

# Mapping Evidence on the Determinants of Postnatal Care Knowledge among Postpartum Women in sub-Saharan Africa: A Literature Review

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## Abstract

Maternal and neonatal deaths continue to pose significant public health challenges globally. In 2020, low-to-middle-income countries accounted for over 95% of all maternal deaths. Sub-Saharan Africa (SSA) is the region most severely impacted, accounting for 70% of global maternal deaths in 2020. Most of the maternal deaths and about a third of child deaths occur in the postnatal period. These unnecessary deaths can be avoided if postpartum women have adequate knowledge about postnatal care (PNC). This literature review's aim was to determine the factors that influence PNC knowledge among postpartum women in SSA. The methodology of this literature review was loosely guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) statement. Peer-reviewed articles describing determinants of PNC knowledge among postpartum women in SSA published in English between 2013 and 2023 were searched using several search engines. All the twenty-five articles used in this literature review reported on quantitative cross-sectional studies. Some of the individual-level determinants of PNC knowledge identified in this review include place of residence, age of the mother, marital status, educational status of the mother, and the socio-economic status of the woman while the health system-level determinants include distance to a healthcare facility, source of PNC information, place of delivery, and previous maternal healthcare service experience. To improve PNC knowledge of postpartum women, we recommend developing rural areas through improving transport networks, improving the socio-economic status of women, and devising strategies to increase maternal and child health services utilization.

**Keywords:** Postnatal care knowledge, determinants, sub-Saharan Africa, postpartum women, factors

## 1. Introduction

Maternal and neonatal deaths are two problems that continue to cause challenges globally. Globally, over 287,000 women died either during or shortly after giving birth in 2020. This figure equates to about 800 maternal deaths daily throughout the world. Nearly 95% of these maternal deaths took place in low-to-middle-income countries (LMICs), and the majority of them could have been avoided (World Health Organization [WHO], United Nations Children's Emergency Fund [UNICEF], United Nations Population Fund [UNFPA], World Bank Group, and United Nations Department of Economic and Social Affairs [UNDESA]/Population Division, 2023). The worst affected region is sub-Saharan Africa (SSA), which accounted for 70% of maternal deaths. Three countries that had extremely high maternal mortality ratio (MMR), that is MMR above 1000 deaths per 100,000 live births, were in SSA, and these are South Sudan, Chad, and Nigeria. With over 82,000 deaths, Nigeria had the greatest estimated number of maternal deaths in 2020, making up almost 25% of all estimated maternal deaths worldwide. However, despite its very high MMR of 545 deaths per 100,000 live births in 2020, SSA managed to significantly reduce MMR by 33% between 2000 and 2020. Almost 60% of maternal deaths in the world occur in the postpartum period. According to UNICEF (2021), the newborn mortality rate (NMR) fell from 37 deaths in 1990 to 17 deaths per

1,000 live births in 2020. Nevertheless, despite this global drop in NMR, there are considerable variations between regions and nations. In 2020, SSA reported 27 neonatal deaths per 1,000 live births, compared to fewer than 5 in Europe. About one-third of all child deaths worldwide occur within the first four weeks of life, also known as the neonatal period. It is estimated that 75% of neonatal deaths take place in the first week after birth (Beraki et al., 2020).

Postnatal care (PNC) is described as the care provided to the woman and her newborn child within 42 days of the placenta's birth. In the postnatal period, there should be at least four PNC visits. PNC offers a chance to promote and put other public health components into action (McCauley et al., 2022). Promoting exclusive breastfeeding is one of the elements of maternal PNC, along with depression screening and counseling, family planning, disseminating information on danger signs in mothers, and detecting, preventing, and treating anemia and cervical cancer. Additionally, other components of maternal PNC include testing for gestational diabetes mellitus and managing it, checking for pre-eclampsia, and identifying victims of intimate partner violence so that counseling can be offered to them (McCauley et al., 2022). The components of newborn PNC include kangaroo mother care, skin-to-skin care at birth, prevention of mother-to-child transmission of HIV, the clinical assessment of the baby, including congenital anomalies, and guidance and education on danger signs in the baby. In addition, the other components of newborn PNC include screening for, preventing, and treatment of malaria in the baby, immunizations for the baby, Vitamin K supplementation, the monitoring of the newborn baby's growth, hygienic cord care, and the care of the pre-term baby.

