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Factors Influencing Antenatal Clinic Attendance among Pregnant Women in Rural Areas of Ho Municipality

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Abstract: *Maternal mortality is a silent traumatic canker which is a major concern for various individuals, health authorities and the country as a whole. All over the world,studies are being done to unravel the mystery surrounding the high prevalence of maternal mortality especially in developing countries.Antenatal care is one important element identified when it comes to the issue of maternal mortality. This study therefore aimsatidentifying the factors that influence pregnant women in availing themselvesto antenatal care at health facilities. The study was based on two hundred (200) mothers living in one of the eight villages around Ho. The data from the respondents was obtained using well-structured questionnaire. The data obtained was analysed using descriptive statistics and logistic regression. The study revealed that place of residence or hometown, level of education of the respondents, level of education of respondents' husbands and distance to the Healthcare centre from respondents'homearesignificant factors influencing the choice to attend antenatal care.*
Key words: *Maternal mortality, antenatal, clinic attendance, pregnant women, Ho Municipality*

I. Introduction

Maternal mortality is one of the most tragic and serious health problems in the world. The rate at which women are dying is so alarming that, one of the Millennium Development Goals is targeted at reducing this phenomenon by three quarters by 2015. Current world rate of maternal mortality shows clearly that this goal can never be achieved unless something drastic is done to reverse the current trend. As the year 2015 gets to an end, development experts are keenly monitoring the efforts being made so far by various countries to attain the eight millennium development goals to improve the lives of the people.

The World Health Oganisation (WHO) estimated that 536,000 maternal deaths occurred in the year 2005 globally (WHO, 2009). Of the total deaths 99% occurred in developing countries where 450 deaths per 100,000 live births were reported (WHO, 2009). However, within developing countries Sub-Saharan Africa had the highest burden where maternal mortality ratio was at 900 deaths per 100,000 live births (UNFPA, 2005). Ghana is among the developing countries that contribute 99% of the global maternal deaths. Despite the advances in many countries in reducing maternal deaths, sub-Saharan Africa still has the highest maternal mortality level in the world – 640 maternal deaths per 100,000 live births in 2008, which is more than twice the average in the developing regions and 38 times the average in the developed regions (MDG report, 2011).

According to Ho Municipal Health Directorate of Ghana Health Service 2010 Annual report, eighty two (82) maternal deaths were recorded in 2010 as compared to 55 recorded a year earlier. This represents maternal mortality ratio of 210/100,000 live births. Five (5) of the deaths occurred in the age group of (15-19) years, 59 in the age group of (20-34) years and 18 were 35 years and above. These results show that instead of total number of maternal deaths to be decreasing as expected by Millennium Development Goals, it is rather increasing.

Maternal health is a huge problem in Africa, with 50 per cent of maternal deaths happening on the continent [16]. African woman are a staggering 100 times more likely to die during childbirth compared totheir counterparts elsewhere, with around one and a half thousands of such cases every day.

In the contemporary world, maternal mortality is considered a violation of the rights of women and its rate is perceived as a critical index of the level of development of a country. Consequently, nations all over the world have been urged to institute programs and policies within their available resources to combat this menace.

According to renowned researcher, Chaibva, (2008) many of the young women, because of their age fail to attend antenatal clinic or attend the antenatal lately. Many of these adolescent girls tend to hide their pregnancies from their parents because they are students or pupils and majority are too young to appreciate

antenatal (Chaibva, 2008) care and majority of these girls are in the rural area who many a time shun antenatal care because of fear of being branded decadent among other girls of the same cohort.

A Ghanaian researcher also opined that pregnant women in Ghana are free to enroll in Ghana's National Health Insurance but they don't, many pregnant women prefer to deliver at homes and suffer complications and occasionally died, Da-uri Awonodom (2013).The aim of the study was, therefore to investigate the factors that influence a pregnant woman in availing herself of antenatal care and suggest the alternative solution to curbing this problem.

