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DETERMINANTS OF USE OF MATERNAL–CHILD HEALTH SERVICES IN RURAL GHANA

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Summary. This study uses data from the Ghana Demographic and Health Survey (GDHS) of 1993 to examine factors determining the use of maternal–child health (MCH) services in rural Ghana. The MCH services under study are: (1) use of a doctor for prenatal care; (2) soliciting four or more antenatal check-ups; (3) place of delivery; (4) participation in family planning. Bivariate and multivariate techniques are employed in the analyses. The analyses reveal that the use of MCH services tends to be shaped mostly by level of education, religious background and region of residence, and partially by ethnicity and occupation. The implications of these results are discussed.

Introduction

This study reports on the use of maternal–child health (MCH) services in a rural sub-Saharan African setting and adds to available studies on reproductive health in the region. Maternal mortality in developing countries has been described as a 'multitude of quiet tragedies' (Kwast, 1987), and 'a disgrace to the modern world' (Holness, 1989). In sub-Saharan Africa, poor living conditions and inadequate nutrition and health care, along with high fertility rates, subject women of all ages to high risk of pregnancy-related illness and death (Graham, 1991). Studies have found that in most communities, for every woman who dies between ten and fifteen may suffer long-term damage to their health by pregnancy or labour which can cause considerable distress and preclude a normal life (Tahzib, 1989; Lettenmaier *et al*., 1988; Starrs, 1987).

Maternal mortality rates are estimated to be about 10 per 1000 live births or higher in some rural communities in sub-Saharan Africa. Complications during delivery directly cause about three-quarters of all maternal deaths. The remainder result from medical conditions that are aggravated by pregnancy, such as viral hepatitis, anaemia and cardiovascular disease (Herz & Measham, 1987). For instance, it is estimated that over 130,000 Ghanaians, mostly women and children, are dying each year due to preventable causes. The majority of such deaths are related to maternal and child mortality. The average infant mortality rate for Ghana is 90 per 1000 live births. In many parts of the country up to 30% of children die before reaching school age. Also,

the maternal mortality rate remains high at 10 per 1000 live births, and over 15 per 1000 deliveries in rural areas (Ghana Ministry of Health, 1990).

Therefore, MCH services can play a vital role in achieving improved reproductive outcome in various societies, particularly in rural settings (Bhatia & Cleland, 1995; Coeytaux, Leonard & Bloomer, 1992; Fauveau *et al*., 1991; Kwast, 1989; Kaunitz *et al*., 1984). However, use of available MCH services continues to be low throughout the world (Paul, 1991; Holian, 1989; Bhandari *et al*., 1989), and sub-Saharan Africa is no exception, it being particularly evident in rural areas (National Research Council, 1993).

Available statistics indicate that there have been steady increases in all aspects of MCH and family planning (FP) services in Ghana. However, trends in the average number of visits per client indicate that the quality of service is static or even declining (Ghana Ministry of Health, 1990). Nowhere is the static and declining visits to centres providing MCH services more obvious than in rural areas. Lack of health facilities and the unwillingness of staff to work at certain institutions because of sociocultural factors, poor logistics and inadequate accommodation are among the factors that have been blamed in the literature for the poor MCH service provision in rural areas (Ampofo, 1988; Adjei *et al*., 1988).

The assumptions underlying this inquiry are that use of MCH services is low in rural Ghanaian communities (Ghana Ministry of Health, 1990), and that it is possible and important to understand the broad factors shaping this phenomenon. An understanding of the determinants of use of MCH services in rural Ghana is needed for policy formulation and implementation directives. For instance, if it can be empirically established that cultural factors are the most important determinants in the use of MCH services, then a cultural barrier may exist. In this case, changing the mode of delivery or increasing delivery points may not necessarily translate into higher use of MCH services in rural areas. On the other hand, if social and demographic attributes emerge as the main determinants of MCH use, then a social development approach may be helpful.

The importance of sociodemographic and cultural factors in shaping the use of MCH services in Ghana has been alluded to in the literature (Ghana Ministry of Health, 1990; Fosu, 1981). However, little research on the relative importance of such factors has been carried out using data from rural Ghana. Therefore, this study represents one of the few studies geared specifically towards understanding factors which have been sustaining low levels of use of MCH services and high maternal and child mortality rates in rural Ghana.

Conceptual framework

Like any health care service, the decision to use MCH services is often perceived as one of individual choice. While all such choices are bounded by social context, they are probably more so for rural women for whom social, cultural and family ties frame many major decisions. A review of the literature suggests that in developing countries the use of modern health care such as MCH services can be explained from three competing perspectives.

The first explanation suggests that the sociodemographic characteristics of

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individuals affects the underlying proclivity of a person to seek care (Anderson & Newman, 1973). This can be termed the 'characteristics hypothesis'. Sociodemographic attributes are perceived as framing decisions such as seeking health care. This explanation postulates that people will act rationally when considering the most effective means of reaching a given goal, such as health-seeking behaviour (Heath, 1976).

