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Utilization of Reproductive Health Services in Ghana

Naasegnibe Kuunibe*, Paul Kwame Nkegbe, and Yazeed Abdul Mumin
Department of Economics and Entrepreneurship Development
Faculty of Integrated Development Studies, University for Development Studies, PO Box 520, Wa, Ghana
* Corresponding author, Tel: +233-209-006165 E-mail: edwardlatuo@yahoo.com

Abstract
Reproductive health is an essential part of general health that it sets the stage for health beyond the reproductive years and also affects the health of the next generation. In many developing countries, however, the availability as well as the consumption of reproductive health services is constrained by a combination of economic and social factors, an understanding of which can be instrumental in formulating and implementing policies that result in improved health. The current study therefore assesses utilization of reproductive health services in Ghana using a random sample of 200. The results of the probit analysis employed show that being married and income positively influence reproductive health services utilization, while price negatively affects it. In the light of the findings thus policy should target the unmarried, and also provide incentives to the poor in the form of price subsidy if the aim is to enhance utilization of the services.
Keywords: Reproductive health, binary probit, marginal effect, utilization, Ghana

1. Introduction

Reproductive health is an important part of general health and a reflection of health particularly during childhood. It is also crucial during adolescence and adulthood because it does not only set the stage for health beyond the reproductive years; it also affects the health of the next generation. Indeed, it is not for nothing the UN General Assembly incorporated universal access to reproductive health as a target of the MDG 5 (Bernstein and Hansen, 2006) making it a prerequisite for social, economic and human development.

Reproductive health services (RHS) include access to information and services on prevention, diagnosis, counselling, treatment and care, and require that all people can safely reach services without travelling for a long time or distance. Services and treatments must be affordable and based on the principle of equity. It also requires that services are of adequate quality and that providers do not discriminate on the basis of sexuality, gender, ethnicity and age (Creel et al., 2002; Doherty, 2005).

Like many health outcomes, reproductive health is the outcome of consumption of both reproductive health care and other goods and services. Components such as family planning, safe delivery services, prenatal and postnatal care, treatment of placental malaria, information and counselling on sexuality, antenatal and neonatal immunization services, nutrient supplements during pregnancy and behaviours that promote foetal growth are a usual part of this service (Ajakaiye and Mwabu, 2007). Overall, 37 countries have family planning needs that are not met and about 24 countries have a contraceptive prevalence rate for modern methods that is less than 10 percent (UN, 2012). In many developing countries, the availability as well as the consumption of reproductive health services is constrained by a combination of economic and social factors.

Indeed there is under-utilization of maternal and child health services around the globe and this has contributed greatly to mortality in developing countries (Raghupathy, 1996). According to Malarcher (2010) progress in utilization of RHS in many countries is low and indeed disappointing even after decades of investments. This low utilization is worsening by widening the poor-rich gap in family planning adoption practices, with the rich adopting faster than the poor. This means that the poor continue to forfeit the advantages associated with reduced fertility and contributes to high levels of morbidity and mortality for largely preventable problems. It is possible that economic and social factors, gender roles and religious conservatism affect access and utilization of RHS. An understanding of RHS utilization can affect the design and implementation of policies that enhance the health of individuals. To this end, the study seeks to assess the utilization of reproductive health services and determine the factors affecting it.

2. Methodology

2.1 Design

The study involves the collection of primary data from a sample of 200 individuals aged from 15 to 49 years old in the Wa Municipality of the Upper West Region of Ghana. The Upper West Region covers 18,478 square kilometres, constituting about 12.7 per cent of the total land area of Ghana. It lies between longitude 1^{o} 25'' W and 2^{o} 45'' and latitudes 9^{o} 30'' N and 11^{o}N and is bordered on the north by the Republic of Burkina Faso, on the east by Upper East Region, on the south by Northern Region and on the west by Cotê d'Ivoire. At the

moment the region is said to be the poorest in the country with nine (9) out of every ten (10) falling below the poverty line and lags behind other regions in most socio-economic development indicators such as education, literacy and social infrastructural facilities. The proportion of the region's population aged six years and older, that has never attended school, is 70.4 per cent, which is 1.8 times higher than the total national average of 39.8 per cent. Educational attainment is consistently lower at every level compared to what pertains in other regions (GSS, 2005).

