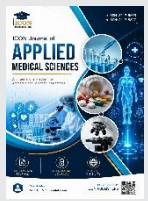

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Husband's Wealth Status and Uptake of Intermittent Preventive Treatment with Sulfadoxine-Pyrimethamine among Pregnant Women in Orlu Zone, Imo State

***Ogoke Ikechukwu V.[1], Ejikunle Samson D.[1], Onyemekara Darlington[2] and Ibe Joy Ada[3] and Uzoma Maria - Joanne's K.[2]**

[1]Department of Obstetrics and Gynecology, Imo State University Teaching Hospital, Orlu, Nigeria.
[2]Department Of Medical Laboratory Science, Imo State University Teaching Hospital, Orlu, Nigeria.
[3]Department of Public health, Imo State University, Owerri, Nigeria.

Corresponding author: Ogoke Ikechukwu V.
Department of Obstetrics and Gynecology, Imo State University Teaching Hospital, Orlu, Nigeria.

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Abstract

Malaria in pregnancy is a major public health concern in malaria-endemic areas. Intermittent preventive treatment with sulfadoxine-pyrimethamine (IPT-SP) is a recommended strategy for the prevention of malaria and its adverse outcome. However, the use of IPT-SP may be determined by an individual's socioeconomic status. This study aimed to determine the association between husband's wealth status and IPT-SP uptake among pregnant women in Orlu Zone, Nigeria. This is a longitudinal study conducted among pregnant women attending ante-natal care (ANC) at 33 selected primary health centres (PHCs) in Orlu Zone, Imo State. A total of 280 pregnant women were recruited for the study. Data were collected using a semi-structured questionnaire. The questionnaire was used to obtain information on the socio-demographic characteristics of the participants, ANC attendance, husband's wealth status, and IPT-SP uptake. Husband's wealth status was categorized into four classes. The data analysis was done using frequencies and percentages. The association between the IPT-SP uptake and husband's wealth was examined using the chi-square test at 5% level of significance. The IPT-SP uptake was found to vary significantly according to the husband's wealth category. The highest IPT-SP uptake of 126 (45%) was recorded among women whose husbands were in wealth class 3. The second highest IPT-SP uptake was among pregnant women whose husbands were in wealth class 4 with 98 (35%). The IPT-SP uptake among women whose husbands were in wealth class 2 was 52 (18.57%). The lowest IPT-SP uptake was among pregnant women whose husbands were in wealth class 1 with 4 (1.43%). The study found that women whose husbands belonged to the higher wealth classes initiated IPT-SP use more than those from the lower wealth classes. Husband's wealth status was significantly associated with IPT-SP uptake among pregnant women in Orlu Zone, Imo State. The higher representation of pregnant women from higher husband-wealth classes among IPT-SP users suggested that access to these interventions may be determined by a woman's socioeconomic status. Increasing access to antenatal health education, improving IPT-SP accessibility, and addressing the socioeconomic inequities among pregnant women can enhance IPT-SP uptake and improve pregnancy outcome.

Keywords: *Husband's wealth; Socioeconomic; IPT-SP; sulfadoxine-pyrimethamine; Malaria; Pregnancy; Antenatal; Orlu Zone; Nigeria.*

Introduction

Malaria is a major public health problem in sub-Saharan Africa where it continues to cause significant morbidity and mortality. Pregnant women are one of the vulnerable groups with high risks of infection and poor health outcomes. The infection is associated with a range of adverse effects on the mothers including maternal anaemia, placental malaria, miscarriage, fetal loss, fetal growth restriction, preterm birth, and other complications[1]. Therefore prevention and effective management of malaria infection during pregnancy are key interventions for improving pregnancy outcome[2].

