International Journal of Science and Healthcare Research
Vol. 9; Issue: 4; October-December 2024
Website: ijshr.com
Original Research Article *ISSN: 2455-7587*

Identifying Factors Associated with Low Use of Intermittent Malaria Preventive Treatment in Pregnancy: Healthy Moms and Babies Program

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DOI: https://doi.org/10.52403/ijshr.20240432

ABSTRACT

Malaria during pregnancy remains a major public health problem in Sub-Saharan Africa. Current strategies to prevent malaria in pregnancy and promote health include the use of insecticide-treated bed nets and intermittent preventive treatment in pregnancy (IPTp). Despite the availability of IPTp service in all health clinics in Zambia, Lufwanyama district has continued recording low utilisation of this service. The purpose of this study was to determine factors associated with the low utilisation of IPT of malaria among pregnant women attending antenatal (ANC) clinics in Lufwanyama. A cross-sectional study interviewed 382 pregnant women attending ANC clinics in Lufwanyama using simple random sampling. Data was entered and analyzed using SPSS version 20.0 after all variables were coded. Validation of findings was set at 95% CI with a p-value <0.05. This study revealed that the following variables were significantly associated with low IPTp utilisation or completion of the three IPTp doses: knowledge levels about IPTp; number of antenatal visits made; gestational age of pregnancy at first antenatal visit; gestational age of pregnancy; timing of first dose of fansidar; use of traditional medicine; health workers behaviour towards pregnant women; wait times; and perception of fansidar. These factors perpetuated low attendance to ANC schedules and non-adherence towards completion of the three recommended IPTp doses. Healthcare workers should intensify sensitization on IPTp service and benefits through training on effective health promotion strategies.

Key Words: Malaria, Pregnant women, Intermittent Preventive Treatments in pregnancy (IPTp), Antenatal care, Insecticide Treated Nets, Sulphadoxine-Pyrimethamine, Health Promotion

BACKGROUND

Malaria in pregnancy remains a major public health problem in Sub-Saharan Africa, where Plasmodium falciparum is endemic.[1-3] Around 25 million pregnant women are at risk of P. falciparum infection every year in Sub-Saharan Africa, and one in four women have evidence of placental infection at the time of delivery.[4] Around 529,000 maternal deaths occur globally every year and 99% of these occur in developing countries.[5] It is estimated that 25 to 30 million pregnant women are at risk of malaria infection and its adverse outcomes during their pregnancy.[6,7] Maternal malaria, which often results in maternal anaemia, intrauterine growth retardation, intrauterine death, stillbirth, premature births, low-birth weight (LBW), perinatal and neonatal morbidity and mortality[8,9] is caused mainly by P. falciparum. The harmful impact of malaria is most apparent in the first and second pregnancies of most pregnant women living in areas of relatively stable malaria transmission.[10]

In Zambia, under-five children and pregnant women are the most vulnerable, especially those living in rural and impoverished areas with 35% to 50% of under-five mortality, and 20% of maternal mortality attributable to malaria.[11] It is estimated that 45% of health facility visits are due to malaria in Zambia.[12] In the Lufwanyama district, malaria is among the top ten causes of morbidity and mortality especially in pregnant women and children.[13]

Prevention of malaria in pregnancy is a major public health challenge and a priority for the Roll Back Malaria (RBM) Partnership. To reduce malaria burden in pregnancy, the World Health Organization (WHO) currently recommends a package of interventions in areas with stable (i.e. high) transmission of P. falciparum.[14] The interventions include effective case management of malaria infection, use of insecticide-treated nets (ITNs) and intermittent preventive treatment in pregnancy (IPTp). In line with this recommendation, approaches to prevention of malaria in pregnancy changed since the early 2000s, moving from a weekly or bimonthly chemoprophylaxis to IPT, and use of ITNs.[14]

In Zambia, the government adopted the IPTp strategy for health promotion including prevention and treatment of malaria in pregnant women in 2003 (11). IPTp is useful and it is given to all pregnant women living in areas with high malaria transmission.[15] It is under the assumption that pregnant women living in high transmission areas have malaria parasites. The parasites live in the blood or placenta, whether or not that pregnant woman has symptoms and signs of malaria.[16] IPTp intervention involves the administration of three doses of Sulphadoxine-Pyrimethamine, also known as fansidar). The drug is given to pregnant women during the second and third trimesters under the direct and supportive observation as part of the Directly Observed Treatment Short-Course (DOTS) strategy.[15] This is done in order to supplement other key traditional interventions, such as the use of ITNs, indoor residual spraying, early diagnosis and treatment of malaria.[17]

However, despite the availability of IPTp service in all the health facilities, Lufwanyama district has continued recording low IPTp service utilisation. Most pregnant women, according to Lufwanyama District Health Information System (DHIS),[18] do not complete the three recommended doses of fansidar. The objective of this study is to determine factors associated with low utilisation of IPT of malaria among pregnant women attending antenatal care (ANC) clinics in Lufwanyama.

