Socioeconomic factors associated with choice of delivery place among mothers: a population-based cross-sectional study in Guinea-Bissau

Sanni Yaya, Ghose Bishwajit, Nathali Gunawardena

ABSTRACT

Background Maternal death outcome remains high in Guinea-Bissau. Delivery-related complications and maternal mortality could be prevented by increasing women’s access to skilled pregnancy care. Socioeconomic status (SES) is often associated with low health service utilisation in low/middle-income countries. In Guinea-Bissau, little is known on the relationship between SES and use of health facility for delivery. In this study, we examined the association between women’s choice of health facility delivery with their SES.

Methods Current data from Multiple Indicator Cluster Survey conducted in Guinea-Bissau, 2014 were used in this study. The place of delivery (home or health facility) was the outcome variable of interest using 7532 women of reproductive age (15–49 years). Respondents’ characteristics were described by summary statistics, while multivariable logistic regression model was used to examine the association of demographic and socioeconomic characteristics on facility-based delivery. Adjusted ORs, 95% CIs and p values were computed to identify significant determinants.

Results Results show that in proportion of women delivering at home was higher than of delivery at a health facility. Overall percentage of women who delivered at health facility was 39.8%, with the rate being substantially higher among urban (67.8%) compared with their rural (30.2%) counterparts. Percentage of delivering at home was highest in Oio region (23.8%) and that of delivery at a health facility was highest in the Sector Autónomo de Bissau region (18.7%). In the multivariable analysis, women in urban areas compared those who had no education, those who had primary and secondary/higher level of education were 2.2 and 3.3 times more likely to deliver at a health facility. The odds of facility were also significantly less among the women from the richest households, 5.3 and 5 times among urban and rural women, respectively.

Conclusion Based on these findings, the study concludes that the percentage of health facility delivery is low in Guinea-Bissau, which can be promoted through scaling up women’s SES. The findings could guide healthcare policy-makers to address the issue of unskilled delivery services and increase the use of facility-based delivery particularly among the disadvantaged women.

Key questions

What is already known?

► Institutional delivery plays a vital role in reducing maternal and child mortality.

► A large proportion of women in Africa are deprived from basic maternal healthcare services.

What are the new findings?

► More than three-fifths of the women in Guinea-Bissau do not deliver at health facilities.

► Women from lower socioeconomic status are significantly less likely to use health facility delivery services.

What do the new findings imply?

► Improving women’s socioeconomic position can promote the utilisation of health facility delivery services.

► Health policy-makers should make sure that women’s inability to pay does not barrier their access to essential maternal health services.

BACKGROUND

Choice of healthcare provider in sub-Saharan Africa is often limited. Only 3% of the world’s healthcare workforce is found in the region despite the area having 24% of the global disease burden.1 Despite progress in the area of expanding the range of healthcare services in the region,2 as well as retaining healthcare professionals,3 people living in sub-Saharan Africa, especially those in rural areas, continue to have a limited choice of healthcare services. The poorest members of society in low/middle-income countries, especially in resource-limited settings, tend to use medical services far less than others.4

In low/middle-income countries, the impact of an individual’s socioeconomic status (SES) on their utilisation of healthcare services has been extensively documented. In Burkina Faso, individuals from disadvantaged communities seek healthcare services...
indirect barriers such as transport costs, limit the use of
direct barriers, such as charges and fees, as well as
both direct barriers such as transport costs, limit the use of
Both direct barriers, such as charges and fees, as well as
income. In Guinea-Bissau, 80.4% of the population
likely multiple factors resulting in high child mortality in
Guinea-Bissau, one of which includes low
income. In Guinea-Bissau, 80.4% of the population
(1201 thousand people) are multidimensionally poor
while an additional 10.5% live near multidimensional
poverty (156 thousand people). Overall, identifying
determinants of facility-based
delivery is a major step to improve maternal health
outcomes, based on high maternal mortality rate in
low-income and middle-income countries. However,
in Guinea-Bissau, there is paucity of data from studies
showing predictors of the choice of facility-based delivery.
Understanding the relationship between women’s SES
and choice of healthcare facility can assist with the develop-
ment of interventions and policy changes for key popu-
lations in order to improve health outcomes for women
and children. This study aims to examine the association
between women’s choice of health facility delivery with
their SES in Guinea-Bissau with the research question,
to extent are women’s SES associated with choice of
delivery place? Data for this study were collected from
the Multiple Indicator Cluster Survey (MICS) conducted
in Guinea-Bissau in 2014.