Intermittent preventive treatment of malaria in pregnancy with sulfadoxine pyrimethamine (IPT-SP) is a highly effective intervention for reducing malaria infection and its adverse outcome. IPT-SP involves the administration of repeated doses of sulfadoxine pyrimethamine to pregnant women at intervals during pregnancy irrespective of their malaria status. IPT-SP has been found to be effective in reducing the incidence of malaria infection among pregnant women. Its effectiveness is however conditional upon pregnant women's access to and utilization of the intervention. There are various individual, household, and health system factors that contribute to IPT-SP uptake among pregnant women[3].

Husband's wealth status is a critical determinant of a woman's access to and utilization of maternal health services including IPT-SP. Households with higher wealth status are more likely to provide enabling environments for pregnant women to access antenatal care services and utilize intermittent preventive treatment of malaria as compared to those from lower wealth households. Although IPT-SP is provided free of charge at most Ante-natal care (ANC) visits, women from lower households may incur expenses in seeking and utilizing this intervention[4]. Expenses may include transportation costs to and from the health facilities, food, and other necessities for survival during ANC visits. The inability to meet these costs discourages pregnant women from attending ANC visits and subsequently adopting IPT-SP as part of their intermittent malaria prevention strategy. In addition, wealthier families may be more likely to provide transportation, support, and other necessities for pregnant women to seek and utilize IPT-SP[5].

Wealth status information for husbands of women seeking ante-natal care services is critical for determining the socio-economic factors that influence their access to and utilization of intermittent preventive treatment with sulfadoxine-pyrimethamine. The findings from this study will help in developing context-specific strategies for improving IPT-SP uptake and utilization in the study area[6].

The study will also contribute to the existing body of knowledge on the relationship between husband's wealth and access to antenatal care services and intermittent preventive treatment of malaria in pregnancy. Additionally, the study will provide evidence needed for sensitizing the community about the role of socioeconomic factors including wealth status on IPT-SP access and utilization among pregnant women.

Orlu Zone has twelve local government areas, each with many primary health centres that provide ante-natal care services to pregnant women. The study is significant in this area because although most pregnant women seek care at primary health care (PHC) facilities, their use of these facilities for IPT-SP may be limited by their personal socioeconomic characteristics[7]. Understanding how socio-economic factors such as husbands' wealth status influence IPT-SP utilization among pregnant women will help in promoting effective strategies for ensuring equitable access and utilization of this intervention during pregnancy[8]. Therefore this study aimed to assess the association between husbands' wealth status and IPT-SP uptake among pregnant women attending ANC at selected Primary Health Centres in Orlu Zone, Nigeria.

The study will be significant in providing an insight into the relationship between husbands' wealth status and IPT-SP utilization during pregnancy. Although many studies have examined the factors affecting IPT-SP utilization during pregnancy, the focus of this study is on women's socioeconomic characteristics and how they may influence IPT-SP utilization during pregnancy. The study will provide evidence for developing targeted interventions for improving IPT-SP utilization among pregnant women in the study area. Therefore this study aimed to determine the association between husband's wealth status and IPT-SP uptake among pregnant women in Orlu, Imo State.

Materials and Methods

Study Design

This study employed a longitudinal study design to assess the relationship between husband's wealth status and uptake of intermittent preventive treatment with sulfadoxine-pyrimethamine (IPT-SP) among pregnant women attending antenatal clinics in selected primary health centres in Orlu Zone, Imo State, Nigeria. Participants were followed from recruitment during pregnancy through subsequent antenatal visits to document IPT-SP uptake.

Area of the Study

The study was conducted in Orlu Zone of Imo State, southeastern Nigeria. Orlu Zone is the largest of the three senatorial zones in Imo State and comprises 12 Local Government Areas (LGAs), namely Orlu, Orsu, Isu, Njaba, Nwangele, Nkwerre, Oru East, Oru West, Ideato South, Ideato North, Oguta, and Ohaji/Egbema.

There are approximately 72 primary health centres distributed across Orlu Zone, of which 33 primary health centres were selected for the study. The zone has an estimated population of approximately 3 million people. The selected primary health centres provide antenatal and other essential maternal healthcare services, including malaria prevention and IPT-SP administration.

