TANZANIA MEDICAL JOURNAL
Ngowi *et al. TMJ V 34 No. 2. November 2023*

Original Research Open Access

Determinants for Postnatal Care Utilization among Mothers in Dodoma Region, Tanzania: A Community-Based Cross-Sectional Study

Agatha F. Ngowi[1]*, Neema Msemwa[1]

[1]The University of Dodoma, Department of Public Health & Community Nursing, Dodoma Tanzania

***Corresponding author:**
Agatha F. Ngowi
The University of Dodoma
P.O. Box 395
Dodoma, Tanzania
Email: agywin2009@yahoo.com

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Abstract

Background

Postnatal care (PNC) is concerned with preventive care, practices, and assessments designed to identify and manage maternal and newborn complications during the first six weeks after birth. It has been shown that proper management of life-threatening conditions soon after childbirth can prevent maternal and prenatal mortality and morbidity.

Objective

The objective of this study was to assess the determinants for postnatal care utilization among mothers in Dodoma Region, Tanzania.

Methods

A cross-sectional study was conducted using a structured questionnaire from January to March 2021. A total of 420 postnatal mothers who were in the 7th to 12th weeks after childbirth were included in the study. Bivariate and multivariate logistic regression analysis was performed using SPSS version 26.0. An adjusted odds ratio with a 95% confidence interval and p-value less than 0.05 was applied**.**

Results

Only 136 (32.2%) attended four postnatal care visits during their postnatal period as recommended. Regarding the timing of PNC visits, results showed that the majority of 330 (78.6%) participants received PNC service within the first 24 hours. However, 64 (15.2%) of participants attended PNC visits between 48 to 72 hours, while 7 (1.7%) between 7 - 14 days and 19 (4.5%) did not attend any PNC. After adjusting for the potential confounder in multivariate logistic regression, education level, place of residence, and mode of delivery remained the strong predictors of adequate PNC service uptake among study participants. Regarding educational level, participants with secondary education and above were 4 times more likely to use adequate PNC services compared to those with informal education (AOR=4.456; 95%CI =1.050-18.907; P=0.043**)**. Participants residing in urban areas were almost 2 times more likely to utilize adequate PNC services compared to those living in a rural area (AOR=1.900;95%CI = 1.177- 3.067; P=0.009). Likewise, participants who delivered through C/Section were 30 times more likely to utilize the PNC services adequately compared to those with normal delivery AOR=29.515; 95%CI = 10.775- 80.844; P=0.001)**.**

Conclusion and recommendations

The finding from this study indicated that the uptake of four postnatal care visits among mothers in the Dodoma region was low. Educational levels of a mother, place of residence, and mode of delivery were significant determinants for adequate utilization of PNC services. Considering this, it is necessary to create awareness of adequate utilization of PNC services, especially among women with low education and women in rural areas.

Keywords: *Postnatal Care, Determinants, Postnatal Mothers, Dodoma,Tanzania.*

Introduction

According to World Health Organization (WHO), PNC is concerned with preventive care, practices, and assessments designed to identify and manage maternal and newborn complications during the first six weeks after birth (1). This period needs a close follow-up for both mother and newborn baby to prevent maternal and neonatal deaths which mostly occur within this period (2). The best practices of PNC services according to WHO includes: (i) provision of postnatal care in the first 24 hours to all mothers and babies regardless of the place of delivery, (ii) ascertaining women without complications and their newborn babies stay at a health facility at least 24 hours before they are discharged, (iii) ensuring all mothers and newborn babies attend at least four postnatal checkups throughout postpartum period (1). Instantly after the third stage of labor, skilled healthcare providers need to ensure that mothers are checked for vaginal blood loss, blood pressure, and temperature which are part of PNC services (3).

Likewise, PNC for all newborn babies should include immediate and exclusive breastfeeding, warming of the infant, hygienic care of the umbilical cord, and timely recognition of danger signs with referral and treatment (3). Recognizing the role of appropriate PNC uptake during this critical period, WHO recommended four PNC visits to mothers and newborns to improve their survival as follows; within the first 24 hours from birth, on day three (48–72 hours), between days 7–14 after birth, and at 6 weeks after birth (4).