The basic premise of this explanation is that people with the same sociodemographic attributes will seek health services equally, irrespective of their cultural background. This line of reasoning is based on the understanding that individuals behave within decision fields who parameters differ with their positions in the stratification system. Low use of MCH services in the context of the characteristics perspective is explained away as a reflection of low levels of sociodemographic attributes such as education, occupation, age at birth and other such variables.

A second perspective is the accessibility explanation. The 'accessibility hypothesis' is based on the premise that access to health facilities and personnel is equally important in the use of MCH services, especially in developing countries (Grant, 1990; Wong *et al.*, 1987; Ademuwangun, 1977). For instance, studies by Adedoyin & Watts (1989), Okafor (1984) and Stock (1983) in Nigeria have shown that accessibility is a major determinant of greater use of health facilities and improvement in health conditions.

Another school of thought attributes the level of use of available MCH services to the cultural context within which decisions about use of traditional or modern services are made (Adetunji, 1991; Azevedo *et al.*, 1991; Davis-Roberts, 1981; Fosu, 1981; Buckley, 1976; Field, 1960). The cultural perspective on the use of MCH services suggests that medical need is determined not only by the presence of physical disease, but also by the cultural perception of illness. What constitutes a threat to health, especially among pregnant women and children, tends to be culturally relative (World Bank, 1994; Sergent, 1982; Orley, 1980; Asuni, 1979; Maclean, 1976).

The assumption underlying the cultural explanation is that individuals may assign a minimal seriousness to certain health situations because they may consider such conditions to be normal based on their cultural understanding and experience of that condition (Azevedo *et al.*, 1991; Davis-Roberts, 1981; Buckley, 1976). Although accepting the logic of the characteristics explanation of the use of MCH services, the cultural hypothesis assigns equal importance to the independent role of cultural factors in shaping decisions such as seeking health (Obermeyer, 1993; Good *et al.*, 1979). The general argument of the cultural perspective is that as societies modernize, the decisions individuals make pertaining to health-seeking practices, such as use of MCH services, depend both upon the enduring models of their culture of origin and upon their current involvement in modernizing experiences.

In most African rural communities, the MCH delivery services coexist with indigenous health care services (Orley, 1980; Uyanga, 1979; Ademuwagun, 1976). Pregnant women in rural areas have a number of MCH service options: the modern medical system, herbalists, diviners and spiritualists. A choice has to be made regarding the preferred source of service delivery between existing options. In a study of the response of parents to childhood diseases in the Nigerian Yoruba community, Adetunji (1991) found that mothers used alternative sources of health care rather than hospitals,

clinics and maternity centres. The study reports that parents' perception of the seriousness of a condition and the religious beliefs of mothers were important determinants in their health-seeking response.

An individual's decision to use a particular source of MCH services is assumed to be partially determined by the person's understanding of the source of diseases (Jordan, 1978). In rural communities where the influence of culture on decision making is expected to be high, individuals may seek professional care only after exhausting their own folk remedies and family resources (Warren, 1978). Also, a potential user of MCH services may lean towards one particular health service delivery mode, depending on previous evidence regarding the efficacy of the alternatives available (Mensah-Dapaah, 1979; Colson, 1971).

All the above-delineated explanations on the use of MCH services may be relevant in rural Ghana. The main goal of this study is therefore to determine which of the above explanations determines women's propensity to use MCH services in rural Ghana.

Data and methods

The data for this study come from the 1993 Ghana Demographic and Health Survey (GHDS), conducted as part of the world-wide Demographic and Health Survey (DHS) project. The GDHS is a nationally representative, stratified, self-weighting probability sample of women aged 15–49. Households were identified using a three-stage cluster sampling procedure based on census enumeration areas and ecological zones, as well as rural–urban localities. One hundred and fifty census enumeration areas were selected for the survey, with probability proportional to the number of 1984 census households. Ninety-eight per cent of all eligible women (those within the stated age range of the study, and who spent the previous night in the selected household) were successfully interviewed, resulting in a final sample of 4562 women aged 15–49 years (Ghana Statistical Service, 1993).

Use of MCH services is a discrete event; a person either uses or does not. Therefore there is a dichotomy of 'use' versus 'non-use'. Given this type of dependent variable, some type of logit or probit function may be the most appropriate technique of analysis. Because of the variety and number of predictors, logistic multiple regression is selected (Norusis, 1990). The logistic regression model estimates a model of the form:

$$\text{logit } p_i = b_0 + b_i X_i,$$

or the linear form:

$$\ln(p_i/[1-p_i]) = b_0 + b_i X_i,$$

where p_i is the estimated probability of a particular event occurring to an individual with a given set of characteristics, X_i, b_0 is a constant that defines the probability, p_0, for an individual with all X_i set to zero; and b_i are the estimated coefficients. The ratio $p_i/[1-p_i]$ is the odds ratio of women with a given set of characteristics using versus not using a service. All results of multivariate models presented are given as the exponentiated coefficients or the odds ratios.

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Dependent variables

Based on the available data file the following maternal health service variables are included in the study as dependent variables.