Factors Associated with Low Utilisation of IPTp Service

Knowledge about IPTp service by pregnant women

Lack of knowledge about IPTp service contributes to its low utilisation. In a systematic review and meta-analysis by Hill and others,[19] it was reported that many of the barriers to receipt of IPTp by women were related to their lack of knowledge about IPTp services. For instance, it was reported that most women were unaware of the benefits of IPTp.[20,21]

Obstetric history and service utilisation

Gestational age of pregnancy

Obstetric history and service utilisation are among the factors that influence IPTp utilisation. A study conducted by Sikambale and others[11] reported that gestational age of the pregnancy at which a woman first accesses ANC was associated with completion of IPTp doses. The reason being fansidar is given one month apart starting from the fourth month of pregnancy.

Number of times a woman attends ANC

The number of times a woman attends ANC influences the completion of the three recommended doses of IPTp.

Cultural beliefs and practices towards IPTp services

Traditional beliefs about modern medicine have been cited as some of the reasons for low use of ANC and IPTp service in some rural communities.[22]

Health workers behaviour, waiting time at the service facility and availability of drugs

The quality of health services offered is an important factor in determining health-seeking behaviour by clients. The success of health interventions in terms of achieving program objectives does not only depend on its efficacy, but also on other factors. These include knowledge and skills of those providing the service and the users, their motivation, attitudes, practices and other socio-economic factors.[23]

METHODOLOGY

Study Setting

The study was conducted in Lufwanyama district, which is located in the Copperbelt Province and has a total population of 95,834. The total population of women in childbearing age is 19,167. The district`s expected annual pregnancies were 3833, deliveries were 2875 and live births were 2683.[13] The study included five rural health clinics selected using a purposive sampling method. The following clinics were included in the study with their respective sample sizes; Nkana RHC, ST Joseph RHC, Mukutuma RHC, Shimukunami RHC and St Mary's RHC). The named clinics were selected because of their low utilisation of IPTp service in the district.

Type of Study

A cross-sectional study using simple random sampling was used to answer the research objectives.

Study Population

Pregnant women attending ANC at selected rural health centres in Lufwanyama district comprised the study population. After receiving informed consent, the sample size for the study consisted of 382 pregnant women that received IPTp service at ANC clinics.

Data Collection and Analysis

A structured face to face interview questionnaire was used to collect field data. The questionnaire consisted of questions on socio-demographic characteristics, obstetric history and service utilisation, knowledge on IPTp service, service factors and perception of the use of fansidar in pregnancy. The quantitative data was entered and analysed using Statistical Package for Social Sciences for windows version 20.0 (SPSS) after all variables were coded. Data on socio-demographic characteristics of participants, knowledge on

IPTp services and obstetric history and service utilisation was summarised using frequency tables and percentages. Graphs and percentages were used to summarise data on knowledge levels of IPTp service by pregnant women. Bivariate analysis using Pearson Chi-Square test was done to determine the associations between the dependent variable (utilisation of IPTp) and the independent variables. Cross tabulations and frequencies were done on dependent and independent variables. The confidence interval (CI) was set at 95% and statistical significance of 0.05 p-value.

RESULTS

Proportion of IPTp utilisation by pregnant women

A total of 81 (21.2%) out of 382 pregnant women interviewed took all three recommended doses of IPTp. Whereas, 95 (24.9%) took only the first dose of fansidar and 206 (53.9%) took at least the second dose of fansidar. The high percentage of second dose of fansidar is due to high second antenatal visits by pregnant women.

Socio-demographic characteristics of participants

The socio-demographic features that were evaluated were age, marital status, level of education and occupation. Analysing the distribution of the respondents by demographic characteristics of the 382 participants, majority (86.6%) represented young individuals between the ages of 15 to 34 between the ages 15-34. Most of the respondents (87.7%) were married, followed by those that were single, 9.9%. Majority of the respondents (58.4%) had completed the primary level of education, whereas only 2.1% had gone up to the tertiary level of education. Most of the respondents were self-employed as peasant farmers (55.2%), 34.3% were housewives and 7.3% were school-going children and school dropouts. Pregnant women between the ages of 15 and 34 are more likely to contribute to low utilisation of IPTp.