Despite being of utmost importance to both the mother and the baby, PNC utilization is very low globally. According to global estimates, fewer women and newborn babies receive PNC compared to antenatal care (ANC), with less than 50% of women receiving a PNC visit within 48 hours of giving birth (Langlois et al., 2015). The mother or the newborn baby may occasionally die or become disabled because of inadequate PNC (Beraki et al., 2020). According to estimates, 10-27% of all neonatal deaths might be prevented if PNC utilization rates reached 90% (McCauley et al., 2022). These unnecessary deaths and disabilities can be avoided if postpartum women have adequate knowledge about PNC. Some studies conducted in SSA have revealed insufficient PNC knowledge among postpartum women (Berhan & Gulema, 2018; Kiragu et al., 2021). Additionally, several studies have shown that women were more likely to use PNC services if they were aware of them (Amsalu et al., 2022; Golla et al., 2018; Alemu et al., 2021). This literature review, therefore, aimed to determine the factors that have an effect on postpartum women's level of PNC knowledge in SSA from previous studies. This information may be used to formulate strategies that can be used to improve PNC knowledge among the target population, possibly leading to an increase in PNC utilization.

## **2. Methodology**

### *2.1 Study Design*

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) statement served as a loose guide for this literature review.

### *2.2 Research Question and Study Eligibility*

The research question that we sought to answer in this literature review was: What are the determinants of PNC knowledge among postpartum women in SSA? The studies' eligibility was determined using the problem-interest-context (PICO) framework. The problem was defined as PNC knowledge, interest as postpartum women, and the context as SSA.

### *2.3 Inclusion Criteria*

This review included original quantitative studies published in English that reported on the determinants of PNC knowledge among postpartum women in SSA. Studies that were excluded from this review were meta-synthesis, literature reviews, qualitative studies, systematic reviews, and meta-analyses.

### *2.4 Literature Sources and Search Strategy*

We searched Google Scholar, ScienceDirect, MEDLINE, Africa Journals Online (AJOL), SCOPUS, and PubMed databases for peer-reviewed articles published between 2013 and 2023. All the databases were searched on 26 July 2023. Supplementary File 1 shows more details of the PubMed search strategy. The terms we used in searching for the relevant articles include 'PNC knowledge', 'determinants', 'sub-Saharan Africa', 'factors', 'postpartum women', 'postpartum family planning', 'postpartum contraception', 'neonatal complications', 'immunization', 'vaccination', 'postpartum danger signs', 'neonatal danger signs', 'postpartum complications', and all countries in SSA. Boolean operators were used to combine search terms. To widen search terms to encompass all variations of

the root words, wildcards, and truncation symbols were utilized. All the full-text retrieved articles were exported to ENDNOTE, which was used to find duplicates. After eliminating the duplicates, the remaining articles were assessed to see if they matched the requirements for inclusion. To determine whether an article met the inclusion criteria, two reviewers (EM and PM), assessed the titles and the abstracts of the remaining articles independently. In order to potentially find publications that might have been overlooked during the initial search, the lead author then looked through the reference lists of the remaining articles. Where the two reviewers disagreed on their assessment results, a third reviewer (GM), was requested to adjudicate.

### 2.5 Data Extraction

A data extraction form prepared by the authors was used to capture information retrieved from the articles. The information that was captured includes the name of the first author, the publication year of the article, the country in which the study was conducted, the aspect of PNC that was studied, the research method, the study design used, and the determinants of PNC knowledge revealed in each study. The findings were presented in a narrative form and in the form of tables.

### 3. Results

We retrieved 210 articles from all the databases searched. One hundred and twenty duplicate records were removed before the screening. Among the 90 articles that were screened, 50 were excluded because they were published before 2013, were qualitative studies, or were systematic reviews and meta-analyses. Only forty articles were assessed for eligibility. Fifteen articles were excluded at this stage, and we remained with 25 articles for this literature review, as illustrated in Figure 1.