(i) Prenatal care: whether prenatal care before the last child was given by a doctor or non-doctor (coded: doctor = 1; non-doctor = 0).

(ii) Antenatal care: whether a woman solicited an antenatal check-up 0–3 times or more than 3 times for her last birth (coded: 4 times or more = 1; 0–3 = 0).

(iii) Place of delivery: whether the last birth occurred in a hospital (medical facility) or at home (coded: hospital = 1; home = 0).

(iv) Family planning: whether a woman is using any contraceptive method or not for women who were married at the time of the survey (coded: use = 1; non-use = 0).

The unit of analysis in this study is those women who gave birth within the 3 years prior to the survey regardless of marital status, and who were living in a rural area at the time of the survey. The focus is on the most recently born child. The family planning analysis includes only currently married rural women at the time of the survey.

Predictor variables

This analysis is not designed to test any formal theory of health-seeking behaviour. Nevertheless, predictors of use of MCH services have been selected for inclusion in the analyses based on previous studies and for an explicit theoretical reason (Bhatia & Cleland, 1995; Obermeyer, 1993; Wong *et al*., 1987; Fosu, 1981). The predictors included in the study reflecting the three delineated perspectives in the theoretical framework are:

(i) Ethnicity categorized into six groups as: Twi, Fante/Other Akans, Ga-Adangbe, Ewes, Guans/Others, Mole-Dagbani.

(ii) Religion classified into four groups: traditional, Protestant, Catholic and Muslim.

(iii) Respondent's education divided into: no education, primary/junior, secondary/higher.

(iv) Age grouped into: 15–24, 25–34, 35–49 years.

(v) Age at marriage categorized into: less than 20 years, 20 years and above.

(vi) Living children grouped into: 0, 1–2, 3 or more.

(vii) Region of residence classified into: Greater Accra, Central/Western, Volta, Eastern Ashanti/Brong Ahafo, Northern/Upper East & West.

(viii) Occupation categorized into: no work, professional/clerical/sales, agriculture, manual/domestic.

Findings

Bivariate analysis

Prenatal care. Bivariate analyses among the respondents are presented in Table 1 for prenatal care, antenatal check-ups, place of delivery and family planning. The data reveal considerable variations in the use of a doctor for prenatal care by education level. The range for consultation of a doctor for prenatal care among religious groups in rural Ghana is 12·8 points, from 10·3% among traditional women to 23·1% among

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Table 1. Percantage distribution of women by use of maternal–child health services and selected characteristics in rural Ghana, 1993

Characteristics	Parental care			Antenatal check-ups			Place of delivery			Family planning		
	Doctor	Other	*n*	4+	0–3	*n*	Hospital	Home	*n*	Use	Non-use	*n*
Age at marriage												
<20 years	18·5	81·5	978	49·8	50·2	979	27·3	72·7	952	15·7	84·3	1532
20 years+	19·7	80·3	407	54·5	45·5	407	30·4	69·6	398	14·4	85·6	630
Living children												
0	16·7	83·3	18	50·0	50·0	18	27·8	72·2	18	5·5	94·5	146
1–2	19·9	80·1	604	54·0	46·0	605	29·8	70·1	588	13·4	86·6	754
3+	18·2	81·8	786	49·1	50·9	786	27·1	72·9	764	17·6	82·4	1262
Education												
No education	14·2	85·8	683	40·6	59·4	684	16·5	83·5	673	6·8	93·2	1138
Primary/junior	22·8	77·2	698	60·2	39·8	698	38·9	61·1	671	24·1	75·9	969
Secondary/higher	37·0	63·0	27	88·9	11·2	27	61·5	38·5	26	36·4	63·6	55
Occupation												
No work	16·9	83·1	231	47·0	53·0	232	28·9	71·1	228	10·0	90·0	525
Prof./cler./sales	22·7	77·3	216	59·3	40·7	216	40·8	59·2	211	24·6	75·4	853
Agriculture	17·1	82·9	786	48·5	51·5	769	23·4	76·6	765	12·8	87·2	1329
Manual/domestic	25·0	75·0	172	59·3	40·7	172	34·3	65·7	166	20·2	79·8	491