Several scholars reported that proper management of life-threatening conditions soon after delivery has been shown to prevent maternal and prenatal morbidity and mortality (5-6). However, only 37% of mothers in low and middle-income countries (7) complied with WHO recommendations for the utilization of four PNC visits within 42 days post-delivery. In sub-Saharan Africa, only 13% of mothers were able to achieve complete postnatal care in compliance with WHO recommendations (8). The previous study has indicated low utilization of PNC services among women in Tanzania. A study conducted in Bahi district, Dodoma showed that only 24% of mothers attended three PNC visits within 42 days post-delivery (9). However, in recent years there had been a deliberate government effort to ensure there are improved maternal healthcare services including free-of-charge PNC services. Again, there have been massive campaigns by different stakeholders to raise public awareness of the importance of utilizing maternity healthcare services. This effort might have changed the recent tendency for utilization of maternal health care services including PNC services resulting in limited information on the current status of utilization of PNC services and its determinants among women in Tanzania.

Moreover, a previous study indicated that utilization of maternal and newborn health services during the postpartum period was associated with factors such as maternal age, educational level, occupation, mode of delivery, awareness about obstetric-related danger signs, and PNC services (10). The researcher also reported that PNC utilization was associated with parity, place of residence, and distance to the health facilities (9; 10). However; these factors are not the same across different areas and cultures within a society. Therefore, this study aimed to assess the determinants for postnatal care utilization among mothers in the Dodoma region of Tanzania.

Methods

Study Design and Population

This study was a community-based cross-sectional survey conducted from January to March 2021 using a quantitative approach. Eligible participants were all postnatal mothers within seven to twelve weeks post-delivery with good health conditions and were willing to participate in the study. However, those mothers who were sick or those with mental health conditions during the time of the interview were excluded from the study.

Study Area

The study was conducted in the Dodoma region, the capital city of Tanzania. Dodoma region is composed of seven districts namely: Chamwino, Bahi, Kondoa, Mpwapwa, Kongwa, Chemba, and Dodoma Municipal. However, this study was conducted in three districts (Chamwino, Mpwapwa, and Dodoma municipality) to represent other districts in the region. The region was selected because was among the regions in Tanzania with low uptake of PNC services utilization. According to 2015/16 TDHS-MIS, 52.2% of postnatal women missed PNC services (National Bureau of Statistics, 2016). The selected districts have a total of 235 health facilities (11 hospitals, 21 health centers, and 203 dispensaries). Maternal health care services including PNC are provided daily in all health care facilities except in remote areas with no health facilities where the outreach programs are carried out once monthly. According to information obtained from respective District Reproductive and Child Health Coordinators (DRCHcos) for each district, there were a total of 97,710, 93,080, and 146, 862 women of childbearing age (WCBA) for Chamwino, Mpwapwa, and Dodoma Municipal respectively.

Sample Size and Sampling Procedures

The sample size (n) for this study was calculated using the Leslie Kish formula $n=\frac{z^2 P(1-P)}{e^2}$

based on the following assumptions; n sample size, z =1.96, e = 5%, and p = 46% (proportion of women using postnatal care services in Dodoma region (11) and 10% non-response rate were employed to compute the required minimum sample size of 420 respondents.

Multistage sampling technique was used to obtain study participants. In the initial stage, three representative districts (Mpwapwa, chamwino, and Dodoma municipal) out of seven were selected by a simple random method using a lottery method with a replacement approach. The same procedure continued until three districts were selected. In the second stage, simple random sampling was used to select six wards (2 from each district) out of 110 wards from the three selected districts by using a table of random numbers. A similar sampling technique was applied to select three villages/streets from each selected ward making a total of 18 villages/streets. From each 18 selected villages/ streets, all households with post-delivery mothers within 7-12 weeks were eligible for the study. At the household level, participants were selected randomly with the assistance of community health workers (CHW). Within the households, only one participant was selected. In the households where there was more than one mother qualified to participate in the study, the one who has the youngest child was selected hoping that she could remember most of the events that occurred during the postnatal period.