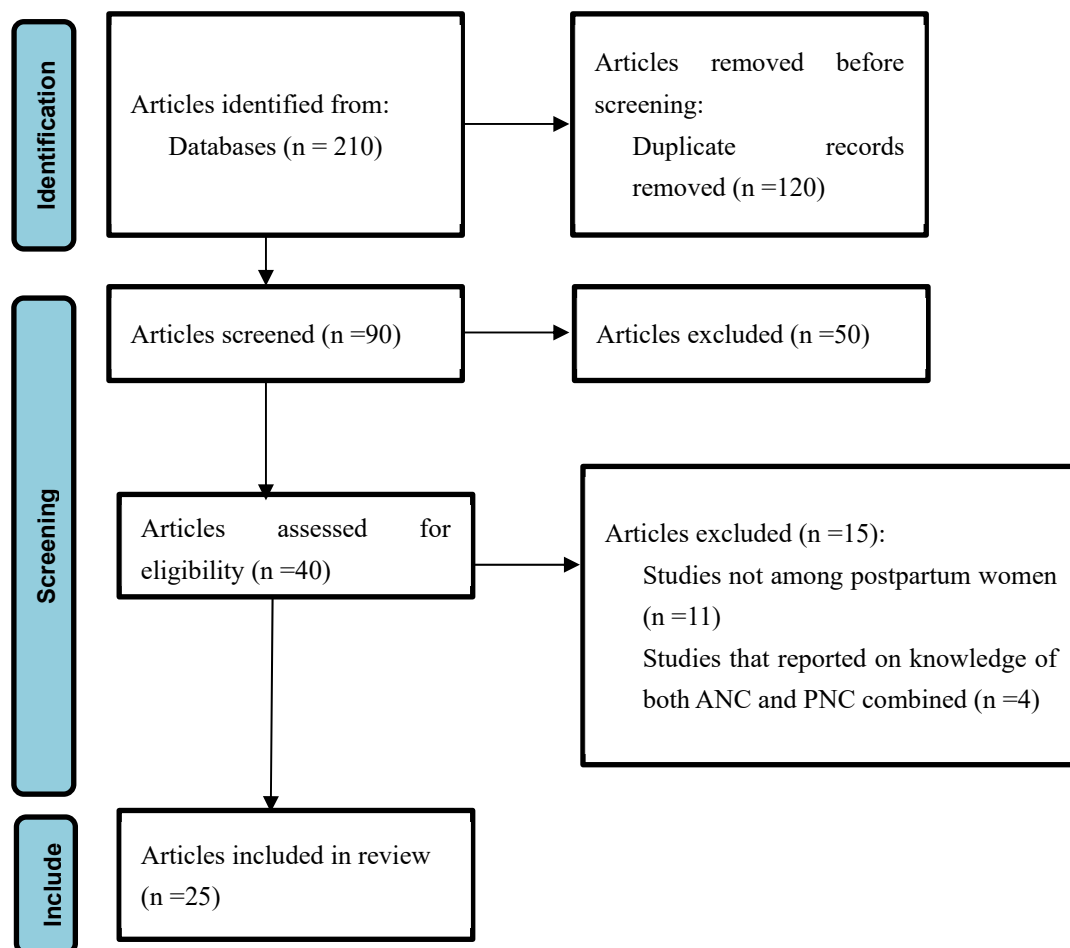


Figure 1. PRISMA Flowchart

### 3.1 Characteristics of Included Studies

After screening and assessing the eligibility of the identified articles, we remained with 25 articles for this literature review. All the articles reported on quantitative cross-sectional studies. Sixteen of the articles were from studies conducted in Ethiopia (Beraki et al., 2020; Yaya Tessema et al., 2023; Leta, 2022; Berhan & Gulema, 2018; Getachew et al., 2022; Berhea et al., 2018; Mose et al., 2021; Hassen & Lelisho, 2022; Mekonnen et al., 2021; Seifu et al., 2020; Guta et al., 2020; Kebede et al., 2020; Tesfaye et al., 2022; Yitayew et al., 2021; Bulto et al., 2019; Degefa, et al., 2019), two each in Kenya (Kiragu et al., 2021; Roney et al., 2021), Tanzania (Msiba et al., 2022; Nchimbi & Joho, 2022), and Rwanda (Batamuriza & Uwingabire, 2020; Deynu & Nutor, 2023), and one each in Sierra Leone (Kanu et al., 2014), Zambia (Chembe & Siziya, 2017), and South Sudan (Meseka et al., 2017). Eight of the articles (Mose et al., 2021; Guta et al., 2020; Kebede et al., 2020; Tesfaye et al., 2022; Yitayew et al., 2021; Bulto et al., 2019; Degefa, et al., 2019; Roney et al., 2021) reported on studies that researched on knowledge of neonatal danger signs (NDS), seven (Leta, 2022; Berhan & Gulema, 2018; Getachew et al., 2022; Berhea, et al., 2018; Msiba, et al., 2022; Batamuriza & Uwingabire, 2020; Meseka, et al., 2017) on essential newborn care (ENC), four (Beraki et al., 2020; Kiragu et al., 2021; Kanu et al., 2014; Chembe & Siziya, 2017) on PNC, two on family planning (Mekonnen et al., 2021; Seifu et al., 2020), and one each on postpartum complications (Yaya Tessema, et al., 2023), maternal healthcare (Hassen & Lelisho, 2022), puerperal sepsis, and mother to child transmission of HIV. More details are presented in Table 1.

### 3.2 Review Findings

The findings of this literature review are presented narratively below. More details are presented in Supplementary File 2 and Figure 2.