The three major economic activities in the region are agriculture and related work, sales work (5.2%) and production and transport equipment work (12.1%). Together, the three account for 89.5 per cent of the workforce in the region, with the highest proportion (72.2%) in agriculture. The three major industrial activities are agriculture, including hunting, forestry and related work, wholesale and retail trade, and manufacturing with the household as the main economic unit. Unemployment in the region (11.1%) is higher than the national average of 7.8%. It is also slightly higher for males (11.6%) than for females (10.7%) (ibid.).

This situation places the Region at a disadvantage in terms of economic and social infrastructure. Being poor requires that families plan their families well and that young people should access reproductive health services to avoid unwanted pregnancies. The age range of 15 to 49 represents the sexually active and decision making population who need to access and utilize RHS. Self-administered questionnaire was used to collect data on the utilization of reproductive health services as well as on the socio-demographic characteristics of the respondents and the costs of accessing reproductive health services.

2.2 Data analysis

The left hand side variable, utilization of reproductive health services, is a qualitative variable. A unique feature of qualitative variables is that it elicits a yes or no response and usually measured on the nominal or ordinal scale, rather than on the continuous scale, in which case the least squares regression technique has been shown to be inadequate (Collet and Agresti, 1990). Usually analysed within the framework of discrete choice models, the most commonly used approaches to estimating such models include the linear probability model (LPM), the logit model and the probit model (Gujarati, 2004).

However, the LPM does not appear an attractive model any longer because it exhibits non-normality of the disturbances, has heteroscedastic variances, has the possibility of the probabilities lying outside the 0-1 range and has a questionable R^2 as a measure of goodness-of-fit (Collet, 1991; Agresti, 1990; Hill et al., 2008). The logit and probit models are shown to be more appropriate alternatives. Indeed, the major difference between the two lies in the fact that the probit model transforms probabilities of an event into scores from the cumulative standard normal distribution rather than into log odds as in the logistic regression.

However, Nagler (1994) believes that the probit model includes a more believable error term distribution as well as more realistic probabilities, which gives it an urge over its logit counterpart. In this light, this study employs the binary probit model to analyse the utilization of reproductive health services in the Upper West Region of Ghana.

According to Cameroon and Trivedi (2010), the probit model specifies the conditional probability;

$$P_i = \theta(X'\beta) = \int_{-\infty}^{X'\beta} \delta(z)dz \tag{1}$$

where $\theta(\cdot)$ is the standard normal cumulative distribution function with derivative

$$\delta(z) = (1/\sqrt{2\pi})\, exp\, (-z^2/2) \tag{2}$$

which is the standard normal density function; and the marginal effects are

$$\frac{\partial P_i}{\partial x_{ij}} = \delta(X'\beta)\beta_j = \delta(\theta^{-1}(P_i))\beta_j \tag{3}$$

where $P_i = \theta(X'\beta)$. Indeed, the probit model usually constrains the estimated probabilities to be between 0 and 1 and relaxes the constraint that the effect of the independent variable is constant across different predicted values of the dependent variable (Nagler, 2002).

In this study, the variable of interest is whether or not an individual has ever utilised reproductive health service in the past one year. In this regard, the probit model is specified as;

$$L^* = X_i'\beta_i + \mu_i. \tag{4a}$$

The L^* is unobservable and is thus referred to as a latent variable. Since it is unobservable, it is linked to L, the observable binary variable, through the relation:

$$L_i = \begin{cases} 1, & \text{if } L^* > 0 \\ 0 \text{ otherwise} \end{cases}. \quad (4b)$$

From equation (4), the X_i include marital status, income, number of children, sex, age, level of knowledge, traditional religion, adopted religion (Christianity or Islam), level of education and price of the service received; β_i is a vector of unknown parameters and μ_i is the random term. The religion variable is put into traditional and adopted to find out if adopted religions are more receptive to reproductive health services than traditional religion and vice versa. The variables and their measurements are presented in Table 1.