Religion												
Traditional	10·3	89·7	348	39·9	60·1	348	14·2	85·8	344	9·7	90·3	565
Protestant	23·0	77·0	617	55·5	44·5	618	35·8	64·2	587	20·2	79·1	904
Catholic	23·1	76·9	255	63·9	36·1	255	35·9	64·1	251	17·7	82·3	396
Muslim	25·0	84·2	184	40·8	59·2	184	21·2	78·8	184	7·8	92·2	293
Region												
Western/Central	28·1	71·9	285	49·5	50·5	285	25·2	74·8	274	18·5	81·5	399
Greater Accra	9·4	90·6	32	56·3	43·8	32	37·5	62·5	32	25·0	75·0	52
Volta	19·1	80·9	178	50·0	50·0	178	28·8	71·2	177	23·5	76·5	285
Eastern/Ash./BA	20·2	79·8	514	59·7	40·0	514	43·2	56·8	488	17·8	82·2	771
North/Upper	11·3	88·7	397	42·0	58·0	398	11·3	88·7	397	6·1	93·9	655
Ethnicity												
Twi	18·7	81·3	251	63·3	36·7	251	46·1	53·9	241	17·0	83·0	358
Fante/Other Akan	26·8	73·2	384	55·2	44·8	384	31·6	68·4	367	21·3	78·7	559
Ga-Adangbe	17·6	82·4	68	47·1	52·9	68	35·5	64·5	62	18·2	81·8	110
Ewe	16·3	83·7	190	50·5	49·5	190	28·7	71·3	188	22·5	77·5	311
Guans/Others	15·5	84·5	207	44·2	55·8	208	21·6	78·3	204	7·5	92·5	293
Mole-Dagbani	13·6	86·4	287	42·2	57·8	287	13·6	86·4	287	7·2	92·8	501
Age of respondent												
15–24	20·0	80·0	430	52·9	47·1	431	28·5	71·5	417	13·3	86·7	490
25–34	18·0	82·0	655	49·3	50·7	655	28·8	71·2	642	15·4	84·6	901
35–49	19·2	80·5	323	52·9	47·1	323	27·0	73·0	311	16·5	83·5	771

Catholic and Protestant women. Generally, the use of a doctor for prenatal care tends to be low among women residing in the rural areas of Greater Accra and Northern/Upper regions. Except for the Fante/Other Akan cultural group, the use of a medical doctor for prenatal care does not vary much among the other ethnic groups.

Antenatal check-ups. The level of attendance at antenatal check-ups is relatively high (88·9%) among women with secondary/higher education (Table 1), and is lowest among women with no education. The proportion of professional/clerical/sales workers soliciting four or more antenatal check-ups is the same as those in manual and domestic work. Also, women engaged in agricultural work demonstrate almost the same tendency to solicit antenatal check-ups as those not working.

A higher proportion of Catholic women (63·9%) went for antenatal check-ups than all the other religious groups. The proportions of Guans/Others and Mole-Dagbani who went for at least four antenatal check-ups during their last birth are 42·2% and 44·2% respectively. The Ewe, Ga-Adangbe and Fante/Other Akans ethnic groups mirror the Twi women in their antenatal check-up behaviour. Regional residential variations in antenatal check-ups are evident. A higher proportion of residents of the southern regions, i.e. Greater Accra and Eastern/Ashanti/Brong Ahafo, sought antenatal check-ups than their counterparts in less developed regions.

Place of delivery. There is a range of 32·5 percentage points among cultural groups in terms of hospital delivery, with the Twi and Mole-Dagbani at either extreme. While almost equal proportions of the Ga-Adangbe and Fante/Other Akan women used the hospital as place for delivery, slightly lower proportions are observed for women of Ewe and Guans/Others cultural background. Women with at least secondary education have a higher tendency to deliver in hospital (61·5%) compared with their counterparts with primary/junior schooling (38·9%) and no education (16·5%).

While almost the same proportion of those not working and those engaged in agricultural work use the hospital as place for delivery, a slightly higher proportion is observed for professional/clerical/sales and manual/domestic workers. Religion is also related to place of delivery. Whereas a higher percentage of Protestant and Catholic women (about 36%) deliver at hospital, a lower percentage is observed among Traditional women (14·2%). Finally, region of residence shows considerable differences in the soliciting of antenatal check-ups.

Family planning. The data show that for currently married rural females aged 15–49, a slightly higher percentage of the Ewes, Fante/Other Akans and Ga-Adangbes practise family planning as compared with the other groups. It is worth noting that, irrespective of cultural background, the use of contraceptives tends to be low among rural residents. However, the lowest use of contraception is observed among the Guans/Others and the Mole-Dagbani women. Like the other MCH services, education, occupation, religion, region of residence and ethnicity demonstrate considerable differences in participation in family planning in rural Ghana.

Multivariate analysis

To assess the relative importance of the selected predictors in shaping the use of MCH services, the variables were entered into multivariate models using logistic

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regression. In each of the models one of the four MCH services under consideration is the dependent variable. The first model examines the relative effects of selected predictors on the use of a doctor for prenatal care. The second model assesses the relative importance of the selected variables on soliciting four or more antenatal check-ups. The third model investigates the impact of selected factors on the place of delivery. Finally, the impact of selected characteristics on family planning participation (contraceptive use) is probed.

Table 2 shows the relative effects of the selected variables in the four models. The data suggest that the most important predictors of the use of a doctor for prenatal care in rural Ghana are education, religion and region of residence. The odds of traditional religious women seeing a doctor for prenatal care are about 35% lower than their counterparts in the reference group.

There is evidence to suggest that controlling for the other variables, women with no education and primary/junior school education are less likely to consult a doctor for prenatal care. Undoubtedly, this positive effect of more education on doctor consultation for prenatal care can be largely attributed to the fact that educated women tend to be more informed and have a better understanding of the advantages of prenatal care.

