

Two decades of maternity care fee exemption policies in Ghana: have they benefited the poor?

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Abstract

Objective: To investigate, the impact of maternity-related fee payment policies on the uptake of skilled birth care amongst the poor in Ghana.

Methods: Population data representing 12 288 births between November 1990 and October 2008 from four consecutive rounds of the Ghana demographic and health surveys were used to examine the impact of four major maternity-related payment policies: the full-cost recovery 'cash and carry' scheme; 'antenatal care fee exemption'; 'delivery care fee exemption' and the 'National Health Insurance Scheme (NHIS)'. Concentration curves were used to analyse the rich–poor gap in the use of skilled birth care by the four policy interventions. Multilevel logistic regression was used to examine the effect of the policies on the uptake of skilled birth care, adjusting for relevant predictors and clustering within communities and districts.

Findings: The uptake of skilled birth care over the policy periods for the poorest women was trivial when compared with their non-poor counterparts. The rich–poor gap in skilled birth care use was highly pronounced during the 'cash and carry' and 'free antenatal care' policies period. The benefits during the 'free delivery care' and 'NHIS' policy periods accrued more for the rich than the poor. There exist significant differences in skilled birth care use between and within communities and districts, even after adjusting for policy effects and other relevant predictors.

Conclusions: The maternal care fee exemption policies specifically targeted towards the poorest women had limited impact on the uptake of skilled birth care.

Key words: Maternal health, developing countries, health inequalities, health insurance, health policy, multivariate analysis, poverty

Key Messages

- Studies have shown that removing user-fees can improve skilled birth care. However, there is limited evidence on the impact of such intervention in reducing inequity in skilled birth care especially at the population level.
- The removal of user-fees in Ghana did not benefit the poorest women in their uptake of skilled birth care.
- The rich–poor gap in skilled birth care use was highly pronounced during the 'cash and carry' and 'free antenatal care' policy periods. The benefits during the 'free delivery care' and 'National Health Insurance Scheme' policy periods accrued more to the rich than the poor.

Introduction

High out-of-pocket expenditure continues to remain a major barrier to the uptake of skilled maternity care in most resource-poor countries (Houweling *et al.* 2007; Hussein *et al.* 2012; Finlayson and Downe 2013). Evidence from cross-national studies in low and middle income countries have shown wide variations in the use of skilled maternal care between the rich and the poor, attributed mainly to economic constraints, availability and perceived quality of services and other structural factors such as physical distance to services (Houweling *et al.* 2007; Say and Raine 2007; Amoako Johnson *et al.* 2013). To address the economic barrier, many low and middle income countries have invested significantly in fee exemption policies to accelerate progress to the UN Millennium Development Goal (MDG) 5 (Dzakpasu *et al.* 2014). Although these policies are primarily targeted towards the marginalized and vulnerable groups (Asante *et al.* 2007; Witter *et al.* 2009; Blanchet *et al.* 2012), the evidence on the benefits amongst the poor is scarce and inconclusive. Studies conducted in sub-Saharan Africa and Asia, including Ghana (Asante *et al.* 2007; Bosu *et al.* 2007; Penfold *et al.* 2007), South Africa (Daponte *et al.* 2000), Uganda (Deininger and Mpuga 2005), Senegal (Witter *et al.* 2010) and Nepal (Witter *et al.* 2011), consistently shows evidence that removal of user fees improves skilled maternity care use; however, its impact on bridging the rich–poor gap is not well understood (Derbile and van der Geest 2013; Dzakpasu *et al.* 2014). There is evidence from national survey data and programme evaluations to suggest that community interventions tend to miss the poorest, who are often invisible, socially excluded and powerless in community decision-making processes (Kabeer 2010; Mumtaz *et al.* 2014).

Till date, there has not been any systematic study that examines the impact of user fees at the national level. Household and facility-based studies have been limited in coverage, rendering them unfounded for assessing the impact at the national level. Also, reliable panel data to assess the temporal effects of such policies are lacking in many low and middle income countries. Although randomized control trials are appropriate for establishing causality, scaling-up such efforts at the national level is not feasible.

In this study, we use repeated cross-sectional population data representing 12 288 births between November 1990 and October 2008 from four consecutive rounds of the Ghana demographic and health surveys (GDHS) to examine the impact of four major maternity-related fee payment policies on skilled delivery care use in Ghana, specifically focusing on the temporal trends referring to the periods that the policies were functional. Given that the retrospective data refer to births in the periods during which the policies were operational, if the policies had any measurable impact should reflect in the level of skilled birth care, particularly for the poorest women who are the primary targets of such policies.

Over time, Ghana has enacted and re-oriented its maternity fee exemption policies with a focus on improving access for the poor and marginalized communities. The country has implemented four major policies in the last two decades: full-cost recovery ‘cash and carry’ scheme (July 1985 to May 1998); ‘antenatal care fee exemption’ (June 1998 to August 2003); ‘delivery care fee exemption’ (initially September 2003 to March 2005 for four most deprived regions and April 2005 to June 2007 nationally) and the ‘National Health Insurance Scheme (NHIS)’ (post-June 2007).