Study Population

The study population consisted of approximately 3,500 pregnant women who attended antenatal clinics at the 33 designated primary health centres during the study period. The participants comprised pregnant women receiving routine antenatal care within the study area.

Sample Size Determination

The sample size was determined using Cochran's formula for a finite population:The calculated sample size was approximately 258 participants. The sample was increased to 280 pregnant women for the study.

Ethical Considerations

Participation in the study was voluntary. Eligible participants were informed about the purpose and procedures of the study and the benefits of participation before recruitment. Informed consent was obtained from participants before data collection. Participants were informed of their right to decline participation or withdraw from the study without affecting their access to antenatal care.

Confidentiality and privacy were maintained throughout the study. Information obtained from participants was treated confidentially and used exclusively for the purpose of the research.

Sampling Technique

A purposive/judgmental sampling technique was used to select participants. This non-probability sampling method enabled the researchers to recruit pregnant women who met the predetermined eligibility criteria and attended antenatal clinics at the designated primary health centres.

Instrument for Data Collection

Data were collected using a semi-structured questionnaire developed to obtain information relevant to the study objectives. The questionnaire contained sections addressing maternal and spousal sociodemographic characteristics, antenatal care information, husband's wealth status, and IPT-SP uptake.

At the first antenatal visit, information collected included the participant's initials, age, occupation, marital status, parity, maternal educational attainment, husband's age, husband's educational attainment, and husband's wealth index.

The husband's wealth index was assessed using indicators including employment status, contribution to food provision in the household, ownership of assets, and quality of residential building. Participants were subsequently categorized into four wealth classes, designated as wealth classes 1, 2, 3, and 4.

Information on booking date and gestational age was also recorded. During subsequent antenatal visits, the number and dates of visits, IPT-SP uptake, and reasons for refusal or non-uptake were documented. At approximately the 38th week of gestation, the number of times the participant had taken IPT-SP during the index pregnancy, the number of doses skipped, and reasons for non-uptake were recorded.

Validity of the Instrument

The validity of the questionnaire was ensured by developing the questions and items in accordance with the objectives and variables of the study. The questionnaire was reviewed and corrected by the research supervisors to establish face and content validity. A pilot study was also conducted before the main data collection to assess the appropriateness and clarity of the instrument and to identify areas requiring modification.

Reliability of the Instrument

The reliability of the instrument was ensured by organizing the questionnaire into sections that reflected the different aspects of the study. The instrument was pre-tested, and post-testing was undertaken to assess consistency and reliability before the commencement of the main study.

Data Collection Procedure

Research assistants comprising doctors, nurses, midwives, community health workers, and students were recruited to assist with data collection. They were trained on the objectives of the study, study methodology, administration of the questionnaire, participant recruitment, informed consent procedures, and documentation of IPT-SP uptake.

Permission to conduct the study was obtained from the staff nurses in charge of the designated primary health centres. Willing staff nurses at the participating facilities were also recruited and oriented on the study procedures. Participants were adequately informed about the purpose, methodology, and benefits of the study before enrolment.

Two hundred and eighty pregnant women who met the eligibility criteria and consented to participate were recruited. At each antenatal visit, the questionnaire was used to collect and update relevant information. IPT-SP uptake was documented during subsequent visits, together with any missed doses and reasons for non-uptake. At the end of each pregnancy, the completed questionnaires were retrieved from the research assistants for documentation, checking, and analysis.

Inclusion Criteria

Participants were included if they:

1. were pregnant women attending antenatal clinics at the designated primary health centres;
2. consented to participate in the study;
3. were in the early second or third trimester of pregnancy; and
4. had no known reaction or hypersensitivity to sulfadoxine-pyrimethamine, sulfonamides, or pyrimethamine.

Exclusion Criteria

Participants were excluded if they:

1. did not provide consent to participate;
2. attended antenatal care at health centres outside the designated study facilities;
3. had a known reaction or hypersensitivity to sulfonamides or pyrimethamine; or
4. were in the first trimester of pregnancy at recruitment.