Living in Western/Central regions increases the likelihood of consulting a doctor for prenatal care among rural residents. For example, compared with Northern/Upper region women, women residing in rural areas of Western/Central regions are almost twice as likely (odds = 1·701) to see a doctor for prenatal care. This finding may be related to the ease of access to health facilities and personnel among women living in rural areas of Western/Central regions (Ghana Statistical Services, 1992).

The main predictors of antenatal check-ups seem to be education and religion. For instance, Catholics tend to have a higher likelihood (odds = 1·556) of seeking antenatal check-ups compared with the reference group; the opposite is true for women of traditional religions (odds = 0·739). The odds of seeking antenatal check-ups are lower among women with no education compared with their counterparts with secondary/higher education.

Hospital delivery tends to be determined by age of respondent, religion, education, occupation and region of residence. The analysis shows that religion plays a vital role in the use of medical facilities for delivery among rural residents in Ghana. The estimated odds of Catholic and traditional women delivering in a hospital are 1·354 times and 0·621 times those of their Muslim counterparts, respectively. Women from the Eastern/Ashanti/Brong Ahafo regions have a higher chance of hospital delivery (odds = 1·794) compared with the reference group.

As expected, being employed in agriculture leads to a lower chance of hospital delivery (odds = 0·742). This finding may be due to farmers' familiarity and confidence with traditional birth attendants. If there is one area of maternal services in which rural people tend to be confident about the traditional service option, it is that of delivery. Traditional birth attendants have been delivering children at home for some time now and people tend to seek modern maternity services only after exhausting the resources and expertise in their communities. This is typically the case among women who are engaged in agriculture and live in rural areas.

Family planning participation (contraceptive use) tends to be shaped by cultural

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Table 2. Relative odds of using versus not using maternal–child health services among women aged 15–49 in rural Ghana, 1993

Characteristics	Prenatal care	Antenatal check-up	Place of delivery	Family planning
Age at marriage				
<20 years	0·981	0·937	0·955	1·064
20 years+†	1·000	1·000	1·000	1·000
Number of children				
0	0·775	1·114	1·606	0·429***
1–2	1·206	1·074	0·849	1·192
3+†	1·000	1·000	1·000	1·000
Education				
No education	0·713**	0·433***	0·478***	0·368***
Primary/junior	0·952	0·757	0·892	1·194
Secondary/higher†	1·000	1·000	1·000	1·000
Occupation				
No work	0·774	0·805	1·002	0·641***
Prof./cler./sales	1·170	1·117	1·227	1·329**
Agriculture	0·876	0·898	0·742***	0·839
Manual/domestic†	1·000	1·000	1·000	1·000
Religion				
Traditional	0·652***	0·739***	0·621***	0·971
Protestant	1·095	1·057	1·098	1·142
Catholic	1·299	1·556***	1·354**	1·052
Muslim†	1·000	1·000	1·000	1·000
Region				
Western/Central	1·700***	0·741	0·812	0·804
Greater Accra	0·478	1·411	1·412	1·629
Volta	1·448	0·804	1·036	1·342
Eastern/Ash./BA	1·250	1·166	1·794***	0·932
Northern/Upper†	1·000	1·000	1·000	1·000
Ethnicity				
Twi	0·767	1·274	1·139	0·875
Fante/Other Akan	1·099	1·167	0·982	1·371**
Ga-Adangbe	1·091	0·681	0·908	0·817
Ewe	0·674	1·045	0·894	1·091
Guans/Others	1·233	0·986	1·233	0·829
Mole-Dagbani†	1·000	1·000	1·000	1·000
Age of respondent				
15–24	0·915	0·862	0·745**	1·063
25–34	1·950	0·916	1·027	0·915
35–49†	1·000	1·000	1·000	1·000
Constant	−1·532***	0·723***	−0·241	−1·852***
X^2	64·930***	115·183***	191·599***	211·635***
df	22	22	22	22

**$p<0·05$; ***$p<0·01$. †Reference category.

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background among the Fante/Other Akans women (Addai, 1999). The data suggest that women with no surviving children have a lower tendency to use contraception compared with their counterparts with three or more children. Education is also an important determinant of contraceptive use. This finding has been corroborated by earlier studies in Ghana (Addai, 1999; Tawiah, 1997). Occupation is also an important determinant of family contraceptive use in rural Ghana. Whereas women employed in professional/clerical/sales are more likely to use contraceptives (odds = 1·329) than their manual and domestic counterparts, the opposite is the case for those not working (odds = 0·641).

Discussion

The purpose of this study was to examine the relative importance of selected characteristics on the use of MCH services in rural Ghana. Logistic regression models were used to estimate the factors associated with the use of a doctor for prenatal care, soliciting four or more antenatal check-ups, delivery at hospital for the last birth in the 3 years preceding the 1993 GDHS, and contraceptive use. The analyses have provided some useful insights into the significance of cultural, social and demographic, and accessibility variables in shaping the use of MCH services in rural Ghana.

