Determinants of postnatal care service utilization among mothers of Mangochi district, Malawi: a community-based cross-sectional study

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Research article

Keywords: Postnatal care, cross-sectional study, multistage sampling, multivariable model, Mangochi district, Malawi

DOI: https://doi.org/10.21203/rs.3.rs-119074/v1

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Abstract

Background

Postnatal care (PNC) services such as antenatal care, labour and delivery care services are paramount in maternal, neonatal morbidity and mortality rates reduction in low and middle income countries. Several factors impede the effective utilization of these services by mothers which makes them access few services than recommended by world health organization. This study examined the determinants of PNC utilization among mothers in Mangochi District, Malawi.

Methods

A community based cross-sectional study involving a multistage sampling of 600 mothers from nine randomly selected villages in Mangochi district, Malawi was conducted in the month of January, 2016. A transcribed semi-structured questionnaire was pre-tested, modified and used to collect data on socio demographic, socio-economic and socio-cultural characteristics. A Pearson Chi square ($\chi^2$) test was used to determine the association between the socio-demographic, socio-cultural, and socio-economic factors and PNC utilization. A multivariable logistic regression with 95% confidence interval was performed to determine the predictors of PNC service utilization.

Results

84.8% of the mothers utilized PNC services at least once within the postnatal period. Among the PNC users, 74.5% attended once, 20% attended two to three times and 5.5% attended more than three times. The predictors of PNC service utilization were education level of the mother (AOR= 2.42, CI: 1.97-6.04), education level of the partner (AOR=1.5, CI: 1.25-2.49), occupation status of the partner (AOR= 3.2, CI: 1.25-8.01), household level of income (AOR=14.4, CI: 5.90-35.16), decision making (AOR=2.27, CI: 1.13-4.57), knowledge of available PNC services (AOR=4.2, CI: 2.22-7.41), knowledge of at least one postpartum danger signs (AOR=4.0, CI:2.07-7.50), and place of delivery (AOR=6.9, CI: 3.35-14.14).

Conclusion

The rate of PNC service utilization among mothers was 85%. The uptake of PNC services among mothers was mainly influenced by education level of the mother and partner, occupation status of the partner, household level of income, decision making power, knowledge of available PNC services, knowledge of at least one postpartum danger signs, and place of delivery. Therefore, reinforcement of the existing policies and strategies to increase awareness about PNC services among mothers through awareness campaigns, training and empowerment programs is needed.

Background

Postnatal care services, as it is the case with antenatal care, labour and delivery care services, are the fundamental element of the continuum of Essential Obstetric Care (EOC) that can help in decreasing
maternal and neonatal morbidity and mortality in low and middle income countries [1]. According to World Health Organization (WHO), postnatal period begins immediately after the birth of the baby and extends up to six weeks (42 days) after birth and it includes an integrated package of routine maternal and neonatal care [2]. WHO recommends that a mother and her new-born child should receive postnatal care within 24 hours of birth, and then at least three more times, that is to say; on day three, in the second week, and six weeks after the birth [2]. Appropriate PNC in the first hours and days following childbirth prevents the great majority of maternal and child morbidity and mortality [3–4]. It is the period where the health care provider helps mothers and new-borns to establish and maintain contact with a number of health care services needed in the short and long term [3].

Each year, an estimated 529,000 women die from complications related to pregnancy and with 99% of these maternal deaths occurring in developing countries especially South Asia and sub-Saharan Africa (SSA) [4–6]. In Malawi, like many other SSA countries, maternal and child mortality rates are still high [7–8]. Recent estimates showed that the country still experiences maternal, neonatal and infant mortality of 439/100,000 and 27/1000 respectively [8]. Despite its importance, postnatal period is generally the most neglected in developing countries [9] including Malawi. At national level, PNC utilization within two weeks of delivery is currently at 42% [10]. In Mangochi district PNC utilization within two weeks of delivery is currently at 28% [11]. Understanding the factors related to PNC utilization is critical for countries like Malawi with an alarmingly high maternal, neonatal and infant mortality levels. Recently, studies on determinants of postnatal care utilization have been conducted in Sub-Saharan Africa, Malawi inclusive [12–29]. These studies have provided insights into the many multilevel factors that influence postnatal care utilization. Since, the determinants of PNC utilization are not the same across different cultures, different geographical locations and socio-economic status within a society [20]. This study therefore was conceptualized to examine the determinants of postnatal care service utilization among mothers in rural communities of Mangochi district, Malawi.