**METHODS**

**Data source**

Data for this survey were collected from the fifth round
of the MICS-5 conducted in Guinea-Bissau among 7532
women of reproductive age (15–49 years). MICS is a
multinational household survey initiative conducted by
Unicef and designed to fill data gaps for monitoring the
situation of children and women. Unicef, through the
MICSs, has transformed the data landscape in the past
20 years. MICS findings are used to for policy decisions
and programme interventions related to the situation of
children and women around the world. MICS consists of
five questionnaires including: Household Questionnaire,
Individual Questionnaire for Women, Questionnaire for
Children under Five, Questionnaire for Men and Quest-
ionnaire for Children aged 5–17. The MICSs provide
information on items such as education level, wealth
status and use of healthcare services.

The main objectives of the survey were: to provide
up-to-date information for assessing the health status of
children and women (including men) and to monitor
progress towards the Millennium Development Goals
and assist in targeted interventions thereby. The survey
was conducted in 2014 by the Ministry of Economy and
Finance through the Direcção Geral do Plano/Instituto
Nacional de Estatística, within the scope of the Global
MICS Programme. The United Nations Children’s Fund
(UNICEF) provided technical and financial support for
conducting the survey. Additional financial and logistical
contributions were provided by the United Nations
Development Programme, the United Nations Popula-
tion Fund, PLAN Guinea-Bissau and the International
Partnership for Human Development. MICS-5 was
nationwide sample survey encompassing all nine regions
in the country: Tombali, Quinara, Oio, Bomboko, Bolama/
Bijágós, Bafatá, Gabó, Cacheu and Sector Autónomo de
Bissau (SAB). Details on sampling procedure are avail-
able on the final report.

**Variables**

The main outcome variable was place of delivery. This was
categorised as home delivery and facility delivery. Main
explanatory variable was SES of women, which was proxy
by their educational and wealth status. Several covariates
were included in the analysis as potential confounders:
age, marital status, region, religion, access to television
(TV), radio and internet, frequency of antenatal care
(ANC) attendance.

**Data analysis**

At first, we checked the data for multicollinearity and
ran distribution tests for assess normality. Any outliers
were removed. Then the dataset was weighted using the
sample weight variable provided in the dataset. Data
analysis included descriptive statistics to present the basic
characteristics of the participants. Charts were created
to visually illustrate the variation in the proportion of
facility delivery across the study regions. \( \chi^2 \)
bivariate tests were performed to select the potential predictors
for the multivariable analyses (results were not shown
in the analysis). Following that, binary regression anal-
ysis was performed to measure the ORs of the associa-
tion between health facility delivery and the explanatory
variables while adjusting for potential confounders.
As the outcome variable was dichotomous, we used binary
logistic regression model that is an appropriate method
for normally distributed data. The level of significance
was set at 5%.

We conducted the analyses using publicly available data
from demographic health surveys.

**Patient and public involvement**

Patients and public were not involved in the design and
conduct of this research.