Religion plays a vital role in the tendency to use MCH services, especially among traditional and Catholic women. With the exception of family planning, traditional religion shows a negative effect on the use of the other three MCH services in rural Ghana. This may be attributable to the traditional faith's magical explanation of diseases in life, which may tie followers to the use of traditional maternal services as opposed to available modern MCH services (Lambo, 1963). Another religious affiliation associated with a higher use of MCH services is the Catholic faith. The role of the Catholic church in the provision of social and health services in Ghana may explain this finding, and deserves further study. With the exception of family planning, ethnicity does not impact on the use of MCH services.

The social characteristic variables of the respondents have also emerged as important predictors of the use of MCH services. Irrespective of MCH services, the most important determinant is the level of education. The data suggest that women with secondary/higher education are more likely to use MCH services than their counterparts without education. Having no education decreases the likelihood of a woman seeking prenatal care from a doctor, soliciting an antenatal check-up, giving birth in a hospital and using contraception in rural areas. Similar findings have been reported in previous studies (Cleland & Van Ginneken, 1988; Rossiter *et al*., 1985; Caldwell, 1979; Benyoussef & Wessen, 1974).

Contrary to expectation, region of residence did not emerge as an important predictor of use of MCH services. Living in Western/Central regions represents a higher likelihood of using a doctor for prenatal care among the respondents. Residents of Eastern/Ashanti/Brong Ahafo regions have the highest tendency to deliver in hospital. The low importance of region of residence in shaping the use of MCH services may be attributable to the uniform neglect of rural areas in Ghana. Despite the reported differences in occupational background of the respondents at the bivariate level, it did not emerge as an important predictor of use of MCH services. This needs more attention.

Demographic or life-course variables are the least-likely predictors of use of MCH services in rural Ghana. However, age of a respondent has emerged as an important determinant in the use of hospital for delivery. In addition, having three or more living children is a very important predictor of contraceptive use.

Like all sub-Saharan African countries, most women in Ghana of reproductive age live in rural areas, so this study has important implications for population and health programmes. The findings suggest that improvement of maternal and child health in Ghana would require the introduction of several measures, the most effective being the promotion of education for women up to at least secondary/higher level.

This suggestion has been echoed in the literature for some time. Population and health researchers now need to be less preoccupied with mechanisms through which education effects population and health changes, but should concentrate their efforts on trying to understand the determinants of women's educational attainment in Ghana and the rest of sub-Saharan Africa, especially in rural settings. The assumption that availability of educational facilities will automatically translate into higher educational attainment among women and hence better reproductive health may be misguided.

International and non-governmental agencies trying to address the health and population problems of Ghana need to consider how women can attain at least secondary level education, alongside health and population programmes. This requires co-ordination between agencies and government. Experts from departments of rural and community development, education and health could set up integrated strategies to address the educational and MCH problems of the rural majority. There needs to be a move away from current sector planning and an adoption of inter-sectorial planning and problem solving. Improvement of the reproductive health conditions in the country will require all determinants of the phenomenon to be given the same level of attention and resources.

In another context, the relevance of traditional religion in the use of MCH services indicates that there is a need for research into aspects of traditional religion which discourage the use of MCH services. Traditional maternal health practices need systematic study, and if possible integration into the medical system. In an era when developing governments are cutting down on every service, including health, incorporation of safe traditional maternal and child care practices into the health care system, especially at the level of primary health care, may be the right thing to do.

Another aspect of religion which needs attention is the impact of faith healing on the use of MCH services. The increasing popularity of the African syncretic and Pentecostal churches, which possibly now account for nearly one-half of all Christians in Ghana, has led to the emergence of faith healing as another distinct source of health delivery included in MCH services. For most people faith healing and practices such as drinking 'blessed water' and other 'blessed' substances may work to reduce the tendency to use available MCH services. There is a need for comprehensive qualitative and quantitative assessment of how faith healing impacts on the use of MCH services, and hence the health of mothers and children, particularly in rural areas.

Another issue which needs attention in efforts towards improved reproductive health in rural Ghana is the proposed National Health Insurance Scheme now being experimented in the country. The scheme will make it mandatory for the public to pay a premium that will ensure that health services are readily available and acceptable. A

fundamental problem with this scheme is that most people do not earn salaries or wages from private or public sectors of the economy. The rural majority, especially women, who need health services, may not be able to pay and this will further deter people from using existing MCH services and similar interventionist programmes. The success of such a scheme will depend on political accountability and commitment, which are yet to be seen in Ghana.

References

ADDAI, I. (1999) Ethnicity and contraceptive use in sub-Saharan Africa: the case of Ghana. *J. biosoc. Sci.* **31**, 105–120.

ADEDOYIN, M. & WATTS, S. (1989) Child health and child care in Okelele: an indigenous area of the city of Ilorin, Nigeria. *Soc. Sci. Med.* **29**(12), 1333–1341.

ADEMUWAGUN, Z. A. (1976) The challenge of the existence of orthodox and traditional medicine in Nigeria. *E. Afr. med. J.* **53**(1), 21–32.