To obtain the number of participants per each selected district, proportionate sampling using the formula ni = (Ni/Nt)*n, (12) was used , where t ni = the number of participants needed from each district, Ni = the total number of women of childbearing age from each district, Nt = the total number of women of childbearing age in all selected districts, and n= the estimated sample size. Consequently, 121 participants out of 97,710 were selected from the Chamwino district, 116 out of 93,080 from the Mpwapwa district, and 183 out of 146,862 from Dodoma Municipal.

Data Collection Tools and Procedures

Data were collected using structured questionnaires through face-to-face interviews. The tool was developed by the researchers using the WHO postnatal guideline (1). The data collection tool was prepared in English and translated into Kiswahili. The Kiswahili expert was consulted for the translation of the tool. To ensure validity, the tool was pretested in 38 post-delivery mothers in one of the villages from Dodoma municipality one week before the actual data collection process to assess whether the tool was valid for obtaining the information needed.

The results of the pretest helped to review, refine and modify the tool, and a village used for pre-testing was not included in the study. Data were collected by two research assistants (nurses) who were trained for one day on the purpose of the study, study tools, data collection process and recruitment procedures. However, the principal investigator supervised the whole process of data collection including the recruitment procedure. Every day after data collection, questionnaires were reviewed and checked for completeness by the research team, and the necessary feedback was offered.

Data Process and Analysis

The data collected from the field were coded, cleaned, and entered into SPSS version 26. Descriptive statistics were used for the social demographic data and the uptake of post-natal care services. Tables and graphs were also used for data presentation. Bivariate and multivariate logistic regression analysis was conducted to determine associates of adequate postnatal care services utilization. All independent variables with p-value ≤ 0.05 at binary logistic regression models were included in the multivariable logistic regression model to evaluate the predictors of PNC utilization among postnatal mothers. All probabilities were two-tailed and independent variables with *p* values <.05 were regarded as statistically significant.

Ethical considerations

Ethical clearance was obtained from the University of Dodoma, Institutional Research Review Board (IRB) with Ref. NO.MA.84/261/02/214. Permission was also sought and obtained from Regional Administrative Secretary (RAS) for Dodoma region with Ref.122/467/01F/175. Permission letters obtained were then presented to the local leaders who granted permission to conduct the study in their respective areas. Verbal or written informed consent was obtained from each participant before participating in the study. However, if a mother or a newborn baby was found to be ill research assistant escorted her to the nearest facilities for curative services.

Results

Socio-demographic characteristics of study participants

A total of 420 participants were involved in this study with a response rate of 100%. The majority 228 (54.3%) of participants were aged 20 to 29, 363 (86.4%), were married and 288 (68.6%) had a primary education level. Regarding the place of residence, the majority (56.4%) were from a rural area but district-wise, the majority (43.6%) were from Dodoma Municipality. Concerning employment status, the majority 283 (67.4%) of participants were small-scale farmers and 346 (82.4%) incurred no cost to reach a health facility (Table 1).

Table 1: Socio-demographic characteristics of participants (N=420)

Variables	N	%
Age (years)		
18- 19	23	5.5
20 to 29	228	54.3
≥30	169	40.2
Marital status		
Never married	45	10.7
Married	363	86.4
Separated/Divorced	12	2.9
Place of residence		
Rural	237	56.4
Urban	183	43.6
Place of residence by districts		
Chamwino	121	28.8
Mpwapwa	116	27.6
Dodoma Municipality	183	43.6
Education level		
Informal	28	6.7
Primary	288	68.6
Secondary or higher	104	24.7
Employment status of the mother		
Employed	36	8.6
Self-employed	101	24.0
Small scale farmers	283	67.4
Employment status of husband		
Not married/ Separated/Divorced	57	13.6
Employed	45	10.7
Self-employed	168	40
Small scale farmers	150	35.7
Estimated time to reach a health facility		
>30 min	149	35.5
30 min to 1 hour	241	57.4
≥2 hour	30	7.1
Encored cost to reach the health facility		
No cost	346	82.4
500 to 2000 TZS	71	16.9
>2000 TZS	3	0.7