Skilled birth care in Ghana increased from 44% in 1993 to 59% in 2008 (Ghana Statistical Service *et al.* 2009b). Despite the modest increase, only 24% of the poorest had skilled birth care when compared with 95% amongst their richest counterparts. This is further

reflected in the slow reduction in maternal mortality by only 40% between 1990 and 2010 [Ministry of Health (MoH) 2008; Ghana Statistical Service *et al.* 2009a; World Health Organisation 2009]. On the other hand, there is evidence that fee exemption policies in Ghana have increased the uptake of skilled birth care among the poorest (Penfold *et al.* 2007; Dzakpasu *et al.* 2012). In contrast, another study showed evidence that the policy benefits accrued more to the rich (Asante *et al.* 2007; Ansong-Tornui *et al.* 2007). However, these studies were conducted only in selected districts and lacked representation at the national level. In addition, the analyses were restricted to short observation intervals and hence do not reveal the comprehensive impact of the policies, particularly when women had to pay full cost for maternity services.

The proposed research addresses this gap by conducting a systematic evaluation of the maternity care payment policies in Ghana over the last two decades and their impact on the uptake of skilled birth care with a focus on the poorest women. More explicitly, the study will unravel the differential impact of full-cost recovery, partial and full fee exemption policies and NHIS on skilled birth care at the population level. Given that the fee exemption policies are in place for a sufficiently long period of time, skilled birth care is expected to increase significantly and consistently for all women irrespective of their socio-economic status. We hypothesize that although skilled birth care use increased significantly during the partial and full fee exemption policy regimes compared with the period where women paid full fees for maternity services, the observed increase is not uniform between the rich and the poor.

Overview of maternity care policies in Ghana

After independence in 1957, the Government of Ghana abolished user-fees in all public health facilities with the aim of providing free universal care (Nyonator and Kutzin 1999; Agyepong and Adjei 2008). The global economic crisis in the late 1970s, political instability and low tax revenues made it difficult for the government to sustain a publicly funded health care system (Nyonator and Kutzin 1999). A cost-sharing policy under the Hospital Fees Regulations Act of 1985 was then introduced in all public health facilities, requiring users to pay for consultation and diagnosis (Asenso-Okyere *et al.* 1997).

In 1992, the policy was extended to cover full cost in public health facilities (Asenso-Okyere *et al.* 1997; Nyonator and Kutzin 1999; Agyepong and Adjei 2008). This policy popularly referred to as the ‘cash and carry’ system required users including pregnant women to pay for services before being offered services, even in emergencies. The ‘cash and carry’ system increased health inequalities and led to drastic decline in health care use, particularly amongst the poorest and marginalized groups (Biritwum 1994; Asenso-Okyere *et al.* 1998; Nyonator and Kutzin 1999; Agyepong and Adjei 2008; McIntyre *et al.* 2008; Seddoh and Akor 2012). It further led to significant delays in accessing health care, increased self-medication and use of traditional medicines (Asenso-Okyere *et al.* 1998). Waivers to reduce out-of-pocket payment for economically disadvantaged population were ineffective, due to the lack of awareness about exemptions for the poor, problems related to identification of the poor and lack of official records to ascertain eligibility (Nyonator and Kutzin 1999; Derbile and van der Geest 2013; Seddoh and Akor 2012; Soors *et al.* 2013).

In 1995, the Ghana Health Service (GHS) in collaboration with the Ministry of Health (MoH) launched the safe motherhood initiative to reduce the high levels of maternal mortality through better

coverage of quality maternity services (Osei *et al.* 2005). As part of the initiative, the free antenatal care policy was introduced in all public health facilities in 1998 (Biritwum 2006). In September 2003, with funding from the highly indebted poor countries initiative, the government introduced the free delivery care policy in the four most deprived (northern, upper east, upper west and central) regions of the country (Asante *et al.* 2007). In April 2005, the policy was extended to all regions (Penfold *et al.* 2007; Witter and Garshong 2009). The free delivery care policy covered antenatal care, normal deliveries, management of assisted and surgical deliveries.

In 2007, the free delivery care policy was formally ended due to lack of funding and integrated into the NHIS, which was already functional since 2005 (Witter and Garshong 2009; Ghana Statistical Service *et al.* 2009a). Unlike the free antenatal and delivery care policies which were functional in only public health facilities, NHIS premium holders are eligible to seek medical care from all public and accredited private and faith-based health care providers (Dalinjong and Laar 2012). The NHIS is financed through a 2.5% levy on value-added tax, 2.5% monthly salary deductions from formal sector workers who by default are members of the scheme (Durairaj *et al.* 2010; Blanchet *et al.* 2012). Informal sector workers and people with no exemption pay annual premiums ranging from 7.20 to 48.00 Ghana Cedis, assessed based on income and ability to pay in addition to registration fees. Exempted persons (children under 18 years whose parents both enrol, those aged 70 years and older and the poor classified as the unemployed with no source of income, no fixed residence and not living with someone employed) are financed through governmental budget and donor payments (Durairaj *et al.* 2010; Blanchet *et al.* 2012; Dalinjong and Laar 2012). Not all health care services are covered under the NHIS, except diagnosis, selected specialist care and surgeries, general ward accommodation, oral health care and listed drugs. Expensive surgical procedures, cancer treatments, organ transplants and dialysis amongst others are excluded (Blanchet *et al.* 2012).