ADEMUWAGUN, Z. A. (1977) Determinants of patterns and degree of utilization of health services in Western State, Nigeria. *Israel J. med. Sci.* **13**, 896–907.

ADETUNJI, J. A. (1991) Response of parents to five killer diseases among children in a Yoruba community Nigeria. *Soc. Sci. Med.* **32**(12), 1379–1387.

ADJEI, S., OWUSU, G., ADAMAFIO, J. & AKYEA, S. (1988) *Primary Health Care Review.* Ministry of Health, Accra, Ghana.

AMPOFO, D. A. (1988) *Maternal–Child Health and Family Planning in Ghana.* Population Impact Project, University of Ghana, Legon, Ghana.

ANDERSON, J. M. & NEWMAN, J. F. (1973) Societal and individual determinants of medical care utilization. *Millbank meml Fund Q.* **51**, 95–124.

ASUNI, T. (1979) The dilemma of traditional healing with special reference to Nigeria. In: *Social Science and Medicine (Special Issue): Parallel Medical Systems: Papers from a Workshop on 'The Healing Process'*, volume 13B(1), pp. 33–41.

AZEVEDO, M., GWENDOLYN, J., PRATER, S. & LANTUM, D. N. (1991) Culture, biomedicine and child mortality in Cameroon. *Soc. Sci. Med.* **32**(12), 1341–1349.

BENYOUSSEF, A. & WESSEN, A. (1974) Utilization of health services in developing countries – Tunisia. *Soc. Sci. Med.* **8**(5), 287–304.

BHANDARI, B., MANDOWARA, S., KUMAR, A. & AGARWAL, D. (1989) Underutilization of MCH services – the major factor for very high IMR in rural Rajasthan. *Ind. Pediat.* **26**(3), 228–233.

BHATIA, J. C. & CLELAND, J. (1995) Determinants of maternal care in a region of South India. *Hlth Transition Rev.* **5**(2), 127–142.

BUCKLEY, A. D. (1976) The secret – an idea in Yoruba medicine thought. In: *Social Anthropology and Medicine*, volume 421, pp. 396–421. Edited by J. B. Loudon. Academic Press, London.

CALDWELL, J. C. (1979) Education as a factor in mortality decline: an examination of Nigeria data. *Popul. Stud.* **33**(3), 395–413.

CLELAND, J. & VAN GINNEKEN, J. K. (1988) Maternal education and child survival in developing countries: the search for pathways of influence. *Soc. Sci. Med.* **27**(12), 1357–1368.

COEYTAUX, F. M., LEONARD, A. H. & BLOOMER, C. M. (1992) Abortion. In: *Women's Health: A Global Perspective.* Edited by M. A. Koblinsky, J. Timyan & J. Gay. Westview Press, Boulder, Colorado.

COLSON, A. C. (1971) The differential use of medical resources in developing countries. *J. Hlth soc. Behav.* **12**, 226–237.

DAVIS-ROBERTS, C. (1981) Kutambawa Ugon-uwa: concepts of illness and transformation among the Tabwe of Zaire. *Soc. Sci. Med.* **15B**, 309–316.

Fauveau, V., Stewart, K., Khan, S. A. & Chakraborty, J. (1991) Effect on mortality of community-based maternity-care programme in rural Bangladesh. *Lancet* **338**(8776), 1183–1186.

Field, M. J. (1960) *Search for Security: An Ethno Psychiatric Study of Rural Ghana*. Faber and Faber, London.

Fortney, J., Susanti, I., Gadalla, S., Saleh, S., Feldblum, P. & Potts, M. (1988) Maternal mortality in Indonesia and Egypt. *Int. J. Gynec. Obstet.* **26**(1), 21–32.

Fosu, G. B. (1981) Disease classification in rural Ghana: framework and implications for health behaviour. *Soc. Sci. Med.* **15B**, 471–482.

Ghana Ministry of Health (1990) *Maternal and Child Health/Family Planning: National Report*. Ghana Publishing Corporation, Accra.

Ghana Statistical Service (1992) *Ghana in Figures*. Commercial Associates Ltd, Accra.

Ghana Statistical Service (GSS) (1993) *Ghana Demographic and Health Survey Final Report*. Ghana Statistical Service, Accra, Ghana, IRD, Macro Systems Inc., Columbia, MD.

Good, C., Hunter, J. M., Katz, S. H. & Katz, S. S. (1979) The interface of dual systems of health care in developing world. Toward health policy initiative in Africa. *Soc. Sci. Med.* **13D**, 141–154.

Graham, W. (1991) Maternal mortality level, trends and data deficiencies. In: *Disease and Mortality in Sub-Saharan Africa*, pp. 101–116. Edited by R. G. Feachem & D. T. Jamison. Oxford University Press, Oxford.

Grant, J. (1990) UNICEF and health of mothers and children. In: *Health Care of Women and Children in Developing Countries*, pp. 531–540. Edited by H. M. Wallace & K. Giri. Third Party Publishing, Oakland.