**Methods**

**Study setting, design and sampling technique**

A community based cross-sectional study was carried out from June to July, 2016 in Mangochi district which is located in the eastern region of Malawi. The study participants were drawn from nine randomly selected villages in the district from three Traditional Authorities; Chilipa, Makanjira, and Nankumba. Six hundred women were selected using a multistage sampling technique.

**Study population and sampling procedure**

Mothers who gave birth in the past two years preceding data collection period, with a child more than six weeks old, willing to participate and living in Mangochi district were included. Multistage sampling technique was used to select study subjects. Initially, all the 12 Traditional Authorities in the district were stratified into three, with four neighbouring Traditional Authorities being put in one stratum based on their geographical location. Then one Traditional Authority was selected randomly from each stratum to come
up with the three Traditional Authorities to be representatives for the study. From the chosen Traditional Authorities, frame of the villages in each was drawn and three villages were chosen from each of the chosen Traditional Authorities using systematic random sampling technique. Sample size was allocated proportionally to each randomly selected village. Finally, frames of households with eligible woman were prepared for each village. Whenever more than one eligible respondent was found in the same selected household, only one respondent was chosen by lottery method.

Sample size was determined using Leslie Kish [29] sampling formula by considering 28% PNC utilization rate in Mangochi district [11], 95% level of confidence and 5% margin of error. A design effect of 1.5 and 20% non-response rate were also anticipated to obtain the final sample size of approximately 600.

**Data collection tools and procedure**

The structured questionnaire was prepared using concepts in the conceptual framework and study objectives and utilized in data collection. The questionnaire was prepared in English (See Supplementary File 1) and then translated in Chichewa which is the common local language used by almost everyone in the district (See Supplementary File 2). To check its consistency, the questionnaire was back translated to English by an expert of both languages. The questionnaire was pre-tested on 10% of the population outside the study area, modified and used for data collection. Five research assistants who were fluent in the local language (Chichewa) and familiar with the local customs were recruited and used to collect the data. One research assistant who had vast experience in household surveys was assigned to supervise the data collection process. A day training was given on the objective of the study, confidentiality of information and the techniques of an interview to data collectors and supervisors by the Principal Investigator.

**Data analysis**

The collected data was entered and coded in EpiData version 3.1 and analysed for both descriptive and inferential statistics using Stata Version 12 software. Data analysis involved univariate, bivariate and multivariate analysis. Descriptive statistics involved generating summary statistics and frequency distribution for socio-demographic, socio-cultural, socio-economic factors. Inferential statistics through a Pearson chi-square test was used to measure the association of socio-demographic, socio-cultural, and socio-economic factors with postnatal care utilization. A multivariate logistic regression was performed on factors that were significantly associated with postnatal care utilization at bivariate level of analysis (p < 0.05). The Odds Ratios (OR) associated with these factors were reported as a measure of strength, together with the respective 95% Confidence Intervals.

**Results**

**Socio-Demographic characteristics**
Age, marital status, and parity were assessed as socio-demographic characteristics of the mothers in this study. A total of 600 women of reproductive age who gave birth in the last two years prior to the survey were interviewed making a response rate of 100%. 38.7% of the mothers were between 20-24 years old, followed by those aged 25-29 (21.8%) and 30-34 (16.0%), while the rest were either above 34 years (9.2%) or below 20 years (Table 1).

**Table 1**: Distribution of respondents by socio-demographic characteristics
| Characteristics       | Frequency (n = 600) | Percentage (%) |
|-----------------------|---------------------|----------------|
| **Age**               |                     |                |
| 15-19                 | 86                  | 14.3           |
| 20-24                 | 232                 | 38.7           |
| 25-29                 | 131                 | 21.8           |
| 30-34                 | 96                  | 16             |
| 35-49                 | 55                  | 9.2            |
| **Marital status**    |                     |                |
| Single                | 70                  | 11.7           |
| Married               | 502                 | 83.7           |
| Divorced/Widowed      | 28                  | 4.6            |
| **Parity**            |                     |                |
| One                   | 168                 | 28             |
| 2-3                   | 249                 | 41.5           |
| 4-5                   | 125                 | 20.8           |
| >5                    | 58                  | 9.7            |
| **Education level of respondent** |         |                |
| None                  | 124                 | 20.7           |
| Primary               | 389                 | 64.8           |
| Secondary & Above     | 87                  | 14.5           |
| **Education level of partner** |     |                |
| None                  | 85                  | 15.5           |
| Primary               | 192                 | 35             |
| Secondary & above     | 272                 | 49.5           |
| **Occupation status of respondent** |   |                |
| None                  | 121                 | 20.2           |
| House wife            | 48                  | 8              |
| Business              | 124                 | 20.6           |
| Farmer                | 307                 | 51.2           |
| Occupation status of partner | None  | 107 | 19.5  |
|------------------------------|-------|-----|-------|
|                              | Farmer| 234 | 42.7  |
|                              | Business | 127 | 23.2  |
|                              | Civil servant | 80 | 14.6  |
| Household income             | <K20,000 | 213 | 35.5  |
|                              | K20,000-K50,000 | 113 | 18.8  |
|                              | K50,000-K150,000 | 208 | 34.7  |
|                              | K150,000-250,000 | 66 | 11    |
| Ever heard of postnatal services | Yes  | 509 | 84.8  |
|                              | No    | 91  | 15.2  |
| Table 1: (Continued).        |       |     |       |
| Decision making              | Self  | 163 | 27.2  |
|                              | Husband | 193 | 32.1  |
|                              | Joint  | 142 | 23.7  |
|                              | Other  | 102 | 17    |
| Family size                  | 2-4 (small) | 282 | 47    |
|                              | 5-6 (medium) | 193 | 32.2  |
|                              | > 6 (big) | 125 | 20.8  |
| Place of delivery            | Home  | 64  | 10.7  |
|                              | Health facility | 536 | 89.3  |