When maternity care was integrated into the NHIS in 2007, pregnant women not enrolled on the Scheme had to pay fees for maternity services which led to significant reduction in the uptake of skilled birth care, prompting the government to exempt pregnant women from paying NHIS premiums from July 2008 onwards (Ghana Statistical Service *et al.* 2009a; MoH 2009). As part of this policy, all pregnant women who attended antenatal care at accredited health facilities were automatically registered with the Scheme for a period ending 3 months after delivery (MoH 2009). All maternity care services including antenatal care, delivery care, caesarean deliveries and emergency care are covered under the NHIS.

With limited resources, low and middle income countries including Ghana face considerable challenge in financing free maternity care. A systematic analysis of the impact of these policies on maternity care use is therefore imperative and timely in the context of the post-MDG agenda aimed at reducing health inequalities through universal access to skilled care. The proposed research has implications in other low and middle income settings where user fee exemption is seen as a major policy intervention to improve skilled birth care for poor women (Ridde and Morestin 2011).

Methods

Data

To examine the trends in skilled birth care during the policy periods, data from four consecutive rounds of the GDHS conducted in 1993,

1998, 2003 and 2008, respectively, were used. GDHS is a nationally representative cross-sectional survey which collects demographic and health information on women, men, children and other members of their household. Information on the place and type of birth care was collected for all births 5 years preceding each survey, except for the 1993 survey which covered births 3 years preceding the survey. The four surveys yielded 12 288 births that occurred between November 1990 and October 2008.

The outcome variable of interest 'skilled care at birth' refers to birth attendants with competency to manage normal deliveries, diagnosis, management of birth complications and referrals (Ronsmans *et al.* 2002). The response variable was binary coded 1 if a birth was attended by a skilled professional (doctor, nurse or midwife) and 0 otherwise. Data on type of birth care received 3 or 5 years preceding a survey are fairly accurate since mothers are unlikely to misreport their birth experiences. However, to ensure that recall bias is minimal, we examined the consistency between reported place at birth and type of birth attendant. Non-institutional births attended by skilled professionals constitute <0.05% and were excluded from the analysis.

The main predictor variables were the time of birth referenced to the policy periods and the household wealth status of the mother. The four main maternal health-related policies enacted between July 1985 and July 2007 were analysed. These were operationalized as births that occurred during the: (i) 'cash and carry' scheme (births prior to June 1998); (ii) 'free antenatal care' policy (June 1998 to August 2003); (iii) 'free delivery care' policy (September 2003 to March 2005 for the four most deprived regions and April 2005 to June 2007 nationally) and (iv) the NHIS period (births post-June 2007). The 4 months (July 2008 and October 2008) where pregnant women were exempted from paying NHIS premiums was not analysed separately because of small sample size. To ensure consistency with the definition and computation, the household wealth index was computed using the same variables across the surveys by applying principal component analysis (Filmer and Pritchett 2001).

The choice of control variables was based on literature and data availability. The selected control variables include: maternal age and education, ethnicity, religion, parity, number of antenatal visits, partner's education, type and region of residence and distance to the nearest health facility. A geo-referenced list of health facilities and topographic data on national road-networks were used as input data for a network analysis algorithm to calculate the distance to the nearest health facility (Gething *et al.* 2012). Only facilities that offer maternity services ($n = 1864$) were considered. The spatial locations of the health facilities and the primary sample units (PSUs) of the four GDHS provided by measure DHS were used to compute the distance from the PSU to the nearest health facility using the closest facility functionality in ArcGIS 10.1 (ESRI 2010).

Statistical analysis

The extent of inequalities in uptake of skilled care at birth by wealth status and policy at time of birth was examined through descriptive analysis including concentration curves and indices (O'Donnell *et al.* 2008). Multilevel logistic regression techniques were used to examine the effects of maternal health policies and wealth status on uptake of skilled birth care, adjusting for potential confounders and clustering of the data. Three-level binary logistic regression models were used with 12 228 births (level 1) nested within 1603 PSUs (level 2) and the 110 districts (level 3) created as part of the political decentralization of Ghana in 1988 and adopted as the sampling frame for the 1993, 1998, 2003 and 2008 GDHS. PSUs are census

enumeration areas which are distinct spatial units with an average population size of 750, representing local communities (Ghana Statistical Service 2005). Ghana operates a three-tier system of local governance—first level comprise of ten administrative regions, subdivided into 110 districts (at the time of the surveys considered in this study) and unit committees consisting of a cluster of localities (Ghana Statistical Service and Macro International Inc. 1999).