Assessment of Husband's Wealth Status

Husband's wealth status was assessed using selected household socioeconomic indicators, including employment status, provision of food for the household, ownership of assets, and quality of residential building. Participants were classified into four wealth categories, designated as wealth classes 1–4.

The distribution of IPT-SP uptake was subsequently assessed across the four wealth categories. The number and percentage of women who took IPT-SP were determined for each wealth class.

Assessment of IPT-SP Uptake

IPT-SP uptake was assessed during successive antenatal visits. The questionnaire was used to document whether each participant received the drug, the number of doses received, the number of doses missed, and reasons for refusal or non-uptake.

The information collected throughout pregnancy was used to determine the distribution of IPT-SP uptake according to the husband's wealth status.

Statistical Analysis

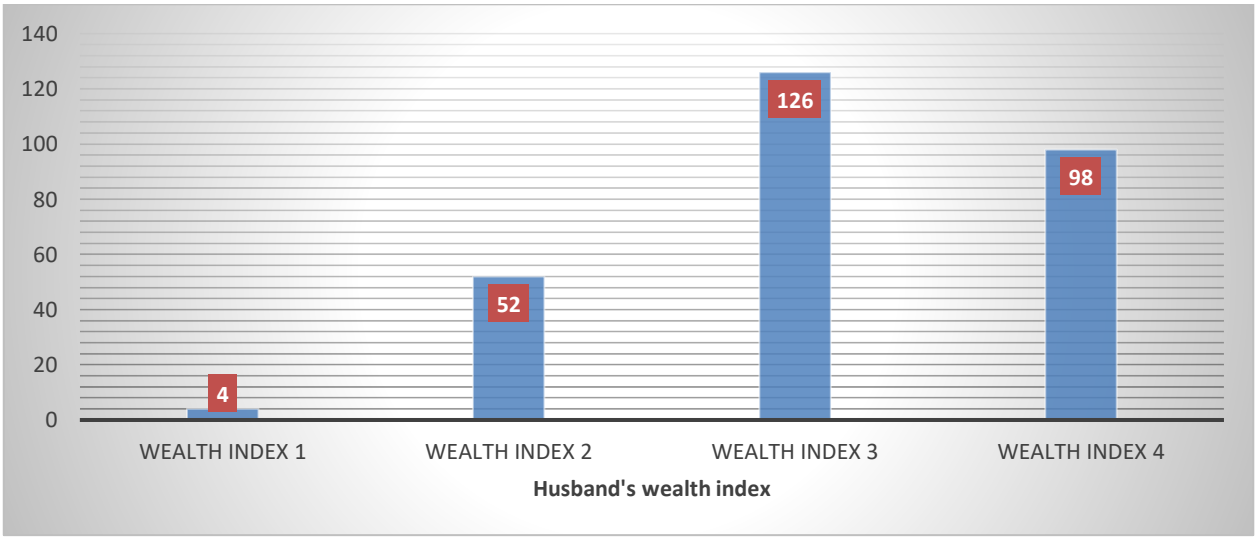
At the completion of data collection, questionnaires were checked for completeness, coded, and entered for statistical analysis. Descriptive results were presented using frequencies, percentages, tables, bar charts, and pie charts, as appropriate. Statistical significance was evaluated at a 5% significance level ($p < 0.05$).

Results

Table 1: Husband's Wealth Index

Wealth status of the husband	1	2	3	4
No of women	4	52	126	98
Percentage uptake	1.43	18.57	45.00	35.00

Fig. 1. The bar chart presentation of the effect of husband's wealth index on the uptake of intermittent preventive treatment with sulphadoxine-pyrimethamine among the participants



On the effect of the husband's wealth index on the uptake of intermittent preventive treatment with sulphadoxine-pyrimethamine, the highest number of participants that took the drug was 126 (45.00%), and these were women whose husbands belonged to class 3 of the wealth index. This was followed by those participants whose husbands belonged to class 4 of the wealth index and their number was 98(35.00%). The number of participants whose husbands belonged to class 2 of the wealth index that took the drug was 52 (18.57%). The lowest number of participants that took the drug was 4 (1.43%), and were those whose husbands belonged to class 1 of the wealth index.