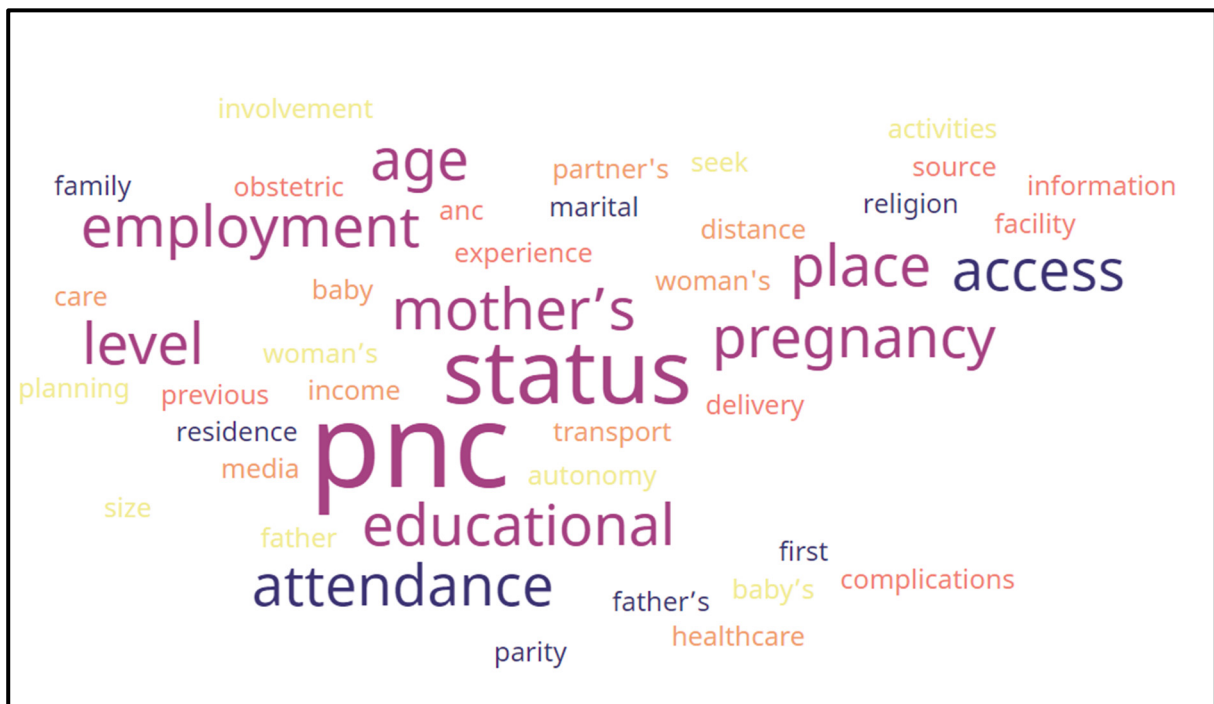


Figure 2. Determinants of PNC

Table 1. Characteristics of included studies

Authors, publication year	Reference	Country where study was conducted	Aspect of Postnatal care (PNC) studied	Research method	Study design
Beraki GG, Tesfamariam EH, Gebremichael A, Yohannes B, Haile K, Tewelde S, et al., 2020.		Ethiopia	PNC	Quantitative	Cross-sectional study
Yaya Tessema G, Ayele G, Fikadu Tessema K, Gendisha Ukke G, Godana Boynito W., 2023.		Ethiopia	Postpartum complications	Quantitative	Cross-sectional study
Leta M., 2022.		Ethiopia	Essential Newborn Care (ENC)	Quantitative	Cross-sectional study
Berhan D, Gulema H., 2018.		Ethiopia	ENC	Quantitative	Cross-sectional study
Getachew T, Dheresa M, Eyeberu A, Balis B, Yadeta TA., 2022.		Ethiopia	ENC	Quantitative	Cross-sectional study
Berhea TA, Belachew AB, Abreha GF., 2018.		Ethiopia	ENC	Quantitative	Cross-sectional study
Mose A, Abebe H, Shitu S, Shimels H., 2021.		Ethiopia	Neonatal danger signs (NDS)	Quantitative	Cross-sectional study
Hassen SS, Lelisho ME.,2022.		Ethiopia	Maternal healthcare	Quantitative	Cross-sectional study
Mekonnen BD, Gelagay AA, Lakew AM., 2021.		Ethiopia	Family planning	Quantitative	Cross-sectional study
Seifu B, Yilma D, Daba W., 2020.		Ethiopia	Family Planning	Quantitative	Cross-sectional study
Guta A, Sema A, Amsalu B, Sintayehu Y., 2020.		Ethiopia	NDS	Quantitative	Cross-sectional study
Kebede AA, Cherkos EA, Taye EB., 2020.		Ethiopia	NDS	Quantitative	Cross-sectional study
Tesfaye DG, Koboto DD, Gezahegn H., 2022.		Ethiopia	NDS	Quantitative	Cross-sectional study