A sequential model building process was considered to investigate how the association between the policy at the time of birth, household wealth status and skilled birth care changes when other control variables were added in the model. Model 1 controlled for only the random effects. Model 2 added the primary variables (policy at the time of birth, household wealth status and an interaction between the two variables). Model 3 further considered the socio-demographic variables and Model 4 added the spatial factors. We tested for other plausible interaction effects. At each stage of the model building process the variables not significant at $P < 0.05$ were discarded. The significance of variables was further tested in the final model. The Laplace approximation in ‘glmer’ function in R version 2.15.1 was used to estimate the model parameters (Raudenbush *et al.* 2000; R Core Team 2012).

Results

Descriptive analysis

Figure 1 shows the percentage distribution of skilled birth care disaggregated by policy at the time of birth and household wealth, based on weighted data. Chi-squared test was used to test for significant differences within and between wealth quintiles and the policy periods.

Overall, the percentage of births attended by skilled personnel increased over time. During the ‘cash and carry’ policy, only 44% of births were attended by skilled health personnel, which increased to 49% during the ‘free antenatal care’ policy and to 54% during the ‘free delivery care’ policy. When maternity care was integrated into the NHIS, the uptake of skilled birth care increased to 58%. The overall increase was significant at $P < 0.05$. However, if we compare

uptake for the poorest women, the increase was not statistically significant, whilst the non-poor experienced significant increase over time ($P < 0.001$). For the poorest women, only 17% of births received skilled care during the ‘cash and carry’ policy, which increased modestly to 22% during the ‘free antenatal care’ policy, but reversed to 18% during the ‘free delivery care’ policy. However, when maternity-related payments were integrated into the NHIS, skilled care amongst the poorest increased to 24%. On the contrary, 81% of the richest received skilled care during the ‘cash and carry’ period, which increased to 92% during the ‘free antenatal care’ policy and further to 97% during the ‘free delivery care’ policy and integration into the NHIS.

Figure 2 presents the concentration curves derived from the concentration index of inequality (CII) showing the extent of inequalities in skilled birth care by policy and household wealth. A concentration index of +1 indicates that only the richest use skilled care at birth, whilst -1 indicates otherwise. There were significant inequalities in skilled birth care by wealth, which were highly pronounced during the ‘cash and carry’ period (CII = 0.312, $P < 0.001$). Although the extent of inequalities reduced throughout the policy changes the rich–poor gap remained high and significant: ‘free antenatal care’ policy (CII = 0.205, $P < 0.001$); ‘free delivery care’ policy (CII = 0.096, $P < 0.001$) and NHIS (CII = 0.104, $P < 0.001$).

Multivariate analysis

The estimated coefficients and their 95% CIs from the three-level random intercept regression are presented in Table 1. Policy, household wealth and their interaction were highly significant, suggesting that these effects do not operate independently but collectively to influence skilled birth care. The interaction remained significant even after adjusting for other predictors. Maternal age, education, religious affiliation, parity, antenatal care visits, partner’s education, distance to health facility, residence and region were significantly associated with skilled birth care. Other interaction effects investigated were not significant at the 5% level. To ease the interpretation of the interaction effects, we computed predicted probabilities holding all other

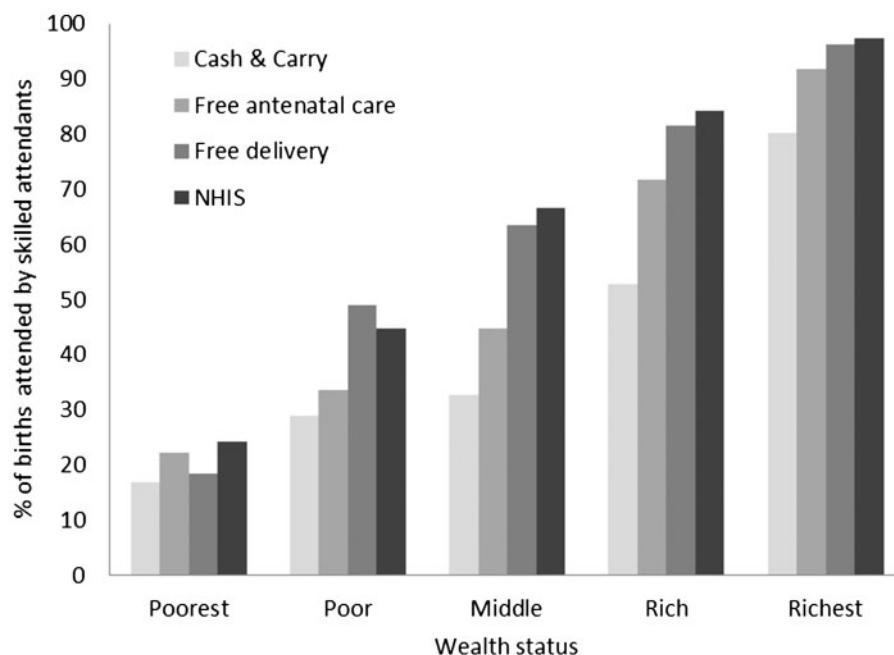


Figure 1. Uptake of skilled birth care by maternal health policy and wealth status