With regards to marital status, slightly over eight out of 10 were in marital union, while the rest were either never married (11.7%), or divorced/widowed (4.6%) (Table 1). Lastly, 41.5% of the mothers had 2-3
children and only 9.7% had more than five children by the time this study was being conducted. (Table 1).

**Socio-economic characteristics**

Regarding the socio-economic factors, the following characteristics, including education level of the mother and their partners, occupation status of the mother as well as of the partner, household level income, knowledge of postnatal care services and postnatal danger signs were assessed. The majority of the mothers 64.8% had at least primary education while only 20.7% had no education at all and the same trend was seen in partners where almost fifty percent had secondary education (Table 1). Regarding occupation status, at least half of the mothers 51.2% were farmers, and 20.6% were doing business, and for the partners, the majority 42.7% were farmers, 23.2% were businessmen, while 19.5% had no job at all (Table 1). About 36% of the respondents were from the poorest wealth quantile earning less than 20,000 Malawi Kwacha in a month. Additionally, the mothers were asked whether they have ever heard of available postnatal health care services, and the postnatal danger signs. 84.8% of the mothers reported having ever heard of available postnatal care services, while the rest 15.2% said they had never heard of the PNC services (Table 1). Regarding knowledge of postnatal care danger signs, at least eight out of ten mothers reported to have ever heard of postnatal danger signs.

**Socio-cultural characteristics**

With regards to socio-cultural aspect, characteristics considered in the study included, decision making, family size and the place of delivery. Slightly above half (50.9%) of the mothers reported being involved in the decision making regarding postnatal care service utilization. Among these mothers, 27.2% were able to make the decision by themselves, while 23.7% reported of making the decision together with their husbands (Table 1). Furthermore, majority 47.0% of the respondents were from small families, with 2-4 family members, 32.2% were from medium size family and the remaining proportion were from big family size with at least six family members. Lastly, the highest proportion of the mothers (89.3%) delivered at the health facility while the remaining proportion had home deliveries (Table 1).

**Postnatal care service utilization**

Postnatal care service utilization was assessed based on binary outcome, yes or no response. In this study, a mother was considered to have utilized postnatal care services if she had attended at least one postnatal care visit within the six weeks post-delivery. The majority of the respondents 84.8% utilized postnatal care services while the remaining 15.2% did not utilize postnatal care services at all (Figure 1).

Among the postnatal care utilizers, only 5.5% utilized postnatal care services more than three times as recommended by WHO and the Malawi Ministry of Health (Table 2).

**Table 2**: Distribution of respondents by number of Postnatal care visits attended
Predictors of postnatal care service utilization

The level of education of the mother and that of the partners showed a strong statistical association with postnatal care service utilization (Table 3).