Yitayew DG, Tadele AS, Yalew ZM, Mamuye SA, Jember DA., 2021.	Ethiopia	NDS	Quantitative	Cross-sectional study
Bulto GA, Fekene DB, Moti BE, Demissie GA, Daka KB., 2019.	Ethiopia	NDS	Quantitative	Cross-sectional study
Degefa N, Diriba K, Girma T, Kebede A, Senbeto A, Eshetu E, et al., 2019.	Ethiopia	NDS	Quantitative	Cross-sectional study
Kiragu C, Osero JS, Wanyoro AK., 2021.	Kenya	PNC	Quantitative	Cross-sectional study
Roney E, Morgan C, Gatungu D, Mwaura P, Mwambeo H, Natecho A, et al., 2021.	Kenya	NDS	Quantitative	Cross-sectional study
Msiba GH, Assenga EN, Ndossa A, Mchomvu F, Zuechner A., 2022.	Tanzania	ENC	Quantitative	Cross-sectional study
Nchimbi DB, Joho AA., 2022.	Tanzania	Puerperal sepsis	Quantitative	Cross-sectional study
Batamuriza M, Uwingabire E, Oluyinka A., 2020.	Rwanda	ENC	Quantitative	Cross-sectional study
Deynu M, Nutor JJ., 2023.	Rwanda	Mother to child transmission of HIV	Quantitative	Cross-sectional study
Kanu JS, Tang Y, Liu Y., 2014.	Sierra Leone	PNC	Quantitative	Cross-sectional study
Chembe BC, Siziya S., 2017.	Zambia	PNC	Quantitative	Cross-sectional study
Meseka LA, Mungai LW, Musoke R., 2017.	South Sudan	ENC	Quantitative	Cross-sectional study

### 3.2.1 Individual-Level Determinants of PNC Knowledge

All the articles included in this review reported on the individual-level determinants of PNC knowledge among postpartum women. The individual-level determinants of PNC knowledge include place of residence (Beraki et al., 2020; Mose et al., 2021; Mekonnen et al., 2021; Yitayew, et al., 2021; Deynu & Nutor, 2023), age of the mother (Beraki et al., 2020; Batamuriza & Uwingabire, 2020), age at first pregnancy, marital status (Beraki et al., 2020; Deynu & Nutor, 2023), educational level of the mother (Beraki et al., 2020; Yaya Tessema et al., 2023; Leta, 2022; Getachew et al., 2022; Berhea et al., 2018; Hassen & Lelisho, 2022; Seifu et al., 2020; Yitayew et al., 2021; Bulto et al., 2019; Degefa et al., 2019; Roney et al., 2021; Nchimbi & Joho, 2022; Kanu et al., 2014; Chembe & Siziya, 2017), educational level of the father (Hassen & Lelisho, 2022; Yitayew et al., 2021), and religion of the mother (Getachew et al., 2022). All articles that reported on place of residence as a determinant of PNC knowledge (Beraki et al., 2020; Mose et al., 2021; Mekonnen et al., 2021; Yitayew et al., 2021; Deynu & Nutor, 2023) revealed that those who stayed in urban areas were more likely to have good PNC knowledge compared to those who stayed in rural areas. Two articles (Beraki et al., 2020; Batamuriza & Uwingabire, 2020) revealed that an increase in maternal age was associated with an improvement in PNC knowledge among them. One study revealed that women who were older than 19 years at first pregnancy were more likely to have good PNC knowledge compared to those who were 19 years old and younger. Two studies that reported on marital status (Beraki et al., 2020; Deynu & Nutor, 2023) revealed that women who were married were more likely to have good PNC knowledge compared to those who were not married. All the studies that reported on the educational level of the mother (Beraki et al., 2020; Yaya Tessema et al., 2023; Leta, 2022; Getachew et al., 2022; Berhea et al., 2018; Hassen & Lelisho, 2022; Seifu et al., 2020; Yitayew et al., 2021; Bulto et al., 2019; Degefa et al., 2019; Roney et al., 2021; Nchimbi & Joho, 2022; Kanu et al., 2014; Chembe & Siziya, 2017) revealed that mothers who had a higher educational level were more likely to have good PNC knowledge compared to those who had a lower educational level. The two studies that reported on the association between the educational level of the father and the mother's PNC knowledge (Hassen & Lelisho, 2022; Yitayew et al., 2021), revealed that mothers who had partners with a higher educational level were more likely to have good PNC knowledge compared to those whose partners had a lower educational level. Only one study (Getachew et al., 2022) that reported on religion as a determinant of PNC knowledge among postpartum women revealed that Muslims were more likely to have good PNC knowledge compared to Christians.