Knowledge on IPTp service

Knowledge on IPTp service includes characteristics, such as name of the drug used to prevent malaria in pregnancy, number of tablets given and the use of fansidar in pregnancy. 96.3% of the pregnant women knew the name of the drug used to prevent malaria in pregnancy and 2.4% mentioned iron tablets and folic acid. Additionally, 95.3% were able to mention the correct number of tablets for the dose of fansidar, whereas 2.1% mentioned 2 tablets of fansidar per dose. Lastly, 79.8% were able to state the use of fansidar in pregnancy as prevention of malaria in a mother (or unborn baby), 17.8% mentioned the use of fansidar in pregnancy as treatment of malaria and 2.4% did not know the use of fansidar in pregnancy. The findings demonstrate whether sensitisation on IPTp service is effective or not. If women are not knowledgeable about IPTp, low utilisation of the service would be the outcome.

Obstetric history and service utilisation

Majority of the pregnant women (57.6%) made two ANC visits on their current pregnancy. Most of the participants (23.6%) carried their fourth pregnancy, while 15.2% had their third pregnancy. High percentage of pregnant women (45.8%) had their pregnancy at 8 months gestation.

Perception of pregnant women about IPTp service

Majority of the pregnant women interviewed, 368 (96.3%), perceived the use of anti-malarial medicine as being beneficial. Whereas, 14 (3.7%) pregnant women reported the use of antimalarial drugs as harmful. This result did not translate to low utilisation of IPTp services; however, it affects utilisation of IPTp service if women perceive the use of fansidar as harmful.

Knowledge levels of IPTp service by pregnant women

Figure 3 below shows that 292 pregnant women were knowledgeable about IPTp

service. Most of them were able to mention the name of the drug used in IPTp, dosage and the use of fansidar in pregnancy. On the other hand, 84 were partially knowledgeable about IPTp service by mentioning at least one correct answer on the criteria for the knowledge level assessment.

DISCUSSION

The study's main objective was to determine factors associated with low utilisation of IPT of malaria among pregnant women attending ANC clinics in Lufwanyama district of Copperbelt Province in Zambia. This chapter discusses the main findings of the study and factors associated with low utilisation of IPTp service. Full utilisation of the service was defined as making practical and effective use of the IPT service by a pregnant woman who has had three recommended doses of fansidar as scheduled, considering the gestation of the pregnancy. Pregnant women who received less than three doses of fansidar were considered not to have fully utilised the service in reference to the Zambia National Malaria policy on IPTp service. The results were based on the analysis of the responses from a sample of 382 pregnant women attending ANC clinics in Lufwanyama district.

Association between knowledge level about IPTp service by pregnant women and completion of IPTp doses

In this study knowledge levels about IPTp service by pregnant women was found to be associated with IPTp utilisation (p=0.011). This means that women who are not knowledgeable about IPTp service are less likely to complete the three doses of IPT. Most of the women interviewed knew the name of the drug used in IPT, the dosage and the reason for the use of fansidar in pregnancy.

Association between number of antenatal visits made and completion of IPTp doses

In this study, it was found that the number of antenatal visits a pregnant woman makes affects whether or not the three recommended doses of IPTp would be completed (p<0.001). This implies that the more antenatal visits a pregnant woman makes, the more likely that woman is able to complete the recommended IPTp doses.

Association between gestational age of pregnancy at first antenatal visit and completion of IPTp doses

In this study, it was found that gestational age of pregnancy at first antenatal visit was associated with completion of IPTp doses (P<0.001). This is because fansidar is given one month apart starting from the fourth month of pregnancy.

Association between gestational age of pregnancy and completion of IPTp doses

In this study gestational age of pregnancy was associated with completion of IPTp doses (p<0.001). This could be because intake of fansidar begins at four months, followed by the subsequent months. If pregnant women start receiving the drug at the gestational age of four months, most of them could be completing the three doses of fansidar.

Association between when the first dose of fansidar was received and completion of IPTp doses

In this study, there was an association between when the first dose of fansidar was received and completion of IPTp dose (p<0.001). This is important because the earlier a pregnant woman receives the first dose of fansidar, the earlier the subsequent doses are completed (26).

Association between number of pregnancy and completion of IPTp doses

The study found that the number of pregnancies a woman has had was associated with completion of all three IPTp doses (p<0.001). During their first pregnancy, 34 (8.9%) women had completed the three recommended doses of fansidar.

Proportion of women utilising IPTp service

In this study, it was found that uptake of IPTp service was very low with only 21.2% of pregnant women completing all three recommended doses of fansidar. The remaining 24.9% took the first dose of fansidar and 53.9% took the second dose of fansidar. The high percentage of uptake of the second dose of fansidar was due to high second ANC clinic visits by pregnant women. The findings are in line with Lufwanyama DHIS (13), which showed that only 27.1% of pregnant women completed the three recommended doses of IPT service during pregnancy. The study revealed that there is low utilisation of IPTp service, especially for the third dose.