Table 3: Predictors of postnatal care service utilization (n = 600)

| Characteristics                  | Coef. | Crude OR (95% CI) | Adjusted-OR (95% CI) | P-value  |
|----------------------------------|-------|-------------------|----------------------|----------|
| None*                            | 0     | 1                 | 1                    | 1        |
| Respondent's Education level     |       |                   |                      |          |
| Primary                          | 0.103 | 1.98(1.19, 3.28)  | 1.80(1.01, 3.19)     | 0.005**  |
| Secondary & above                | 0.161 | 3.65(1.49, 8.94)  | 2.31(1.97, 6.04)     | 0.001**  |
| Household level of income        |       |                   |                      |          |
| Poorest*                         | 0     | 1                 | 1                    | 1        |
| Poorer                           | 0.181 | 3.23(1.66, 6.27)  | 2.82(1.40, 5.70)     | 0.000**  |
| Middle                           | 0.262 | 12.06(5.08, 28.65)| 16.20(5.90, 35.16)   | 0.000**  |
| Richer                           | 0.24  | 7.14(2.08, 24.54) | 5.35(1.43, 15.03)    | 0.000**  |
| Decision making                  |       |                   |                      |          |
| Self*                            | 0     | 1                 | 1                    | 1        |
| Husband                          | 0.091 | 1.90(1.08, 3.35)  | 1.60(0.88, 2.89)     | 0.017**  |
| Joint                            | 0.08  | 1.73(0.94, 3.17)  | 2.14(1.13, 4.57)     | 0.001**  |
| Other                            | 0.123 | 2.61(1.22, 5.58)  | 1.96(0.85, 4.50)     | 0.007**  |
| Ever heard of PNC services       |       |                   |                      |          |
| No*                              | 0     | 1                 | 1                    | 1        |
| Yes                              | 0.274 | 5.06(3.00, 8.56)  | 3.80(2.22, 7.41)     | 0.000**  |
| Ever heard of PN danger signs    |       |                   |                      |          |
| No*                              | 0     | 1                 | 1                    | 1        |
| Yes                              | 0.317 | 6.14(3.58, 10.54) | 4.30(2.07, 7.50)     | 0.000**  |

* p < 0.05, ** p < 0.01, *** p < 0.001
Mothers and their partners who attended secondary school were at least 2 times (AOR=2.42, CI: 1.97, 6.04) and almost 1.5 times (AOR=1.45, CI: 1.25, 2.49) respectively more likely to utilize postnatal care services than mothers and their partners who had no education at all. Similarly, respondents whose partners were in civil service were at least 3 times (AOR=3.17, CI: 1.25, 8.01) more likely to utilize postnatal care services than mothers whose partners were not working at all (Table 3). Furthermore, mothers who were from middle income families were at least 14 times (AOR=14.41, CI: 5.90, 35.16) more likely to utilize postnatal care services than mothers from poorest families. Likewise, place of delivery showed a strong prediction for postnatal care service utilization. Mothers who gave birth with their current last born at the health facility were almost 7 times (AOR=6.88, CI: 3.35, 14.14) more likely to utilize postnatal care services as compared to mothers who delivered at home (Table 2). Probability of postnatal care service utilization also has shown to be highly predicted by awareness of available postnatal care services. In this study, mothers who were aware of the available postnatal care services, when and where to get them were at least 4 times (AOR=4.06, CI: 2.22, 7.41) more likely to have utilized postnatal care services than mothers who were not aware of available postnatal care services. The study also found that mothers who had knowledge of at least one postnatal obstetric danger sign were 4 times (AOR= 4.00, CI: 2.09, 7.50) more likely to utilize postnatal care services than those mothers who had never heard of postnatal danger signs at all (Table 2). Lastly, involving the mother in making decision regarding postnatal care service utilization increased at least twice (AOR=2.27, CI: 1.13, 4.57) the odds of utilizing postnatal care services among mothers of Mangochi district.

Discussion

The study examined the determinants of PNC service utilization among mothers in rural communities of Mangochi district, Malawi. The study revealed that 84.8% mothers utilized PNC services. The results are slightly higher than those reported by [12, 13, 21]. This may be attributed to the differences in study settings, samples size, study period and other related factors that might have led to the improvement in accessing and utilizing PNC services through time. Despite the higher percentage of PNC utilization by the mothers in the district, it's only 5.5% of the respondents that met the set criteria of number of PNC visits by WHO and MoH, Malawi. This clearly indicates that the PNC service in the district is poorly utilized.

Socio-economic factors such as educational level of the mothers and partners, occupation status of the partner, household level of income determined PNC service utilization. However, PNC service utilization by the mothers varied with the level of education attained by the mothers and their partners. The likelihood of utilizing PNC service was more pronounced among those with secondary level education and above than those with primary level education. The results coincide with the findings of [12–21, 30–32]. This can be attributed to the fact that education serves as a proxy for information, cognitive skills and values which in-turn promotes health seeking behavior through increased level of awareness of the available health services [12, 34]. Family disposable income obtained through an occupation of the partner or an income generating activity influenced PNC service utilization. Those with the ability to pay for the health
care service for their wives were more likely to utilize PNC service than those without the ability to pay for the PNC service. [23, 32–37] reported similar findings.