The other determinants of PNC knowledge reported in this review include the number of previous pregnancies (Beraki et al., 2020; Yaya Tessema, et al., 2023; Leta, 2022; Berhan & Gulema, 2018; Mose et al., 2021; Kebede et al., 2020; Yitayew et al., 2021; Roney et al., 2021; Kanu et al., 2014; Meseka et al., 2017), whether the pregnancy was planned or not (Hassen & Lelisho, 2022; Kebede et al., 2020), family size (Tesfaye et al., 2022), whether the woman stayed with the father of the baby (Tesfaye et al., 2022; Nchimbi & Joho, 2022), involvement of the father of the baby in PNC activities (Kebede et al., 2020; Roney, et al., 2021), and whether the woman had self-decision making power to seek care for herself and her baby (Yaya Tessema et al., 2023). All the studies that reported on the number of pregnancies as a determinant of PNC knowledge (Beraki et al., 2020; Yaya Tessema et al., 2023; Leta, 2022; Berhan & Gulema, 2018; Mose et al., 2021; Kebede et al., 2020; Yitayew et al., 2021; Roney et al., 2021; Kanu et al., 2014) revealed that women who had more children were more likely to have PNC knowledge compared to those who had fewer, except for one (Meseka et al., 2017) that revealed that primiparous women were more likely to have good PNC knowledge compared to multiparous women. The two studies that reported on the influence of pregnancy planning on PNC knowledge (Hassen & Lelisho, 2022; Kebede et al., 2020) revealed that women who had planned their pregnancies were more likely to have good PNC knowledge compared to those whose pregnancies were not planned. One study (Tesfaye et al., 2022) that reported on the effect of family size on PNC knowledge revealed that women who were from smaller families were more likely to have good PNC knowledge compared to those who were from larger families. Two studies that reported on the influence of staying with the father of the child on the woman's PNC knowledge (Tesfaye et al., 2022; Nchimbi & Joho, 2022) revealed that women who stayed with their partners were more likely to have good PNC knowledge compared to those who did not stay with their partners. In addition, two studies (Kebede et al., 2020; Roney, et al., 2021) reported that women whose partners were involved in PNC activities were more likely to have good PNC knowledge compared to those whose partners were not involved. One study (Yaya Tessema et al., 2023) reported that women who had self-decision-making power to seek care for themselves and their babies were more likely to have good PNC knowledge compared to those who did not.

The woman's employment status (Guta et al., 2020; Kiragu, et al., 2021), the employment status of the father (Yitayew et al., 2021), the woman's income (Leta, 2022; Hassen & Lelisho, 2022; Yitayew et al., 2021; Kiragu et al., 2021; Roney et al., 2021; Deynu & Nutor, 2023), the woman's easy access to transport (Hassen & Lelisho, 2022; Kiragu et al., 2021), and the woman's access to media (Hassen & Lelisho, 2022; Kebede et al., 2020; Yitayew,

et al., 2021; Deynu & Nutor, 2023) were also identified as individual-level determinants of PNC knowledge among postpartum women. Two studies (Guta et al., 2020; Kiragu et al., 2021) reported that women who were employed were more likely to have good PNC knowledge compared to those who were unemployed while one study (Yitayew et al., 2021) also reported that women whose partners were employed were more likely to have good PNC knowledge compared to those whose partners were not employed. Several studies (Leta, 2022; Hassen & Lelisho, 2022; Yitayew et al., 2021; Kiragu et al., 2021; Roney et al., 2021) that reported on the association between a woman's income and her PNC knowledge revealed that women who had a higher income were more likely to have good PNC knowledge compared to those who had a lower income, except for one that reported that women who had a lower income were more likely to have good PNC knowledge. Additionally, two studies (Hassen & Lelisho, 2022; Kiragu et al., 2021) reported that women who had easy access to transport were more likely to have good PNC knowledge compared to those who did not have easy access to transport. Finally, women who had access to media were more likely to have good PNC knowledge compared to those who did not have access (Hassen & Lelisho, 2022; Kebede et al., 2020; Yitayew et al., 2021; Deynu & Nutor, 2023).