Heath, A. (1976) *Rational Choice and Social Exchange*. Cambridge University Press, Cambridge.

Herz, B. & Measham, A. R. (1987) *The Safe Motherhood Initiative: Proposal for Action*. World Bank Discussion Paper No. 9. World Bank, Washington, DC.

Holian, J. (1989) Infant mortality and health care in Mexican communities. *Soc. Sci. Med.* **29**(5), 677–679.

Holness, D. A. (1989) A disgrace to the modern world. *Population* **16**(4), 52–58.

Jordan, B. (1978) *Birth in Four Cultures*. Eden Press, Montreal and St Albans, Vermont.

Kaunitz, A. M., Spencer, C., Danielson, T. S., Rochat, R. W. & Grimes, D. A. (1984) Prenatal and maternal mortality in a religious group avoiding obstetric care. *Am. J. Obstet. Gynec.* **150**(7), 826–831.

Kwast, B. (1987) A multitude of quiet tragedies. *People* **14**(3), 14–16.

Kwast, B. E. (1989) Maternal mortality: levels, causes and promising interventions. *J. biosoc. Sci.* **10**(suppl.), 51–67.

Lambo, T. A. (1963) *African Traditional Beliefs: Concepts of Health and Medical Practice*. Ibadan University Press, Ibadan.

Lettenmaier, C., Liskin, L., Church, C. A. & Harris, J. A. (1988) *Mothers' Lives Matter: Maternal Health in the Community*. Population Reports Series L, No. 7. John Hopkins University, Population Information Program, Baltimore, MD.

Maclean, U. (1976) Some aspects of sickness behaviour among the Yoruba. In: *Social Anthropology and Medicine*. Edited by J. B. Louden. Academic Press, London, New York.

Mensah-Dapaah, W. S. (1979) Observations on traditional healing methods in Ghana. In: *Africa Therapeutic Systems*. Edited by Z. A. Ademuwagun *et al*. Crossroads Press, Waltham.

National Research Council (1993) *Social Dynamics of Adolescent Fertility in sub-Saharan Africa*. National Academy Press, Washington, DC.

Norusis, M. (1990) *SPSS Advanced Statistics Student Guide*. SPSS, Chicago.

Obermeyer, C. M. (1993) Culture, maternal health care, and women's status: a comparison of Morocco and Tunisia. *Stud. Fam. Plann.* **24**(6), 354–365.

OKAFOR, F. C. (1984) Accessibility to general hospital in rural Bendel State, Nigeria. *Soc. Sci. Med.* **18**(8), 661–666.

ORLEY, J. (1980) Indigenous concepts of disease and their interaction with scientific medicine. In: *Health in Tropical Africa During the Colonial Period*, pp. 127–137. Edited by E. E. Sabben-Clare, D. J. Bradley & K. Kirkwood. Clarendon Press, Oxford.

PAUL, B. (1991) Health service resources as determinant of infant death in rural Bangladesh: an empirical study. *Soc. Sci. Med.* **32**(1), 43–49.

ROSSITER, C., CHONG, H., LISTER, U., BANO, Q., BRIGGS, N., EKWEMPU, C. & MEMBER, M. (1985) *Zaria Maternity Survey 1976–79. Antenatal Care, Formal Education and Childbearing. Br. J. Obstet. Gynaec.* **92**(suppl. 5), 14–22.

SERGENT, C. F. (1982) *The Cultural Context of Therapeutic Choice: Obstetrical Care Decisions Among the Bariba of Benin.* D. Reidel Publishing Company, Boston, London, UK.

STARRS, A. (1987) *Preventing the Tragedy of Maternal Deaths.* Report on the International Safe Motherhood Conference, Nairobi, Kenya. World Bank, Washington, DC.

STOCK, R. (1983) Distance and utilization of health facilities in rural Nigeria. *Soc. Sci. Med.* **17**(9), 563–570.

STRAUSS, J. (1990) Household, communities and pre-school children's nutrition outcomes: evidence from Rural Cote d'Ivoire. *Econ. Dev. cult. Change* **38**, 231–262.

TAHZIB, F. (1989) Searching for the W in MCH. *Lancet* **2**(8666), 795.

TAWIAH, E. O. (1997) Factors affecting contraceptive use in Ghana. *J. biosoc. Sci.* **29**, 141–149.

UYANGA, J. (1979) The characteristics of patients of spiritual healing homes and traditional doctors in South–Eastern Nigeria. *Soc. Sci. Med.* **13A**, 323–329.

WARREN, D. M. (1978) The interpretation of change in a Ghanaian ethnomedical study. *Hum. Org.* **37**(1), 74–77.

WONG, E. L., POPKIN, B. M., GUILKEY, D. K. & AKIN, J. S. (1987) Accessibility, quality of care and prenatal care use in the Philippines. *Soc. Sci. Med.* **24**(11), 927–944.

WORLD BANK (1994) *Development in Practice. Better Health in Africa: Experience and Lessons Learned.* World Bank, Washington, DC.