Prevalence of Postnatal Care Services Utilization

Results from this study showed that the majority 401 (95.6%) of participants attended PNC visits at least once while 19 (4.5%) did not attend PNC visits during their postnatal period. Results also showed that only 136 (32.2%) participants completed the recommended four

PNC visits (adequate PNC utilization). Regarding the timing of initiation of the first PNC visit, the majority 330 (78.6%) received PNC services within the first 24 hours, 64 (15.2%) between 48 to 72 hours, 7 (1.7%) between 7 - 14 days while no participant-initiated PNC at six weeks (Figure 1).

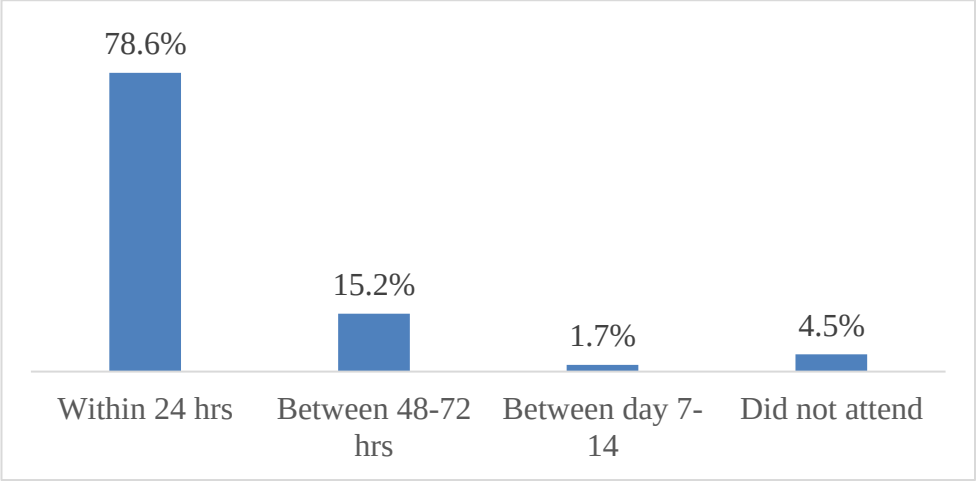

Figure 1. Timing of postnatal care services

Source of Information for PNC Services

Regarding the source of information for PNC services, this study revealed that 156 (37.1%) of participants received information from healthcare providers, 67 (16%) from friends, 37 (8.8%) from family members, 13 (3.1%) from a magazine while 147 (35%) reported that they didn't receive any information on postnatal care services (Figure 2).