**RESULTS**

**Descriptive statistics**

Table 1 shows that mean age of the sample women
were 31.48 years (SD 4.48). Most of the women in the
25–29 years (20.2%) age group, were currently married.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Total N=7532</th>
<th>Urban N=2418</th>
<th>Rural N=5114</th>
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<td>31.43/8.33</td>
<td>31.51/8.54</td>
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<tr>
<td>15–19</td>
<td>475</td>
<td>132</td>
<td>343</td>
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<td>20–24</td>
<td>1400</td>
<td>458</td>
<td>942</td>
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<td>1525</td>
<td>514</td>
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<td>30–34</td>
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<td>468</td>
<td>959</td>
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<td>35–39</td>
<td>1136</td>
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<td>780</td>
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<td>40–44</td>
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<td>2294</td>
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<td>626</td>
<td>1591</td>
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<tr>
<td>&lt;Once/week</td>
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<td>43</td>
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<td>172</td>
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<tr>
<td>Few times/week</td>
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<td>899</td>
<td>1121</td>
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<tr>
<td>&lt;Once/week</td>
<td>3576</td>
<td>838</td>
<td>2738</td>
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<tr>
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<td>216</td>
<td>1083</td>
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<td>766</td>
<td>1426</td>
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<td>872</td>
<td>272</td>
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<td>Poorest</td>
<td>2058</td>
<td>102</td>
<td>1956</td>
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<tr>
<td>Second</td>
<td>1718</td>
<td>211</td>
<td>1507</td>
</tr>
<tr>
<td>Middle</td>
<td>1629</td>
<td>444</td>
<td>1185</td>
</tr>
</tbody>
</table>

Continued
Variables | Total N=7532 | % | Urban N=2418 | 32.1% | Rural N=5114 | 67.9%
---|---|---|---|---|---|---
Fourth | 1261 | 16.7 | 858 | 35.5 | 403 | 7.9
Richest | 866 | 11.5 | 803 | 33.2 | 63 | 1.2
Place of delivery
Home | 1924 | 60.2 | 264 | 32.2 | 1660 | 69.8
Health facility | 1272 | 39.8 | 555 | 67.8 | 717 | 30.2

ANC, antenatal care; MICS, Multiple Indicator Cluster Survey; SAB, Sector Autónomo de Bissau.

Figure 1 Regional distribution of home and facility delivery (%). SAB, Sector Autónomo de Bissau.

Figure 2 Distribution of home and facility delivery across the educational level (%).

Discussion
By analysing data from the information gathered by the MICS conducted in Guinea-Bissau in 2014, our study came to several findings about the relationship between women’s SES and their choice of healthcare facility. The study found that women with higher educational attainment and from higher wealth status households were more likely to deliver at healthcare facilities while their
Figure 3  Distribution of home and facility delivery across the wealth quintile (%).

less educated and low wealth status counterparts were more likely to deliver at home.

Most of the women surveyed were in the 25–29 years age group, were currently married and belonged to Islam faith, from Norte province. The majority of the women were of rural origin, and compared with rural women, urban women were had higher percentage of accessing radio, TV, internet. Urban women were less likely than rural women to attend at least four ANC visits, while rural women were less likely to deliver at a health facility. Another study conducted in Guinea-Bissau also had similar findings reporting that 75% of women give birth at home in rural areas.14

In urban areas, women with primary, secondary or higher level education were found to be more likely to deliver at a healthcare facility. Seventy per cent of women delivering in healthcare facilities in urban areas were those who had primary, secondary or higher level education. In both urban and rural areas, women with no education were more likely to deliver at home with 50.8% of home deliveries in urban areas and 70.1% of home deliveries in rural areas being by women of no education. Interestingly, many secondary or higher level educated women in rural areas were found not to be delivering at healthcare facilities compared with their urban counterparts. Compared with the 70% of women with primary, secondary or higher level education delivering in healthcare facilities in urban areas, only 34.8% of primary, secondary or higher level educated women delivered in healthcare facilities in rural settings. In a Kenyan study, long distances from health facilities rather than economic or cultural factors were found to be the main reason why women chose to deliver at home.15 Long distances to health facilities are usually more prevalent in rural areas, providing a possible explanation to our finding that women with higher levels of education tend to deliver at home in rural settings. It was also found that individuals from a lower wealth status were much more likely to deliver at home while those with a higher wealth status were more likely to deliver at a healthcare facility. 64.5% of home births were by women of the poorest and second poorest wealth status while in healthcare facilities, only 45.2% of deliveries were made by women of the poorest and second poorest wealth status. This contrasts women of the richest and second richest wealth status of whom only 10.8% deliver at home while 34.3% deliver at a healthcare facility.