Discussion

The results of this study revealed the relationship between husband's wealth status and IPT-SP uptake among pregnant women in Orlu Zone, Imo State. There was a wide variation in IPT-SP uptake among the four categories of women's husband's wealth. The highest number of pregnant women who took IPT-SP were those whose husbands belonged to wealth class 3; this was 126 (45%) of the study respondents. The second highest number of pregnant women who took IPT-SP were those whose husbands belonged to wealth class 4; this was 98 (35%) of the study respondents. The number of pregnant women who took IPT-SP was 52 (18.57%) for those whose husbands belonged to wealth class 2. The lowest number of pregnant women who took IPT-SP was recorded among those whose husbands belonged to wealth class 1 and was 4 (1.43%).

The wide variation in IPT-SP uptake observed among the study respondents can be explained by the fact that socioeconomic status significantly contributes to accessing antenatal care and treatment. Women whose husbands belonged to wealth class 3 were highly likely to take IPT-SP because they could afford transportation and had enough money for meals, communication, and other needs while receiving antenatal care at primary health centres (PHCs)[9]. In addition, women from relatively wealthy households could cover indirect costs associated with antenatal care attendance, making them more likely to adhere to IPT-SP schedules. This finding can explain why IPT-SP was provided as a component of antenatal care in this study because women who attended antenatal appointments had more opportunities to take IPT-SP[10].

The relatively high IPT-SP uptake of 98 (35%) found among pregnant women whose husbands belonged to wealth class 4 further supports the fact stated above. The high IPT-SP uptake observed among these women could be explained by their ability to cover indirect costs associated with antenatal care attendance. Despite the relatively high IPT-SP uptake recorded among these women, the number of pregnant women belonging to this category was lower than that of pregnant women whose husbands belonged to wealth class 3, which could explain why these women comprised a smaller percentage of IPT-SP receivers. Therefore, it is possible to state that IPT-SP uptake is not always dependent on women's socioeconomic status because parity, maternal education, distance to PHCs providing IPT-SP, drug availability, and women's attitudes can also influence IPT-SP uptake[11].

The low IPT-SP uptake recorded among pregnant women whose husbands belonged to wealth class 1, which was 4 (1.43%), is also concerning. These women might encounter several challenges while receiving antenatal care at PHCs, which could reduce their IPT-SP uptake. Even though IPT-SP is provided to pregnant women for free, they might have to buy food, communicate with relatives and family members, and pay for transportation to PHCs, which could discourage them from receiving antenatal care. In addition, these women might not be able to receive antenatal care on a regular basis due to financial constraints, thereby reducing their IPT-SP uptake[12].

The results of this study can further explain the fact that a pregnant woman's ability to utilise IPT-SP as a malaria control measure largely depends on her socioeconomic status[13]. Women from relatively wealthy households could easily overcome indirect costs associated with antenatal care while those from poorer households might be deterred from receiving antenatal care due to additional expenses they might incur. This fact significantly influences IPT-SP uptake because IPT-SP is provided as a component of antenatal care. Therefore, pregnant women from relatively wealthy households have more opportunities to receive IPT-SP because they can receive antenatal care more frequently than those from poor households[14].

In addition to the study results described above, the relationship between IPT-SP uptake and husband's indirect costs can also be explained by the fact that husbands largely participate in decision-making processes concerning their wives' health care, particularly in terms of transportation to PHCs and the utilisation of antenatal services and interventions. A husband belonging to a relatively wealthy household can support his wife both financially and physically in terms of antenatal care, prenatal interventions such as IPT-SP, and institutional delivery. Therefore, the socioeconomic status of men influences IPT-SP uptake indirectly, by impacting their spouses' ability to receive antenatal care[15].