Table 1: Description of variables

Variable	Measurement
Marital status	1= ever married ; 0 = never married
Income	Monthly earnings (GH¢)[4]
Children	Number of children by respondent at time of interview
Sex	1 = male; 0 = female
Knowledge	1 = low ; 2 = high
Education	0 = none ; 1 = basic; 2 = secondary; 3 = tertiary
Age	Full age (in years) at the time of interview
Price	Amount paid for service (GH¢)
Christianity	0 = no; 1 = yes
Islam	0 = no; 1 = yes

3. Discussion of Results

3.1 Descriptive statistics

The results in Table 2 show that about 55.0 percent of the respondents were ever married while about 45.0 percent never married. Similarly, more women than men were also interviewed. Generally, about 53.0 percent of the respondents indicated that they had high level of knowledge on reproductive health services, a position which is consistent with the number of persons utilizing the various services. Out of the 200 respondents interviewed, majority of them (about 78.0 percent) indicated that they ever utilized RHS, which finding agrees with the position by the National Population Council (2004) that in Ghana knowledge of modern contraceptive methods is high, increasing from 12.9 percent in 1988 to 25.3 percent in 2003. Specifically, about 17.3 percent used nutritional supplements during pregnancy, 15.2 percent sought information and counselling on sexuality, 17.9 percent sought treatment of placental malaria and 16.0 percent went for antenatal and neonatal immunization services.

Table 2: Summary statistics

Variable	Category	Frequency	Percent
Socio-demographic characteristics			
Marital status	Married	110	55.0
	Not married	90	45.0
Level of education	None	24	11.6
	Basic	56	26.5
	Secondary	58	29.0
	Tertiary	62	32.9
Sex	Male	71	35.5
	Female	129	64.5
Level of knowledge	Low	98	47

[4] GH¢1 = US$0.5150 as at 20/08/12 accessed from www.xe.com.

	High	102	53
Religion	Christianity	111	55.5
	Islam	84	42.0
	Traditional	4	2.0
Utilization of reproductive health services			
RHS use	Never utilised	45	22.5
	Ever utilised	155	77.5
Services ever utilised	Nutritional Supplements	57	17.3
	Information and Counselling on Sexuality	50	15.2
	Prenatal and Postnatal Care	59	17.9
	Safe Delivery Services	55	16.8
	Treatment of Placenta Malaria	52	15.8
	Antenatal and Neonatal Immunization	55	16.8

3.2 Determinants of reproductive health services utilization

In analysing the factors affecting the utilization of reproductive health services, the binary probit model was employed and the results are presented in Table 3. The model summary results show that over 80.0 percent of the dependent variable was correctly predicted. The Wald statistic of 44.67 is significant at the 0.01 percent, indicating that the explanatory variables included in the model are jointly significant in explaining variations in the utilisation of RHS in the study area.

The regression results reveal that marital status, income, knowledge of the service, religion and price of the service all have significant effect on the utilisation of RHS. A married person has a significantly positive effect on the probability of using RHS at the 0.05 level. This means married people are more likely to utilise RHS than their unmarried counterparts. The probability of utilizing RHS increases by about 0.12 when the status of a person changes from being unmarried to married as shown by the marginal effects (Table 3). This probably explains the observation that out of the six RHS utilised by people in this study (see Table 2), three of them (prenatal and postnatal care, safe delivery services, antenatal and neonatal immunization) are maternal related, since they are more likely used by the married. On the flip side, unmarried persons especially the youth could be exposed to such dangers associated with poor reproductive health life such as unwanted pregnancies and unsafe abortions since they are less likely to use such RHS.