### 3.2.2 Health System-Level Determinants of PNC Knowledge

Three studies (Beraki et al., 2020; Kanu et al., 2014; Chembe & Siziya, 2017) in this review did not report on the health system-level determinants of PNC knowledge among postpartum women. The health system-level determinants of PNC knowledge reported include distance to a healthcare facility (Berhea et al., 2018; Kiragu et al., 2021), source of PNC information (Nchimbi & Joho, 2022; Meseka et al., 2017), place of delivery (Getachew et al., 2022; Mekonnen et al., 2021; Yitayew et al., 2021; Roney et al., 2021), and previous PNC experience (Mekonnen et al., 2021; Seifu et al., 2020; Guta et al., 2020; Kebede et al., 2020; Yitayew et al., 2021; Bulto et al., 2019). In addition, the other determinants include ANC attendance (Yaya Tessema et al., 2023; Getachew et al., 2022; Mose et al., 2021; Hassen & Lelisho, 2022; Seifu et al., 2020; Guta et al., 2020; Tesfaye et al., 2022; Roney et al., 2021; Leta, 2022; Berhan & Gulema, 2018), whether the women attended PNC (Tesfaye et al., 2022; Yitayew et al., 2021; Bulto et al., 2019; Degefa et al., 2019), whether women received education and counseling about PNC services during ANC or PNC attendance (Getachew et al., 2022; Berhea et al., 2018; Mose et al., 2021; Mekonnen et al., 2021; Guta et al., 2020; Yitayew et al., 2021; Bulto et al., 2019; Msiba et al., 2022; Batamuriza & Uwingabire, 2020; Deynu & Nutor, 2023; Meseka et al., 2017), and whether the women had obstetric complications (Yitayew et al., 2021). The two studies (Berhea et al., 2018; Kiragu et al., 2021) that reported on the association between distance to a healthcare facility and women's PNC knowledge revealed that women who stayed closer to a healthcare facility were more likely to have good PNC knowledge compared to those who stay far away. Two studies (Nchimbi & Joho, 2022; Meseka et al., 2017), revealed that women who received PNC information from healthcare workers were more likely to have good PNC knowledge compared to those who received the information from mass media. Four studies (Getachew et al., 2022; Mekonnen et al., 2021; Yitayew et al., 2021; Roney et al., 2021) that reported on the association between place of delivery and women's PNC knowledge revealed that those who delivered at a healthcare facility were more likely to have good PNC knowledge compared to those who delivered at home. All the studies that reported on the association between previous PNC experience and PNC knowledge (Mekonnen et al., 2021; Seifu et al., 2020; Guta et al., 2020; Kebede et al., 2020; Yitayew et al., 2021; Bulto et al., 2019) revealed that women who had previous PNC experience were more likely to have good PNC knowledge compared to those who did not have experience. While most studies (Yaya Tessema et al., 2023; Getachew et al., 2022; Mose et al., 2021; Hassen & Lelisho, 2022; Seifu et al., 2020; Guta et al., 2020; Tesfaye et al., 2022; Roney et al., 2021) that reported on the association between ANC attendance and PNC knowledge revealed that women who attended four or more ANC visits were more likely to have good PNC knowledge compared to those who attended less, two studies (Leta, 2022; Berhan & Gulema, 2018) revealed that those who attended fewer visits were more likely to have good PNC knowledge compared to those who received more. All the studies (Tesfaye et al., 2022; Yitayew et al., 2021; Bulto et al., 2019; Degefa et al., 2019) that reported on the association between PNC attendance and PNC knowledge revealed that women who attended PNC were more likely to have good PNC knowledge compared to those who did not. Additionally, all the studies (Getachew et al., 2022; Berhea et al., 2018; Mose et al., 2021; Mekonnen et al., 2021; Guta et al., 2020; Yitayew et al., 2021; Bulto et al., 2019; Msiba et al., 2022; Batamuriza & Uwingabire, 2020; Deynu & Nutor, 2023; Meseka et al., 2017) that reported on the association between PNC education and counseling and PNC knowledge revealed that women who received PNC education and counseling were more likely to have good PNC knowledge compared to those who did not. Finally, women who experienced obstetric complications were more likely to have good PNC knowledge compared to those who did not experience obstetric complications (Yitayew et al., 2021).

## 4. Discussion

This review revealed that individual-level determinants of PNC knowledge among postpartum women include the



place of residence, the mother's age, and the mother's education level. These findings are consistent with a Pakistani study, which revealed that there was a statistically significant association between newborn care knowledge and place of residence, the mother's age, and the mother's education level (Memon et al., 2019). The study revealed that women who stayed in urban areas had a higher likelihood of having good knowledge than those who stayed in rural areas. It also revealed that women who had a higher level of education had a higher likelihood of having good knowledge than those who had a lower educational level. In addition, the study revealed that women who were older than 19 years were more likely to have good knowledge compared to those who were younger (Memon et al., 2019). Women who stay in urban areas are more likely to have good knowledge of PNC because of their proximity to healthcare facilities. Due to this close proximity, urban residents are more likely to visit healthcare facilities in search of medical care, where they are more likely to learn about PNC. Additionally, urban residents have easier access to the mass media, which is usually utilized to inform women about PNC (Samuel et al., 2021). We would also expect women who are better educated to be more likely to have good PNC knowledge compared to those who are less educated because they might have learned about PNC at school or tertiary institutions.

The other individual-level determinants of PNC knowledge reported in this review include the number of previous pregnancies, whether the pregnancy was planned or not, whether the woman stayed with the father of the baby, involvement of the baby's father in PNC activities, and whether the woman had the autonomy to seek care for herself and her baby. The findings of this review concur with those of a study conducted in Ethiopia, which revealed that women's autonomy was positively associated with maternal healthcare utilization (Tiruneh et al., 2017). It is more likely that women who have had prior pregnancies have heard about PNC during ANC and/or PNC attendance. In addition, it is plausible that women who have planned pregnancies are more likely to seek PNC information compared to those who would not have planned their pregnancies. Women who are autonomous have a higher likelihood of utilizing maternal healthcare services, which in turn may lead to increased knowledge of PNC through education and counseling by healthcare workers. The involvement of partners in PNC activities may improve PNC knowledge since they may share PNC knowledge with their partners. In this study, women who stayed with the baby's father had a higher likelihood of having good PNC knowledge than those who did not. This may be explained by the fact that these partners may help the women with resources to access healthcare services, and it is through these interactions with the healthcare system that they obtain PNC information.