It is necessary to note that the table above represents the descriptive results of this study, namely, the association between IPT-SP uptake and husband's indirect costs[16]. Therefore, the findings described in this section do not indicate that the higher is the women's socioeconomic status, the higher is their IPT-SP uptake. The table represents the distribution of pregnant women who took IPT-SP among the four categories of husbands' wealth. To indicate that increased women's wealth leads to increased IPT-SP uptake, it is necessary to represent the distribution of IPT-SP receivers and those who did

not take IPT-SP among the four categories of husbands' wealth. This information was not provided in this study; hence, it should be taken into consideration when interpreting the results of this study. In addition, to represent statistically significant associations, it would also be essential to provide the results of the chi-square test with a corresponding p-value. For instance, if the results of the chi-square test are as follows: $p < 0.05$, the results of this study would indicate that IPT-SP uptake is associated with women's socioeconomic status[17].

The study findings described above should also be critically evaluated in the context of women's educational attainment as an important predictor of IPT-SP uptake. This study did not specifically mention women's educational attainment; however, women's education is significantly related to their socioeconomic status[18]. Since women from relatively wealthy households usually have better access to education, they are more likely to understand the benefits of IPT-SP. It is reported that pregnant women often rely on their educational status while making decisions regarding their health care. Therefore, it is possible to suggest that the findings described in this study are also related to women's educational attainment[19].

This study provides important implications for maternal and child health service providers in Orlu Zone. Since PHCs are the most accessible source of antenatal care for poor pregnant women, it is essential for healthcare professionals working in these facilities to provide pregnant women with comprehensive information on IPT-SP, particularly in terms of the prevention-related benefits of this intervention and the timing of its administration. In addition, it is essential for healthcare professionals to counsel pregnant women on the importance of receiving IPT-SP. For pregnant women from poor households, it is also essential for community health workers to provide them with advice on the benefits of attending antenatal care and IPT-SP uptake, which may be crucial for those who cannot reach PHCs due to financial, social, and other barriers[20].

Finally, it is essential for healthcare professionals to ensure that IPT-SP is available for pregnant women who want to take it. If pregnant women decide to take IPT-SP but cannot do so due to the unavailability of this intervention, it will lead to their dissatisfaction and loss of trust in healthcare providers. Moreover, this issue may affect women's future decisions regarding their health care, resulting in adverse outcomes for both mothers and children. To address this issue, healthcare professionals should work on reducing inequity in access to antenatal care and IPT-SP by promoting the benefits of IPT-SP, providing effective communication with pregnant women on IPT-SP, and ensuring the continuous availability of this intervention[21].

A strong aspect of this study was its design, which involved collecting data from pregnant women on a regular basis, thereby enabling this study to include information on IPT-SP uptake at different stages of pregnancy. Another strong aspect of this study was that it was conducted in 33 PHCs, thereby providing an opportunity to collect comprehensive data and obtain accurate results from most PHCs in Orlu Zone. The study's limitation was that pregnant women were selected using a purposive sampling strategy, which makes it difficult to generalise the results of this study to all pregnant women in Orlu Zone. Another limitation of this study was that it used husbands' wealth as an indicator of households' socioeconomic status, which may not always represent women's indirect costs, particularly if women play an active role in decision-making processes concerning their health care[22].

Conclusion

The results of this study revealed that IPT-SP uptake varied greatly among pregnant women whose husbands belonged to different categories of wealth. Those whose husbands belonged to wealth class 3 comprised the largest portion of pregnant women who took IPT-SP, followed by those whose husbands belonged to wealth class 4, while those whose husbands belonged to wealth class 1 comprised the smallest portion of pregnant women who took IPT-SP. Socioeconomic factors appear to greatly influence IPT-SP uptake among pregnant women. Improving accessibility to antenatal care and promoting IPT-SP adherence to pregnant women while they receive antenatal care can help increase IPT-SP uptake among pregnant women in Orlu Zone, Imo State.

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