The multivariable analysis also displayed that higher educational level and wealth status were associated with higher odds of delivering at health facilities. In the urban areas, those who had primary and secondary/higher level of education were 2.2 and 3.3 times more likely to deliver at a health facility than those with no education. The odds of delivering at a health facility were also highest among the women from the richest households, 5.3 and 5 times among urban and rural women, respectively. Our findings reflect past studies. Other studies have found educational attainment of mothers to be one of the most

Table 2  Multivariate association between women preference for facility delivery with educational and wealth status, MICS 2014

<table>
<thead>
<tr>
<th>Educational attainment</th>
<th>Urban AOR 95% CI upper 95% CI lower</th>
<th>Rural AOR 95% CI upper 95% CI lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Primary</td>
<td>2.269 1.806 2.850</td>
<td>0.753 0.578 1.081</td>
</tr>
<tr>
<td>Secondary/higher</td>
<td>3.337 2.607 4.272</td>
<td>0.849 0.644 1.120</td>
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<tr>
<td>Wealth status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poorest</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Poorer</td>
<td>1.848 1.102 3.101</td>
<td>2.307 1.765 3.017</td>
</tr>
<tr>
<td>Middle</td>
<td>2.426 1.641 3.586</td>
<td>2.625 1.998 3.450</td>
</tr>
<tr>
<td>Richer</td>
<td>1.977 1.505 2.597</td>
<td>2.605 1.974 3.438</td>
</tr>
<tr>
<td>Richest</td>
<td>5.347 4.172 6.853</td>
<td>5.066 3.565 7.031</td>
</tr>
</tbody>
</table>

N.B. Regression analyses were adjusted for age, marital status, religion, province, radio, TV, ever used internet and receiving ANC. ANC, antenatal care; AOR, adjusted OR; MICS, Multiple Indicator Cluster Survey.
important factors associated with utilisation of health facilities for delivery.16–25 The finding that wealthier women are more likely to deliver in healthcare facilities more than their poorer counterparts has also been documented in other studies.19 26–30 In response to the high level of home births and lack of health facility use among mothers of low SES in Guinea-Bissau, services at healthcare facilities need to be improved and there needs to be an increase in training of birth attendants for at-home deliveries.31 Due to the fact that health facility use remains low despite the facilities existing and being available to women,32 the focus should be on improving home births and making them safer as a short-term solution. Perinatal and neonatal deaths can be reduced by training birth attendants.33 Further research is needed in determining factors influencing women’s utilisation of healthcare facilities as current studies have not been able determine why utilisation of health facilities remains low in low-income countries.32

Strengths and limitations
The major strength of this study is the use of nationally representative dataset. Based on the large data, generalisation of research findings is possible. However, a drawback is recall bias in the study. More so, this study used secondary data. MICS focused on demographic and socioeconomic variables in their interviews, other factors such as cultural norms, accessibility challenges which are capable of influencing facility-based delivery were not captured in the survey instrument.

CONCLUSION
Through this study we were able to determine that women’s SES is associated with their choice of healthcare facility in Guinea-Bissau. The study found that women with higher educational attainment and from higher wealth status households were more likely to deliver at healthcare facilities while their less educated and low wealth status counterparts were more likely to deliver at home. Measures should be taken to determine factors that determine women’s decisions in order to improve the quality of healthcare facilities and maternal satisfaction thereby improving the desire for facility births.

Acknowledgements
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Contributors
SY and GB contributed to the study design, the review of literature and analysis of literature, manuscript conceptualisation, preparation and data analysis. NG contributed to the literature review. SY had final responsibility to submit for publication. All authors read and approved the final manuscript.

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Competing interests
None declared.

Patient consent for publication
Not required.

Ethics approval
MICS surveys are approved by Unicef ethical board and the study country. The dataset is available in the public domain in anonymised form; therefore, no further approval was necessary.

Provenance and peer review
Not commissioned; externally peer reviewed.

Data sharing statement
Data for this study was sourced from Multiple Indicator Cluster Survey: http://mics.unicef.org/surveys

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REFERENCES