variables in Model 4 to their mean values (Figure 3). The figure shows there has not been much improvement in the probability of uptake of skilled birth care for the poorest women, when compared with their counterparts. The estimated probability of a woman from the poorest quintile seeking skilled birth care was 0.30 during the 'cash and carry' policy, 0.35 during the 'free antenatal care' policy and 0.37 during the 'free delivery care' policy and 0.38 when maternity services were integrated into the NHIS. On the contrary, the probability of a woman from the richest quintile accessing skilled birth care increased consistently over the policy periods from 0.56 during the 'cash and carry' policy to 0.93 during the integration into the NHIS.

The null model in Table 1 shows that without adjusting for any predictors, there exist significant differences between communities ($P < 0.001$) and districts ($P < 0.001$) in skilled birth care. The differences remained significant even after adjusting for other predictors. This shows that even after adjusting for the policy effects and other important predictors, the community and district in which a woman resides significantly influences her uptake of skilled birth care.

To examine, how different policies impact skilled birth care within each wealth group, we used a decomposition approach to model the net effect of each policy on the preceding policy for each wealth group, adjusting for the predictors in Model 4. The results presented in Table 2 show that although the odds of skilled birth care increased over time among the poorest women, the increases were not large enough to be significant when compared with the other wealth groups who experienced consistently significant increases except when maternity services were integrated into NHIS. This clearly suggests that maternity-related fee exemption policies in Ghana have significantly benefited the rich but not the poorest women whom these policies were primarily targeted.

Discussion

This research is the first of its kind at the national level, which uses birth history data to systematically examine the impact of maternal health policies implemented over the last two decades on skilled birth care use. There is clear evidence to suggest that while maternity fee exemption interventions has had an overall positive impact and

reduced the extent of inequalities in the uptake of skilled birth care, the benefits to the poorest women were marginal and insignificant throughout the last two decades. The analysis revealed a significant interaction between policy and household wealth, even after adjusting for other effects, suggesting that the effect of the policies on skilled birth care is dependent on wealth. There is clearly a significant disadvantage for the poorest women accessing skilled birth care under various maternal fee exemption policies. Over the last two decades, the probability of skilled birth care has remained low increasing from only 30 to 38% for the poorest. Similarly, for the poor the probabilities increased from 34 to 52% during the free delivery care but decline to 42% when maternity payments were incorporated into the NHIS. Nonetheless, the increase was consistently higher for the richest from 56 to 93%.

Although the findings confirm the evidence reported in other sub-national level studies that fee exemption policies have reduced inequalities in skilled birth care (Penfold *et al.* 2007), this study contradicts the evidence that they were most beneficial to the poorest (Penfold *et al.* 2007; Dzakpasu *et al.* 2012). This suggests that user fee exemption and user fee removal policies have benefited the richer groups rather than the poorer groups. Evidence from the literature indicates that fee exemptions and user fee removal constitute only a fraction of the total health expenditure and the regressive nature of out-of-pocket payments including cost of drugs and services not covered under exemption schemes, transportation costs and unofficial payments may deter the poor from seeking care (James *et al.* 2006; Blanchet *et al.* 2012; Derbile and van der Geest 2013). They are often disadvantaged because of lack of access to services and poor quality of care (Derbile and van der Geest 2013). Furthermore, the poor generally lack information about fee exemptions, and where waivers are available there are insufficient records to ascertain their eligibility (Nyonator and Kutzin 1999; Derbile and van der Geest 2013; Seddoh and Akor 2012; Soors *et al.* 2013).

There are also considerable physical and financial barriers in the implementation of fee exemption and fee removal policies targeting the poor and marginalized groups. Evidence from cross-national studies show that ineffective planning, mobilization of resources and lack of co-ordination amongst policy makers, service providers and