Table 3: Binary probit regression results

Variables	**Coefficients**		**Marginal effects**	
	Estimates	Z-value	Estimates	Z-value
Marital Status	0.388*	1.54	0.097*	1.72
Income	0.169*	1.72	0.042*	1.87
Number of Children	0.359	1.50	0.089	1.39
Age	0.077	0.40	0.019	0.42
Sex	0.191	0.75	0.046	0.74
Education	0.136	0.94	0.034	0.96
Knowledge	0.126**	2.28	0.032***	2.48
Christianity	2.243***	3.20	0.585***	2.96
Islam	1.661***	2.51	0.367***	2.18
Price	-0.280**	-1.22	-0.075***	-1.19
Constant	-3.579	-3.80		

*, **, and *** denote statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

Similarly, income has a significant positive effect on the probability of utilising RHS at the 0.05 level, and relates favourably to the significant negative price effect on the probability of utilising RHS at the 0.01 level. This implies that the poor still experience barriers to the use of RHS in the region. The marginal effect values

suggest that an increase in the monthly income of people by GH¢1.00 increases the probability of using RHS by over 0.04, while an increase in unit price by GH¢1.00 decreases the probability of utilizing RHS by almost 0.08.

Level of knowledge about the particular service also has a significant positive effect on the utilisation of RHS, and the probability of utilizing RHS increases by about 0.03 given an increase in the level of people's knowledge in RHS from low to high. This means that when people's knowledge in a particular service increases they are more inclined to utilising such a service. This could be explained by the fact that knowledge generally drives out fear and increases people's confidence, thereby making it easier for an individual to go in for a service that he/she would probably not do if such a person did not have any knowledge about it.

Religion is categorised into Christianity and Islam to find out the differential effects of these two categories on utilization of RHS against traditional religion which serves as the base case. Persons affiliated to Traditional religion are less likely to utilise RHS while persons affiliated to adopted religion (Christianity or Islam) are more likely to utilise RHS. The marginal effect for being a Christian implies that the probability of using RHS increases by about 0.59 if the status of a person changes from being Traditionalist to Christian, whereas the probability of usage increases by about 0.37 when a person is affiliated to Islam compared to being a Traditionalist. It is worth noting that even though adoption increases for being a Christian or Moslem, the rate of adoption for Christians is higher than Moslems. This suggests that Christianity may have more benign rules regarding contraception than Islam, even though both appear more open than Traditional religion. Traditional religious practices usually have norms and taboos regulating the social life of people especially women, including their sexuality, child bearing and for that matter decisions regarding use of RHS.

These findings largely corroborate those from other studies. For example van de Ven and van Praag (1981) reported significantly positive relationship between income and education on reproductive health care demand, while Addai (2000) reported a positive association between education, and being a Catholic and antenatal use, but a negative association between belonging to traditional religion and the use of antenatal care. Generally, higher income decreases the opportunity cost associated with the purchase of healthcare. Thus, increases in both income and education are expected to increase the probability of patronizing reproductive health services. In line with economic theory and the findings in this study, Acharya and Cleland (2000) have reported a negative effect of cost (price) on the use of antenatal care.

4. Conclusions

The study concludes that the use of RHS is generally high among people in the study area given that majority (about 78.0 percent) of respondent ever used one form of RHS in the past year. Indeed, over 50.0 percent of persons have good knowledge of RHS, a situation which explains the high level of utilization among other things.

Unmarried persons are at risk of not using RHS. This is because being married has a significant positive effect on the probability of using RHS. The implication is that unmarried persons, especially those of reproductive age are at risk of poor reproductive health. This could particular get worse given that cost is a disincentive for people to utilise RHS.

Given that income is a significant determinant, poverty still constrains access to RHS and inhibits its consumption. Indeed, this is particularly worrying given that there is significant negative price effect which reinforces this significant positive income effect. The implication is that poor persons are excluded from the utilisation of RHS, a situation which leads to maternal complications and mortality by poor women.

Given these conclusions, it is recommended that public education on the importance of RHS should target the unmarried youth to encourage them to utilise the service to ensure a healthy reproductive life. There is high possibility that this approach will work because when the level of knowledge about the product increases people are more likely to utilise it. Also, special targeting for the poor involving granting subsidy to poor people will help increase both access and utilisation of the services and help reduce possible maternal mortality among them.

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