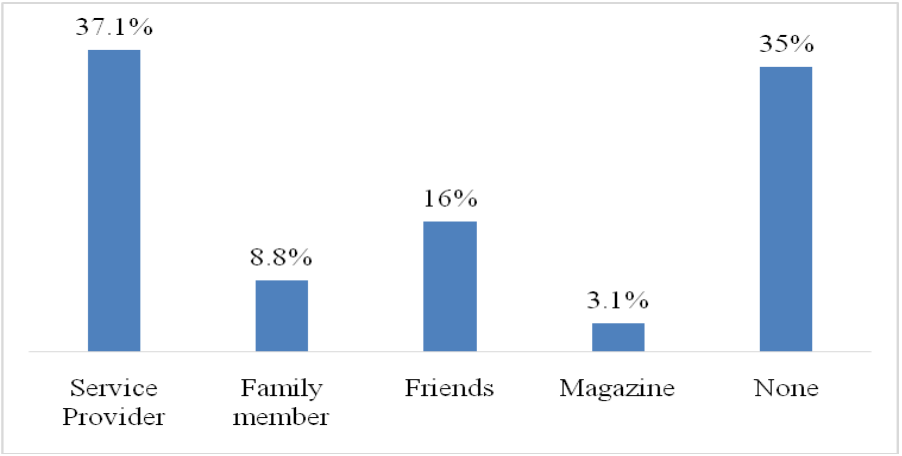

Figure 2. Source of information regarding PNC services

Determinants of postnatal care services utilization

Bivariate and multivariate logistic regression analysis was performed to determine the association of adequate postnatal care services. The results of bivariate logistic regression

analysis showed that education level, place of residence, mode of delivery, Place of delivery, and parity were significantly associated with adequate uptake of PNC services during the postnatal period compared with their respective reference category (P <0.05) (Table 2).

After adjusting for the potential confounder, education level, place of residence, and mode of delivery remained the strong predictors of adequate PNC service uptake among study participants. Regarding educational level, results showed that participants with secondary education and above were 4 times more likely to use adequate PNC services compared to those with informal education (AOR=4.456;95%CI =1.050-18.907; P=0.043). Concerning the place of residence, participants residing in urban areas were almost 2 times more likely to utilize adequate PNC services compared to those living in rural areas (AOR=1.900;95%CI = 1.177- 3.067; P=0.009). Likewise, participants who delivered through C/Section were 30 times more likely to utilize the PNC services adequately compared to those with normal delivery AOR=29.515; 95%CI = 10.775- 80.844; P=0.001) (Table 2).

Table 2: Determinants of postnatal care services utilization

Variables	COR	95% CI			AOR	95% CI		
		Lower	Upper	p-value		Lower	Upper	p-value
Education level								
Informal (Ref)								
Primary	2.512	0.846	7.460	0.097	2.554	0.642	10.157	0.183
Secondary	4.947	1.603	15.266	<0.005	4.456	1.050	18.907	0.043
Residence								
Rural (Ref)								
Urban	1.916	1.267	2.898	0.002	1.900	1.177	3.067	0.009
Parity								
1 to 2	2.261	1.135	4.505	0.020	0.947	0.339	2.650	0.918
3 to 5	2.397	1.175	4.892	0.016	1.323	0.562	3.113	0.522
>5(Ref)								
Place of delivery								
Home (Ref)								
H/Facility	2.980	1.127	7.887	0.028	0.443	0.131	1.505	0.192
Mode of delivery								
Normal (Ref)								
C/Section	24.932	9.582	64.870	<0.001	29.515	10.775	80.844	<0.001

Discussion

This was a community-based study conducted to assess determinants of adequate PNC service utilization among study participants. The finding from this study showed that a majority 401 (95.6%) of participants attended PNC visits at least once during their postnatal period. This result was almost similar to the finding of a study conducted in Ethiopia which showed that 84%women utilize at least one PNC service from health institutions (13). The increase in PNC use in the study area may be due to the ongoing process of health education campaigns in the community, health facilities, and through mass media emphasizing the importance of maternal health care utilization. Again, the high finding of PNC at least once could also be due to women's confusion about different services. They may have failed to make a distinction between the care in the first six weeks after delivery and the Expanded Programme on Immunizations (EPI) services, one of the components of PNC. This confusion may occur just because EPI immunizations begin shortly after birth and administration continue during the PNC period (14).

