Limenih *et al.*,

2016; Titaley et al., 2009; Yeneabat, 2015). Consequently, the lower awareness levels among rural women may contribute to delayed initiation or non-utilization of postnatal services, thereby increasing their vulnerability to preventable postpartum complications.

Among respondents who had heard of PNC services, healthcare providers emerged as the predominant source of information, accounting for 77.1% of urban women and 85.1% of rural women, with an overall contribution of 80.5%. This underscores the pivotal role of healthcare workers in promoting maternal health awareness and influencing healthcare-seeking behaviours. The greater reliance on healthcare providers in rural communities may reflect the limited availability of alternative information sources within such settings. Conversely, urban women demonstrated relatively higher use of the internet (9.3%) and family or friends (13.7%) compared with rural women, among whom only 6.1% and 7.4%, respectively, obtained information through these channels. These findings align with Umar et al. (2017), who emphasized the importance of healthcare professionals in providing education on breastfeeding, newborn care, immunization, and other essential postnatal practices (Umar *et al.*, 2017).

The overall low awareness observed in the present study raises important public health concerns, given the critical role of postnatal care in preventing maternal and neonatal morbidity and mortality. The World Health Organization recommends at least four postnatal contacts, beginning within the first 24 hours after birth, to ensure adequate monitoring of mothers and newborns (WHO, 2022). Nevertheless, when women are unaware of these services or their benefits, they are less likely to seek timely care. This finding corroborates the observations of Afnan-Holmes (2015) and Konje et al. (2021), who reported that poor knowledge of the purpose and importance of postnatal care contributes significantly to low uptake of maternal health services and the persistence of adverse maternal and neonatal outcomes in developing countries (Afnan-Holmes, 2015; Konje *et al.*, 2021).

Conclusion and Recommendations

Despite the central role of healthcare providers, the findings suggest that facility-based information dissemination alone may not be sufficient to achieve widespread awareness, particularly in rural communities. The low contribution of community and media sources

indicates opportunities for strengthening health communication through community outreach programmes, traditional media, women's associations, and digital platforms. Such approaches could complement existing facility-based interventions and improve the reach of maternal health messages among underserved populations. Continuous professional development programmes that emphasize respectful maternity care, effective communication, empathy, and patient-centred practice are therefore essential for enhancing women's experiences and promoting sustained engagement with PNC services.

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Conflict of Interest:

None

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