Knowledge of the available PNC service and postpartum obstetric danger signs associated with PNC service utilization. Mothers who were aware of the available PNC service and postpartum obstetric danger signs were more likely to utilize PNC service than those who were not aware. Previous studies in developing countries also found that knowledge of postpartum danger signs and knowledge of available PNC service influences the uptake of PNC services [9, 31, 35]. This can be explained by the fact that awareness of obstetric danger sign is an important factor in triggering and motivating the mothers to seeking health care services with the aim of preventing, diagnosing and even treating [34]. Additionally, knowledge is an important factor in the utilization of PNC services as it enables one to understand the services that are available, their importance, when and where to get them [23].

Socio-cultural factors such as the final decision maker and place of delivery determined PNC service utilization among mothers. Mothers who were involved in making decision regarding postnatal care service utilization were more likely to have utilized PNC services more than those who had to wait for either their husbands/partners or other significant others to make the decision for them. This is in line with the study carried out in Malawi, Zomba [12]. Mothers who delivered their last baby in the health facility utilized PNC services more when compared with those who delivered at home. This finding aligns well with the results by [32] who reported that women who delivered at health facility utilized PNC services more than those who delivered elsewhere. This can be attributed to the fact that women who gave birth in health institutions have greater chances to get exposed to health education related to PNC services at the time of delivery and thus get access to learn about the types, benefits, and availabilities of PNC services, where and when to access them, during their stay in the health institution [34].

Limitations Of The Study

Recall biasness by participants is one of the limitations of the study as only mothers who had given birth in the past two years preceding data collection period were considered. Cause and effect of the predictors could not be established due to the type of research design used.

Conclusions

PNC services are a significant constituent of safe motherhood. The study revealed that the overall utilization of PNC services among mothers in Mangochi district, Malawi was good as almost 85% of the mothers were able to utilize the services, while 15% of them had poor utilization of postnatal care services. Among the PNC service utilizers, only 5.5% utilized PNC services more than three times as recommended by WHO and Ministry of Health, Malawi. The study also established determinants of PNC utilization which should be targeted through health care awareness and sensitization campaigns on the available PNC services to enhance uptake of PNC services among mothers.
Abbreviations

AOR: Adjusted Odds Ratio; COR: Crude Odds Ratio; CI: Confidence Interval; EOC: Essential Obstetric Care; IEC: Information Education and Communication; PNC: Postnatal Care; USAID: United States Agency for International Development; WHO: World Health Organization; Coef.: Coefficient; MOH: Ministry of Health.

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from the Higher Degree Ethics and Research Committee of Makerere University School of Statistics and Planning, and the National Commission for Science and Technology (NCST) of Malawi Protocol Number P.12/15/67. Permission to conduct the study was obtained from Mangochi District Health Office. Informed consent was obtained from the village head of each selected village of study, and from each respondent. Respondents were informed that all the information obtained from them would be kept confidential. Furthermore, the participants were informed of their right to withdrawal from the study anytime they felt like with no consequences attached. The questionnaire was coded instead of using names as identification and hence confidentiality was assured throughout the study.

Consent for publication

Not applicable.

Availability of data and materials

The data sets used and analysed during the current study will be made available upon reasonable request made through the corresponding author.

Competing interest

The authors declare that there is no conflict of interest.

Funding

This research was financially supported by United States Agency for International Development (USAID) through World Learning Malawi Scholarship program. The funder did not take part in the design of the study, data collection, data analysis and interpretation and in writing the manuscript.

Author’s contribution

JS, AK and GT contributed to the concept of the study. JS and SM performed statistical analysis. JS and SM jointly wrote the draft manuscript. JS, AK, GT and SM contributed in interpreting the result, literature review and revising the manuscript. All authors revised the manuscript and agreed on the findings and
views expressed. All authors read, approved the final version of the manuscript and agreed to abide by the copyright terms and conditions of BioMed Central.

Acknowledgments

We thank the United States Agency for International Development (USAID) through World Learning Malawi Scholarship program for providing financial support towards the study. The authors would also like to thank National Commission for Science and Technology (NCST), Malawi, and Mangochi District Health Office for the permission and support they provided towards the accomplishment of the study. We are also grateful to all the village heads of all the villages that participated in this study for the permission and support given to us during the time the data was collected in their respective villages. Lastly, our great appreciation goes to the respondents for sacrificing their time in providing data for this study. The contents are solely the responsibility of the authors and do not necessarily represent the official views of the supporting offices.

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