II. Methodology

Study design and setting

The study was designed combining both qualitative and quantitative forms, which is known as the mixed methods approach. Creswell (2009) argued that since the mixed methods approach uses both forms alongside each other, the overall strength of a study is greater than either qualitative or quantitative research (Creswell and Clark, 2007 cited in Creswell, 2009). The setting was the Ho municipality in Volta Region, Ghana.

III. Study Population

The population of Ho Municipality according to the 2010 Population and Housing Census is 177,281and 52.7% (93428)of the population are females. Selecting all women of Ghana which is the target population would be very ideal for the study. Financial and time constraints however would not permit that to happen. The study was therefore limited to women of Ho Municipality. Women from Matse, Nyive, Taviefe Lume and Akorme all in Ho municipality were considered for the study. The rest of the communities were Hordzo, Abutia, and Tanyigbey. The respondents were women had pregnancy experiences or have giving birth two years ago and are from eight villages in the municipality.

IV. The Sampling Procedure and Sample Size

A total of two hundred (200) female adults who met the criteria for the interview (those women who may have had pregnancy experiences or giving birth two years before the commencement of the research) were interviewed. The following sampling procedure was used;

Simple random sampling was used to select tight villages out of over 50 villages and towns in Ho Municipality.

• 200 women who had pregnancy experiences or giving birth two years ago were selected from eight communities in the municipality were selected for the study

• In each of the eight villages 25 households were selected using the following method. The Assembly man's house was located in each village, fronting it; the first house on the right was selected and moving in that direction, every alternate household was selected until the 25 households were covered. When the 25 households were not covered, the researchers turned right, then right until the 25 households were covered for the specific village.

The sample total was arrived at by the formula below since the total population is more than 10,000

N= The desired sample size (when population is greater than 10,000)

Z = The reliability co-efficient for 95% confidence level set at 1.96

P = Proportion of Antenatal care services non users

q = 1 – P = 86.o% or.0. 86 d = Degree of freedom

(0.05)

$$N= \frac{1.96^2 \times 0.14 \times 0.86}{0.05^2}$$

Therefore, $N = \frac{0.46252864}{0.0025} = 185.011$

To get a roundedfigure for the research, 200 was decided on to make up for non-response. The sample size of women who have given birth to at least one child which is twenty-five (25) each from each of the eight communities mentioned earlier was arrived at based on the number of rural areas in the municipality and the number of women who had in-depth knowledge on mortality prior to the study.

V. The Instrument

The questionnaire had two sections. The first section consisted of demographic information such as age, occupation and marital status. The second section consisted of access to maternal health care services (MHC).

VI. Data Collection

The study employed a non-probability sampling technique of snow ball to identify the research participants. To arrive at the sample, twenty five (25) women were selected from each village through snow ball sampling technique for the study. This technique was chosen because of how reliable it would be in this study.

VII. Data Analysis

The researcher coded all questionnaires before their administration. Completed questionnaires were sorted out, collated and cleaned. Cross validation and consistency checks were done. Data collected were summarized and illustrated using bar-charts and frequency distribution tables used for sample data grouping. The results were presented in tables showing proportions of the distribution of the characteristics. A binary logistic regression analysis was done. The response variable for the analyses was: ever visit to service centre for antenatal purposes(yes = 1, no = 0).

VIII. Analytical Framework

Logistic regression is a technique for making predictions when the response variable is a dichotomy, and the independent variables are continuous and/or discrete. Regression methods have become an integral component of any data analysis concerned with describing the relationship between a response variable and one or more explanatory variables. It is often the case that the outcome variable is discrete, taking on two or more possible values.

The goal of logistic regression is to correctly predict the category of outcome for individual cases using the most parsimonious model. To accomplish this goal, a model is created that includes all predictor variables that are useful in predicting the response variable. Several different options are available during model creation. Variables can be entered into the model in the order specified by the researcher or logistic regression can test the fit of the model after each coefficient is added or deleted, called stepwise regression.