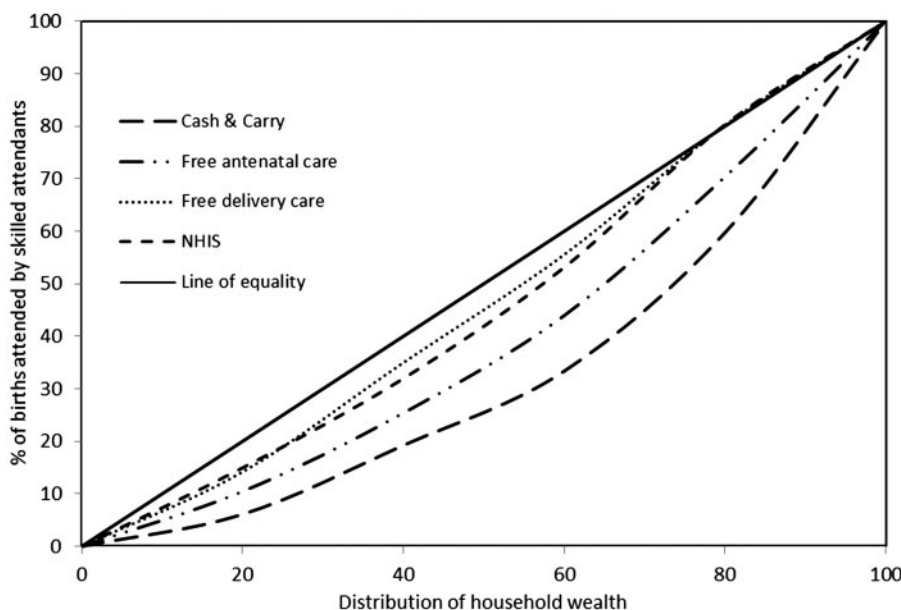


Figure 2. Inequality in uptake of skilled birth care by policy

Table 1. Estimated coefficients from the three-level binary regression models and their 95% CIs

	Model 1 coef [95% CI]	Model 2 coef [95% CI]	Model 3 coef [95% CI]	Model 4 coef [95% CI]
Intercept	-0.19 [-0.42, 0.03]	1.08 [0.82, 1.34]***	2.08 [1.78, 2.37] ***	1.95 [1.49, 2.41]***
Primary variable				
Policy at time of birth				
Cash and carry		Ref	Ref	Ref
Free antenatal care		0.79 [0.42, 1.17] ***	0.69 [0.31, 1.07] ***	0.69 [0.30, 1.07]***
Free delivery care		1.46 [0.71, 2.20] ***	1.19 [0.46, 1.92] ***	1.31 [0.55, 2.07]***
NHIS		2.76 [1.33, 4.19] ***	2.14 [0.80, 3.48] ***	2.33 [0.87, 3.78]*
Wealth				
Poorest		-2.50 [-2.82, -2.18] ***	-1.79 [-2.12, -1.46] ***	-1.07 [-1.41, -0.73]***
Poor		-2.07 [-2.36, -1.79] ***	-1.53 [-1.82, -1.23] ***	-0.89 [-1.20, -0.59]***
Middle		-1.82 [-2.11, -1.54] ***	-1.39 [-1.69, -1.10] ***	-0.85 [-1.14, -0.55]***
Rich		-1.10 [-1.36, -0.84] ***	-0.85 [-1.11, -0.58] ***	-0.46 [-0.73, -0.19]***
Richest		Ref	Ref	Ref
Interaction				
Policy *wealth status				
Poorest*free antenatal care		-0.41 [-0.88, 0.06]	-0.44 [-0.92, 0.04]	-0.46 [-0.93, 0.02]
Poorest*free delivery care		-1.15 [-1.97, -0.32]**	-0.93 [-1.74, -0.11]**	-1.00 [-1.84, -0.17]*
Poorest*NHIS		-2.21 [-3.70, -0.72]**	-1.86 [-3.26, -0.46]*	-1.99 [-3.51, -0.48]**
Poor*free antenatal care		-0.54 [-0.99, -0.09]*	-0.56 [-1.02, -0.11]*	-0.58 [-1.03, -0.12]*
Poor*free delivery care		-0.43 [-1.24, 0.38]	-0.42 [-1.22, 0.38]	-0.56 [-1.38, 0.27]
Poor*NHIS		-2.08 [-3.56, -0.60]*	-1.78 [-3.17, -0.38]*	-1.98 [-3.49, -0.47]*
Middle*free antenatal care		-0.29 [-0.74, 0.15]	-0.28 [-0.74, 0.17]	-0.38 [-0.83, 0.08]
Middle*free delivery care		-0.28 [-1.09, 0.54]	-0.23 [-1.04, 0.58]	-0.56 [-1.39, 0.28]
Middle*NHIS		-1.46 [-2.95, 0.03]	-1.19 [-2.60, 0.22]	-1.58 [-3.10, -0.06]*
Rich*free antenatal care		-0.07 [-0.50, 0.37]	-0.02 [-0.47, 0.42]	-0.28 [-0.73, 0.17]
Rich*free delivery care		0.11 [-0.72, 0.95]	0.01 [-0.82, 0.84]	-0.39 [-1.25, 0.47]
Rich*NHIS		-1.23 [-2.74, 0.29]	-1.01 [-2.45, 0.42]	-1.49 [-3.04, 0.05]
Socio-demographic variables				
Maternal age (in years)				
Less than 20			-0.38 [-0.60, -0.16] ***	-0.43 [-0.65, -0.21]***
20 – 34			-0.10 [-0.22, 0.03]	-0.10 [-0.23, 0.02]
35+			Ref	Ref
Educational status				
No formal education			-0.51 [-0.66, -0.36] ***	-0.47 [-0.62, -0.32]***
Primary			-0.36 [-0.50, -0.22] ***	-0.38 [-0.52, -0.24]***
Secondary or higher			Ref	Ref
Religious background				
Christian			Ref	Ref
Moslem			0.02 [-0.16, 0.20]	0.02 [-0.16, 0.20]
Other			-0.64 [-0.81, -0.47] ***	-0.60 [-0.77, -0.43]***
Parity				
First birth			0.64 [0.48, 0.79] ***	0.64 [0.48, 0.80]***
Second or third birth			0.02 [-0.10, 0.14]	0.01 [-0.11, 0.13]
Fourth or higher order birth			Ref	Ref
Antenatal visits for pregnancy				
No antenatal visits			-1.19 [-1.34, -1.04] ***	-1.16 [-1.31, -1.00]***
1 to 3 visits			-1.57 [-1.73, -1.40] ***	-1.53 [-1.70, -1.37]***
4 to 6 visits			-0.63 [-0.77, -0.50] ***	-0.61 [-0.75, -0.47]***
7+ visits			Ref	Ref
Partner's educational status				
No formal education			-0.48 [-0.62, -0.34] ***	-0.44 [-0.58, -0.29]***
Primary			-0.23 [-0.39, -0.08]**	-0.23 [-0.38, -0.07]**
Secondary or higher			Ref	Ref
Spatial factors				
Distance to health facility				
<1 km				Ref
1.0 to 4.9 km				-0.56 [-0.79, -0.33]***
5.0 to 8.0 km				-0.71 [-1.00, -0.42]***
>8 km				-0.76 [-1.06, -0.47]***
Place of residence				
Urban				Ref
Rural				-1.2 [-1.41, -0.98]***