The woman's employment status, the employment status of the father, the woman's income, the woman's easy access to transport, and the woman's access to media, were also identified as individual-level determinants of PNC knowledge among postpartum women. The results of this review are consistent with those of studies carried out in Bangladesh, which revealed that the employment status of the woman and her income were significantly associated with PNC knowledge (Majumder et al., 2018; Timilsina & Dhakal, 2015). The studies revealed that employed women had a higher likelihood of having good PNC knowledge than the unemployed. Additionally, women who had a higher income had a higher likelihood of having good PNC knowledge than those who had a lower income (Majumder et al., 2018; Timilsina & Dhakal, 2015). These results make sense because women who are employed, women whose partners are employed, and women who have a higher income are more likely to attend ANC and PNC visits where they can receive information about PNC since they can afford to pay for the transport and the services.

The health system-level determinants of PNC knowledge reported include distance to the healthcare facility, source of PNC information, place of delivery, previous interaction with the healthcare system, and whether the women had obstetric complications. The findings of this review can be explained by the findings of a Malawian study, which revealed that a short distance to a healthcare facility was associated with an increase in the utilization of PNC services (Kim et al., 2019). During the utilization of maternal healthcare services such as ANC, delivery, and PNC, women are likely to receive education about PNC, which will improve their PNC knowledge. The finding of this review which revealed that women who received PNC information from healthcare workers had a higher likelihood of having good PNC knowledge than those who received it through mass media may be a result of less accurate PNC information being provided through mass media compared to that from healthcare workers. Misinformation in mass media is not only a challenge in maternal and child health, but it is also observed in other areas of health. COVID-19 misinformation was a common challenge experienced during the initial stages of the COVID-19 pandemic (Anwar et al., 2020).

After considering the findings of this review, we came up with several recommendations. One of the recommendations is to develop transport networks in rural areas in the region so that there is easy accessibility to healthcare facilities (Varela et al., 2019). Countries should also make use of community health workers to educate women about PNC, after adequate training, especially in hard-to-reach areas (Wilford et al., 2018). There should

be an improvement in the socio-economic status of women by keeping them in school by providing affordable education up to secondary education. Women should also be empowered through vocational training and providing them with financial assistance to start income-generating projects. Such training and projects will ensure that they have adequate income that will allow them to utilize healthcare services where they can learn more about PNC. Empowered women may be able to have autonomy over healthcare-seeking behavior and better access to media. Strategies to increase ANC attendance and healthcare facility delivery such as providing the services free of charge or at an affordable cost should be promoted, as the women are more likely to receive PNC information during these interactions with healthcare workers (Dzakpasu et al., 2014). In addition, health information provided through mass media should be assessed for accuracy before it is disseminated to ensure that women receive accurate PNC information. There is also a need for countries in the region to conduct research on how the provision of PNC knowledge will influence PNC utilization among women in the region.

This review had several strengths. One strength is that several databases were used to find articles on the subjects. The other strength is that a search criterion was agreed upon before the commencement of the study, which makes the study reproducible. Additionally, two reviewers assessed the articles for eligibility, which improved the accuracy of the search results. However, there might have been a language bias because only English articles were retrieved.

## 5. Conclusion

Maternal and neonatal deaths remain unacceptably high globally. Maternal and neonatal mortality are highest in countries in SSA. Most of the maternal deaths occur in the postpartum period while about a third of the child mortality occurs in the neonatal period. These deaths can be avoided if women have good PNC knowledge, as this may improve PNC utilization. Several individual-level and health system-level factors influence PNC knowledge among postpartum women in SSA. To improve PNC knowledge of postpartum women, we recommend developing rural areas, improving the socio-economic status of women, devising strategies to increase maternal and child health services utilization, and assessing the accuracy of PNC information that has to be disseminated through mass media.

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## Authors' Contributions

Enos Moyo – Conceptualization; Data extraction and synthesis; Writing original draft

Perseverance Moyo –Data extraction and synthesis; Writing review and editing

Tafadzwa Dzinamarira –Writing review and editing

Grant Murewanhema – Writing review and editing

Andrew Ross – Supervision; Writing review and editing

## Informed Consent

Not applicable.

## Provenance and Peer Review

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## Data Availability Statement

There is no dataset for this study.

## Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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