The main focus of logistic regression analysis is the classification of individuals in different groups. The aim of the present study is to explain basic concepts and applications of binary logistic regression analysis intended to determine the combination of independent variables which best explain the membership in certain groups called dichotomous dependent variable. Stepwise regression is used in the exploratory phase of research but it is not recommended for theory testing **[11].**Inference in logistic regression can be made using odds ratio or Wald test.

IX. Properties of The Odds Ratio

The odds ratio is a measure of effect size, describing the strength of association or non-independence between two binary data values [14]. It is used as a descriptive statistic, and plays an important role in logistic regression. Unlike other measures of association for paired binary data such as the relative risk, the odds ratio treats the two variables being compared symmetrically, and can be estimated using some types of non-random samples.

The odds ratio is the ratio of the odds of an event occurring in one group to the odds of it occurring in another group. The term is also used to refer to sample-based estimates of this ratio. These groups might be men and women, an experimental group and a group, or any other dichotomous classification. If the probabilities of the event in each of the groups are $p1$ (first group) and p2 (second group), then the odds ratio is:

$$\frac{p1}{1-p1} = \frac{p1}{q1} = p1q1$$

$$\frac{p2}{1-p2} = \frac{p2}{q2} = p2q2$$

where$q$=1-$p(x)$. An odds ratio of 1 indicates that the condition or event under study is equally likely to occur in both groups. An odds ratio greater than 1 indicates that the condition or event is more likely to occur in the first group. And an odds ratio less than 1 indicates that the condition or event is less likely to occur in the first group. The odds ratio must be nonnegative if it is defined. It is undefined if$p2q1$ equals zero, i.e., if$p2$ equals zero or p_1 equals one.

X. The Wald Test

The estimates of the coefficients and the intercepts in logistic regression are found through maximum likelihood estimation. We use Wald statistic to test the statistical significance of each predictor in the model.

The Wald test works by testing the null hypothesis that a particular parameter is equal to zero. If the test fails to reject the null hypothesis, this suggests that removing the variables from the model will not substantially harm the fit of that model.

XI. Hosmer-Lemeshow Goodness-Of-Fit Statistic

Sufficient replication within subpopulations is required to make the Pearson and deviance goodness-of fit tests valid. When there are one or more continuous predictors in the model, the data are often too sparse to use these statistics.

[15] proposed a statistic that they show, through simulation, is distributed as chi-square when there is no replication in any of the subpopulations. This test is available only for binary response models.

The Hosmer–Lemeshow test statistic is given by:

$$H = \sum_{g=1}^{n} \frac{(O_g - E_g)^2}{N_g \pi_g (1 - \pi_g)}$$

Here Og,Eg,Ng, andπg denote the observed events, expected events, observations, predicted risk for thegt risk decile group, and n is the number of groups. The test statistic asymptotically follows aχ^2distribution with$n-$ 2 degrees of freedom. The number of risk groups may be adjusted depending on how many fitted risks are determined by the model. This helps to avoid singular decile groups.

XII. Result And Discussion

Table 1: Age distribution of Respondents

Variable	Frequency	Percentage
<21	28	14
21-25	89	44.5
26-30	41	20.5
31-35	31	15.5
35+11	5.5	

Source: From the study

Table 1 shows that 14% (28) of the women interviewed were less than 21 years old while 11 respondents were aged above 35 years representing 5.5% of the ages of the respondents.

Table 2: Distribution of Educational level of the participants (n=200)

Variables	Frequency	Percentages
No Education	76	38
JHS/Middle School	61	30.5
SHS/VOC/TECH	41	20.5
Tertiary	22	11

Source: From the study

Table 2 showed that 38% of the respondents (women) had no education and 11% of the respondents had tertiary education.