Association between pregnant women who took traditional drugs on present pregnancy and completion of IPTp doses

The study found that pregnant women who took traditional drugs in the present pregnancy were associated with completion of IPTp doses (p=0.001). The majority of women (13.1%) who did not take traditional drugs on their pregnancy completed the three recommended doses of fansidar.

Association between traditional medicine that prevent malaria in pregnancy and completion of IPTp doses

A significant association was shown for participant's responses on whether there were traditional medicines that prevent malaria in pregnancy (p=0.029). Majority of pregnant women (88%) said there were no traditional medicines used for malaria prevention, of which 19.9% fully utilised the IPTp service. This study has therefore revealed that women who knew that there were traditional medicines that prevent malaria in pregnancy were less likely to have fully utilised IPTp service. Therefore, this has contributed to low utilisation of IPTp service.

Association between waiting time and completion of IPTp doses

In this study, there was an association between waiting time of a pregnant woman to be attended to and the completion of IPTp doses (p=0.004). Majority of pregnant women, 290 (75.9%), had to wait for more than one hour at the clinic before they were attended to by the health workers. Utilisation of IPTp service would be affected if pregnant women have to wait for a very long time in queues before they are attended to by health workers.

Association between maternal age and completion of IPTp doses

In this study, maternal age was associated with completion of IPTp doses (p=0.030). Pregnant women (19.1%) between the ages of 15-34 classified as young, completed the three recommended doses of fansidar. Therefore, the age of a woman during pregnancy could determine whether a woman will fully utilise the IPTp service or not.

Association between marital status and completion of IPTp doses

In this study, there was no association between marital status and the completion of IPTp doses (p=0.122). Therefore, the marital status of the woman during pregnancy did not determine whether a woman would fully utilise IPTp service.

Association between level of education attained and completion of IPTp doses

The study found that there was no association between level of education attained by a pregnant woman and the completion of IPTp doses (p=0.260). The study revealed that most of the respondents obtained a primary level of education and were able to utilise IPTp service because they knew its benefits and were knowledgeable about it. This finding contradicts Sikambale et al. (11), who found that the level of education attained empowers a woman, with knowledge and

assists her to make informed decisions, thereby influencing IPTp dose completion.

CONCLUSION

Effective IPTp service utilisation in Lufwanyama district is low, with only 81 out of the 382 (21.2%) pregnant women interviewed completed the three recommended doses of fansidar during pregnancy. The study revealed that multiple factors influence the low utilisation of IPTp service. These include: knowledge levels about IPTp; number of antenatal visits made; gestational age of pregnancy at first antenatal visit; gestational age of pregnancy; timing of first dose of fansidar; use of traditional medicine; health workers behaviour towards pregnant women; wait times; and perception of fansidar. Since the study revealed that most pregnant women were knowledgeable about IPTp service, the district community medical office (DCMO) should focus on the importance of seeking early ANC clinic attendance, adherence to ANC schedules and the completion of the three recommended doses of IPTp. Additionally, the DCMO should intensify mass sensitisation on the importance of IPTp service to both community members and pregnant women attending ANC clinics, and pregnant women must be informed that the side effects of fansidar are temporary and fansidar is a lifesaving drug for both the mother and child. Finally, health workers should also aid in intensifying sensitization on IPTp service and benefits through training on effective health promotion strategies.

LIMITATIONS

The study was conducted in a confined region with a target population and the external validity was not tested with a Zambia-wide study. As a convenient sample was used, the level of participant bias was not considered. With the Ministry of Health Hospitals being the sole source of care for low-income and rural household mothers in Zambia, the question is how many mothers would provide their true views in the participation. The level of accuracy of a self-reported measure is a concern as self-reports often provide different values from clinically determined standards.[24] Confounders or effect modifiers were not identified nor taken into consideration while designing the study. These limitations could be addressed with a nation-wide study with a larger sample size and a more heterogeneous population.

Future Programs & Research

Future health promotion and protection programs and studies could focus on innovative health promotion, prevention, protection programs and effective methods to prevent malaria in pregnant women.[25-28] Malaria prevention in pregnancy is associated with substantial reductions in neonatal mortality and low birthweight and reduction in mortality rates for pregnant mothers.[29,30] Introducing sustainable funding of malaria prevention programmes, identifying knowledge and skills gaps in health professionals, and improving access to malaria drugs and diagnostics would help in reducing the mortality and morbidity rates in mums and babies.[31]

Declaration by Authors

Ethical Approval: Approved
Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Norris Chileshe Chishimba, Crecious Phiri, Gabriel Mpundu, Jonathan Ikachana Sitali, Eby Aluckal, Sandra Abraham et.al. Identifying factors associated with low use of intermittent malaria preventive treatment in pregnancy: healthy moms and babies program. *International Journal of Science & Healthcare Research*. 2024; 9(4): 254-262. DOI: *10.52403/ijshr.20240432*

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