This study also indicated that less than half (32.4%) of participants received recommended four PNC services during their postnatal period. This finding was slightly higher compared to the results from previous studies conducted in Tanzania which showed that only a few (10.4 %) participants in three rural districts of Tanzania and (25%) in Morogoro attended recommended PNC services (15-16). The observed discrepancy from these studies could be due to time differences as there was some improvement in the accessibility of maternal health services over time. However, the low utilization of four PNC services in the study area could be due to inadequate information regarding postnatal care services as it was observed from this study that 35% of participants didn't receive any information on postnatal care services. Previous scholars have challenged the availability of effective postnatal care services in Tanzania that mothers may attend health facilities for maternal and child health services but not received all of the recommended components of postnatal care (14, 17). Therefore healthcare providers need to abide by WHO and MoHCDGEC guidelines of PNC service including assessment of mothers for dangerous signs (vaginal bleeding, high fever, high blood pressure) and mental health problems, provided with iron and folic acid supplements, and counseling on breastfeeding, nutrition, hygiene, family planning, and safe sex. (18,19).

It was also found from this study that, participants with secondary education levels were more likely to utilize adequate PNC services compared with those with informal education. This could be explained that education is associated with increased knowledge of basic health

services which can lead to improved health-seeking behavior. This finding concurred with the report of other scholars conducted elsewhere (9; 20-21). It is well noted that, once a woman is educated, her autonomy and decision-making skills on her health including maternal health care services utilization increased.

According to this study, mothers who reside in urban settings were more likely to utilize PNC services adequately than those living in rural settings. The reason for this observation could be mothers living in urban areas tend to benefit from increased knowledge of maternal health services compared with their counterparts. This finding is consistent with the report of a previous study done in Northern Ethiopia and according to the report of analyzed data from 36 sub-Sahara countries (22-23). However, the inadequate utilization of PNC services among women in a rural areas could be due to the traditional practices in the communities. Thus, in rural areas, people may still have overriding practices of not allowing mothers and their newborn babies to go outside the home. This was evidenced by a study conducted in rural Tanzania which showed that the period before the umbilical cord stump falls off is understood in some communities to be a period when a baby is particularly vulnerable to harm by jealous or malevolent people and spirits, and the baby is usually secluded inside (14). This practice can contribute to the delay in seeking PNC among women, especially those who delivered at home.

The findings from this study also revealed that the uptake of PNC services was significantly associated with the mode of delivery, whereby postnatal mothers who gave birth by cesarean section were more likely to utilize PNC services adequately compared to those with normal vaginal delivery. This finding was consistent with the results of the study conducted in rural Tanzania and Sub-Saharan Africa (16; 24-25). This can be assumed that women who delivered by cesarean section at the health facilities were provided PNC services before they were discharged. However, mothers who delivered by cesarean section could be more susceptible to a wide range of postoperative complications and require a frequent return to the health facilities hence increased utilization of PNC services. (26).

Conclusion and recommendation

The uptake of adequate PNC visits as recommended among postnatal mothers in the study area was low. Determinants factors associated with adequate utilization of PNC services were the educational levels of the mother, place of residence, and mode of delivery. This finding calls for community-based interventions to create awareness of adequate utilization of PNC services, especially among women with low education and women in rural areas.

Strengths and limitations of the study

The study presented evidence on factors affecting postnatal care services utilization among postnatal mothers in the Dodoma region which could be used locally and at the policy level as an input for interventions on reproductive health services. The study also presented the status of the utilization of the complete four PNCs in which very limited information is available in community-based studies in Tanzania. However, the study has some limitations as well. Although the study has included mothers who gave birth in the last six weeks after delivery there might be a possibility of some recall bias. Again, the nature of the study was cross-sectional and there was no relationship between cause and effect reported. This study also employed a quantitative study approach and method of data collection, therefore further research can be done employing both quantitative and qualitative approaches to explore barriers to adequate PNC utilization in the study area.

Acknowledgments

The authors would like to acknowledge the University of Dodoma and the Regional Administrative Secretary of the Dodoma region for granting permission to conduct this study. Sincere gratitude also goes to data collectors and the study participants for their willingness to participate in the study.

Authors' contributions

AFN and NM were involved in the conception and design of the study: NM was involved in data collection: AFN. and NM analyzed the data and interpretation: NM drafted the manuscript: AFN involved in the critical review of the manuscript. All the authors read and approved the final manuscript.

Conflict of Interest

The authors declare no conflict of Interest.

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