Table 3: Logistic Regression Predicting Likelihood of mothers visiting Hospitals

Variable	Coefficient	Standard Error	Wald stat.	P-Value	Odds Ratio
Hometown	-0.172	0.074	5.436	0.02	0.842
Age	-0.168	0.15	1.261	0.261	0.845
Religion	-0.258	0.263	0.96	0.327	0.773
Education	0.921	0.337	7.459	0.006	2.513
Occupation	0.015	0.29	0.003	0.959	1.015
Husbands' education	0.994	0.36	7.617	0.006	2.702
Husbands' occupation	0.013	0.01	1.903	0.168	1.013
Distance	-0.588	0.279	4.435	0.035	0.555
Accompaniment	-0.028	0.043	0.413	0.521	0.972
Constant	1.24	1.051	1.393	0.238	3.456

Source: From the Study

From Table 3, the logistic model was obtained as follows

$$\boldsymbol{Logit(P(y=1))} = \mathbf{0.921}\,\boldsymbol{Education} + \mathbf{0.994}\boldsymbol{Husbands'education} - \mathbf{0.588}\boldsymbol{Distance} - \mathbf{0.172}\boldsymbol{Hometown} \ldots\ldots\ldots\ldots\ldots\ldots\ \boldsymbol{model\ A}$$

Hypothesis testing using Table 3 above

$H0: \beta_j = 0$

$H1: \beta_j \neq 0 \quad w \quad ere\ j = eac \quad coefficient\ of\ t \quad e\ independent\ variables\ in\ Table\ 4.2$

It can be noted from Table 3 that, the independent variables; place of residence or hometown, level of education of the respondents, level of education of respondents' husbands and distance to the service centre from respondent's home with the p-values 0.02, 0.006, 0.006, and 0.035 respectively are each less than α = 0.05. Therefore, we reject the null hypothesis and conclude that the coefficients of these variables are each not equal to zero with 95% confidence. This means that these predictors are each important to be included in the final model A. Based on this reason, we can say that these predictors are relevant in predicting visiting health facility or centresin Ho Municipality.

Also, it is worth noting that the independent variables; age, religion, occupation, husband's occupation and accompaniment were dropped from the model. Since the p – values 0.261, 0.327, 0.959, 0.168 and 0.521 were each greater than α = 0.05, so we fail to reject the null hypothesis and conclude that the coefficients of these variables are each equal to zero. This shows that these independent variables were not important to be included in the model. Hence the independent variables: age group, antenatal visits, weight of baby, sex of baby, hours of work and anemia were not relevant in predicting visiting health facility or service centres at Ho Municipality hospital at the time of the study.

Furthermore, the strongest predictor of visiting service centre was husband's education, recording an odds ratio of 2.702 which implies that a one unit increase in husband's educational level increased the odds that survey respondents will visit the service centre by 170.2%.

The value of the odds ratio for hometown was 0.842 which implies that a one unit increase in the location of the hometown of respondent decreased the odds that survey respondents will visit the service centre by 15.8%.

Again the value of the Odds ratio for education was 2.513, which implies that a one unit increase in the number of respondents who were educated increased the odds that survey respondents visiting the health facility by 151.3%.

Last but not the least the value of the odds for distance was 0.555 which implies that a one unit increase in the distance of service centre from respondent's household increased the odds that survey decreased the odds of the respondents visiting the health facility by 44.5%. This implies that visiting service centre was predicted more by the educational status of husband.

XIII. Conclusions and Recommendations

It can be inferred from the study that the higher the level of education of pregnant women and their spouses, the higher the likelihood of attending antenatal clinic. In addition, the farther a pregnant woman lives away from a health facility, the lower the likelihood of her attending antenatal clinic.

It is recommended that public education on maternal health be intensified. Also, girl-child education must be encouraged and promoted. Finally, more health facilities should be cited closer to these communities to encourage antenatal clinic attendance.

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