(continued)

Table 1. Continued

	Model 1 coef [95% CI]	Model 2 coef [95% CI]	Model 3 coef [95% CI]	Model 4 coef [95% CI]
Region				Ref
northern				
western				0.97 [0.52, 1.41]***
Central				0.72 [0.27, 1.17]**
Greater accra				1.13 [0.60, 1.67]***
Volta				1.29 [0.85, 1.73]***
eastern				1.13 [0.70, 1.56]***
Ashanti				1.44 [1.02, 1.85]***
Brong ahafo				1.66 [1.22, 2.10]***
Upper east				1.09 [0.62, 1.57]***
Upper west				0.93 [0.46, 1.39]***
Random effects				
PSU variance (SE)	2.16 [2.09, 2.23]***	1.11 [1.05, 1.17]***	1.01 [0.95, 1.07]***	0.87 [0.83, 0.91]***
District variance (SE)	1.14 [0.94, 1.34]***	0.48 [0.34, 0.61]***	0.32 [0.22, 0.42]***	0.11 [0.05, 0.18]***
Percentage of change in variance				
PSU	–	48.6	9.0	13.9
District	–	57.9	33.3	65.6

***Significant at $P < 0.001$; ** $P < 0.01$; * $P < 0.05$; Ref - reference category; SE - Standard Error.

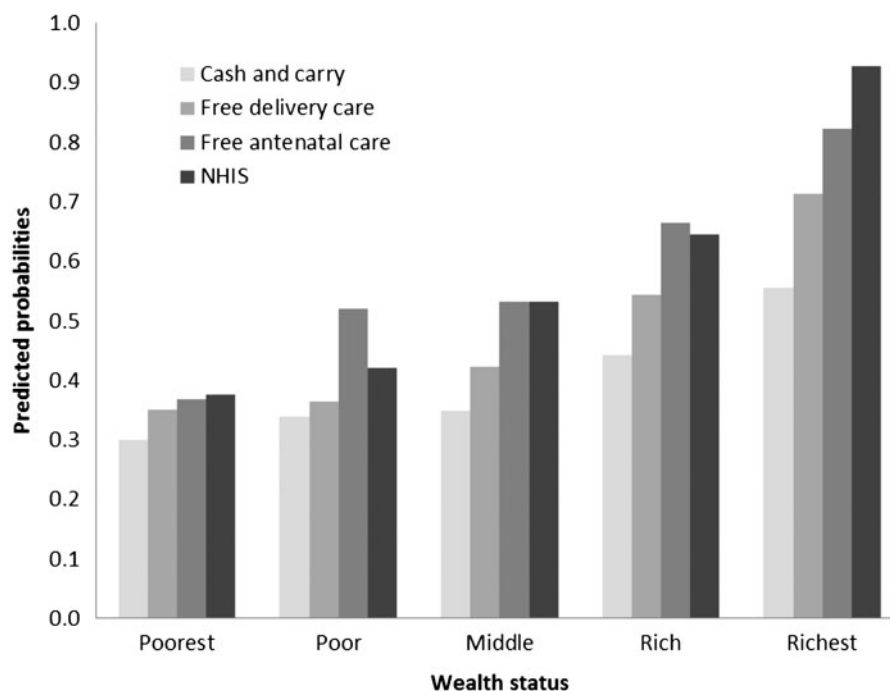


Figure 3. Predicted probabilities of uptake of skilled birth care by wealth and policy

international donors affect the sustainability of fee exemption policies and service barriers, including access to services, staff, equipment and drug shortages (Gilson and McIntyre 2005; James *et al.* 2006; McPake *et al.* 2011; Meessen *et al.* 2011; Mills *et al.* 2012).

