Determinants of Intermittent Preventive Treatment of malaria among pregnant women in Uganda

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Background: The malaria burden is so much felt in Sub-saharan Africa where up to 90% of the global deaths occur(WHO, 1996 & Snow et al, 1996). 250 million cases of malaria are recorded each year and annual deaths are about 781,000 (WHO, 2010) and most of the malaria cases are reported in Sub-saharan Africa (Heggenbougen, 2003). Malaria's impact among pregnant women includes high maternal and child mortality and increases the risk of miscarriage, still births and low birth weight (Steketee, 2001, Shane 2001, Olorunfemi E A, 2012).
The Uganda national malaria policy states that pregnant women should take sulfadoxine pyrimethamine atleast twice during pregnancy, once during the second trimester and then at least one month apart since 2002. Therefore, this study is set out to find out whether the pregnant women use the drugs in the WHO recommended manner.

Purpose: The main objective of the study was to investigate the determinants of Intermitent preventive treatment of malaria among pregnant women in Uganda.

Methods and materials
Source of data: This paper has utilized data from the 2009 Uganda Malaria indicator survey which was conducted by Ministry of Health in conjunction with ICF Macro in 2009.

Population of study: A total of 1464 women whose last birth in four years before the survey were asked questions on sulfadoxine pyrimethamine (fansidar) use during pregnancy and how many times they took fansidar.

Variables of the study: They include background factors i. e:

- *Age:* which was categorized into six categories of 15-19, 20-24, 25-29, 30-34, 35-39 and 40-49 because of the few cases in the 40-44 and 45-49 age groups.
- *Education* is in three categories of no education, primary and secondary and above
- *Occupation* include the unemployed, those employed in the agriculture sector, professionals, those in the service industry like clerks, sales persons and manual labourers that is both the skilled and unskilled manual labourers.
- *Region* include the Central, East, North and West.
- *Wealth index* was grouped into five quintiles that is, the poorest, poorer, middle, richer and the richest.
- *Type of visit* which was the time when the pregnant woman got fansidar. The women either got fansidar at an antenatal care visit, from other health centers or from other sources.
- And whether the women had received any message about malaria or not.

Data analysis method: The researcher used Statistical Package for Social Scientists (SPSS) statistical package for data analysis.

At univariate level, frequency distributions were done for background factors like age, region, rural urban residence, and education level, occupation, and wealth quintile. Frequency distribution for knowledge of IPT, type of visit when the women got fansidar and whether these women have heard any information about malaria was also done.

Chi-Square tests were done to establish if there was any relationship between the independent variables and IPT among these women. Times women have taken fansidar was cross-tabulated with the independent variables in order to assess whether or not the associations were statistically significant. The level of significance was at 0.05 that is at a confidence interval of 95%.

The general form of the Chi-square used is

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{k}\frac{(O_{ij}-E_{ij})^2}{E_{ij}} \quad \text{.....3.1}$$

Where;

j= 1, 2… k

i = 1, 2... r

O_{ij} = Observed frequency.

E_{ij} = Expected frequency.

k = Number of categories of the dependent variable.

r = Number of categories of the independent variables.

To find out the determinants of IPT among pregnant women in Uganda, Binary logistic regression model was used to model the determinants. The independent variables that were fitted into the model were: education, occupation, region, place of residence, type of visit when a woman got fansidar, knowledge of times when a pregnant woman should take anti-malarials and whether these women have heard messages about malaria. At a p-value of 0.05, the researcher chose the determinants of IPT among pregnant women Uganda.
The model can be expressed as;

$$\text{Log}\left[\frac{p_i}{1-p_i}\right] = b_0 + b_1x_{1i} + b_2x_{2i} + \ldots + b_kx_{ki}$$

Where;

p_{i-} Probability that a pregnant woman took anti-malarials atleast two times while pregnant with her last live birth in two years preceeding the survey.

b_o– the intercept

b_i– the regression coefficients

x– are the independent variables

Findings: The study revealed that the highest number of respondents were aged 20-24 (33.1%) and 87.9% women aged 15-49 resided in rural areas. The majority had attained primary education (63.8%), and most of them were in the poorer wealth index. The study also indicated that most respondents were residing in Northern region (32.2%) and forty seven percent of them were employed in the Agriculture sector.

More than half of the respondents (55.8%) have heard a message about malaria, 43 percent of them know that pregnant women should take fansidar to prevent malaria and 32.9 percent knew that a pregnant woman should take fansidar at least two times to prevent malaria infection. Thirty three percent (475) took sulfadoxine pyrithamine at least two times.

At bivariate level, it was found out that occupation, region, place of residence, wealth index, age, education level, type of visit when she got antimalarials, knowledge that fansidar helps prevent malaria among pregnant women, the number of times a pregnant should take fansidar and having heard a message about malaria were significantly related to IPT uptake among the pregnant women.

With Binary logistic regression, It was found out that IPT was determined by education level, occupation, wealth index and type of visit when a woman got Fansidar. The findings at multivariate analysis gave the contribution of each factor on Intermittent Preventive Treatment among pregnant women in Uganda, (See Appendix 1).

Recommendations: This study has implications for policies and programs that seek to increase IPT among women at least up to 85%. It is crucial to continue improving women access to education in the country, as this increases their knowledge and improves their health seeking behavior including IPT up-take.
Also, women working out of their homes should be encouraged in order to expose them better information, improve their incomes so that they become empowered to access ANC and be able to pay the related costs in terms of transport and other costs.
Health staff should be given courses on IPT so as to equip themselves with current guidelines on malaria prevention among pregnant women and stocking of sulfadoxine pyrimethamine should be ensured especially in public health facilities so that women are availed with it.

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APPENDIX

Table 1: Results of Binary logistic regression model analysis for intermittent Preventive treatment among pregnant women to female's characteristics

Female's Characteristics	Odds ratio	Pvalue	95% confidence interval	
Education level				
Secondary Education	1.000			
No education	3.439	**0.029**	0.911	12.982
Primary education	0.707	0.068	0.344	1.453
Occupation				
Labourers	1.000			
Agriculturalists	5.160	**0.030**	1.174	22.687
Traders	5.080	0.098	0.741	34.803
Professionals	2.811	0.150	0.687	11.498
Unemployed	3.394	0.098	0.797	14.453
Wealth index				
Richest	1.000			
poorest	2.151	0.192	0.681	6.791
Poorer	3.250	**0.027**	1.143	9.235
Middle	2.158	0.100	**0.864**	5.391
Richer	3.380	**0.010**	**1.332**	8.575
Place of residence				
Rural	1.000			
Urban	1.309	0.527	0.569	3.012
Type of visit				
Other source	1.000			
ANC visit	37.450	**0.001**	4.252	329.882
Other Health facility	4.841	0.254	0.322	72.690

Has heard messages about malaria				
No	1.000			
Yes	0.676	0.184	0.380	1.205
Age				
40-49	1.000			
15-19	0.474	0.624	0.024	9.354
20-24	0.359	0.456	0.024	5.313
25-29	0.144	0.158	0.010	2.123
30-34	0.145	0.164	0.010	2.204
35-39	0.388	0.509	0.023	6.441
Goodness of fit	**0.000**			
Sample	**1464**			