The findings further reveal that significant differences continue to exist in the uptake of skilled birth care use between communities and districts. This could be attributed to structural factors such as availability and cost of transportation, perceived quality and availability of services in local health care units and other cultural barriers in accessing facility-based care (James *et al.* 2006; Houweling *et al.* 2007; Say and Raine 2007; Ridde *et al.* 2012; Dzakupasu *et al.* 2014).

The present study demonstrates that the reduction in inequalities were not large enough to be significant, indicating that substantial inequalities continue to exist. Despite government policies and programme efforts over the last two decades to bridge the rich–poor gap, inequalities persist because of social exclusion and lack of social protection for the poor (Soors *et al.* 2013). Pro-poor policies often lack political support and commitment and in most cases fail to reach the poorest (Soors *et al.* 2013). In addition, research evidence suggests that the poor lack awareness of their privileges, are usually powerless to demand their rights and are repeatedly subjected to discrimination and abuse, particularly by service providers (Kabeer 2010; Derbile and van der Geest 2013; Mumtaz *et al.* 2014).

Table 2. Comparison of subsequent policies by wealth

Earlier policy	Subsequent policies		
	Free antenatal care	Free delivery care	NHIS
Cash and carry	Poorest Not significant ↑		
Free antenatal care		Not significant ↑	
Free delivery care			Not significant ↑
Cash and carry	Poor Not significant ↑		
Free antenatal care		Significant ↑***	
Free delivery care			Not significant ↓
Cash and carry	Middle Significant ↑**		
Free antenatal care		Significant ↑**	
Free delivery care			Not significant ↓
Cash and carry	Rich Significant ↑***		
Free antenatal care		Significant ↑*	
Free delivery care			Not significant ↓
Cash and carry	Richest Significant ↑***		
Free antenatal care		Significant ↑*	
Free delivery care			Not Significant ↑

***Significant at $P < 0.001$; ** $P < 0.01$; * $P < 0.05$; ↑ increase odds; ↓ decrease odds.

The increase in skilled birth care was consistent amongst the non-poor over the policy period. However, this progress stalled when maternity care payments were integrated into the NHIS. The present findings concur with the assertion of the MoH that the integration reduced the use of skilled birth care, because women who were not enrolled on the scheme had to pay for maternity care (Ghana Statistical Service *et al.* 2009a). Further investigation of the 2008 GDHS demonstrates evidence of significant differences in the uptake of skilled birth care within different economic groups by NHIS status. However, less than a third of the poorest women with NHIS had skilled birth care whereas uptake was almost universal among the richest.

The findings show that removing user fees at health facilities does not remove all financial barriers to accessing skilled birth care. Non-medical expenses such as transportation cost for patients and persons accompanying them, loss of wages and informal payments also discourage the poor from seeking care (Jacobs *et al.* 2012; Ridde *et al.* 2012; Dzakpasu *et al.* 2014). Also, there is evidence that distance to facilities, lack of transportation, poor quality of care and lack of information often deter poor women from seeking skilled care (Ofori-Adjei 2007; Immpact 2008; Witter *et al.* 2009; Apoya and Marriott 2011; Dzakpasu *et al.* 2014) Although alleviating financial barriers must continue to be a priority to improving access, bottlenecks and other social and cultural barriers need to be addressed. Systematic monitoring and targeted interventions are required to ensure that services reach the poorest and they benefit from exemption policies. Specifically, concerted measures are needed to explicitly define and identify the poorest in society as well as effective community-based outreach education programmes are required to promote awareness among the poorest and empower them in seeking care.

The revised NHIS policy which allows all pregnant women to be registered free of charge for skilled birth care for a period ending 3 months after birth is a step in the right direction. However, it would take time to ascertain the population impact of such policy, especially for the poorest and marginalized population.

The limitations of the study are worth noting. Although it is argued that removal of user fees can affect the provision of quality of local health care, there was no direct information in the GDHS data to examine these effects (Derbile and van der Geest 2013).

Also, the GDHS did not collect any information on unofficial payments for maternity care. The potential influence of macro-level community and district level indicators was not considered since these data are not available in the GDHS. However, the results show that individual and household factors sufficiently capture most of the variation.

Conclusions

A number of studies have examined the impacts of user fees on uptake of skilled birth care in low and middle income countries; however, the evidence on the impact for the poorest and marginalized women whom these policies are primary targeted remains uncertain. This study using repeated cross-sectional population representative survey data spanning two decades has shown that although partial and full removal of user fees in Ghana improved uptake of skilled maternity care, the impact for the poorest women were trivial. Full and partial payment for maternity services with reference to the 'cash and carry' policy period and the 'free antenatal care' period resulted in pronounced rich-poor inequity gap in skilled birth care use. Outright removal of user fees improved uptake of skilled birth care significantly for the non-poor, whilst the benefits to the poorest women was only trivial. The findings from this study suggest that removal of user fees is important in improving skilled birth care use; however, other barriers need to be addressed to improve uptake for the poorest and marginalized women.

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