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Use of institutional delivery services in Kassala, eastern Sudan

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The number of deliveries assisted by a skilled birth attendant is an important indicator in meeting Millennium Development Goal 5 [1]. Different rates of institutional delivery and various barriers to institutional delivery (e.g. distance, higher cost, illiteracy of the mother, higher parity, and fewer prenatal care visits) have been reported in many settings [2–6]. The aim of the present study was to investigate the prevalence of and predictors for institutional delivery in Kassala, eastern Sudan.

A community-based cross-sectional household survey was conducted in Kassala between May 1 and September 30, 2012. The study population comprised women who had delivered in the previous 12 months in Kassala (where there are 28 health centers and 3 hospitals). A total sample size of 680 women was calculated using a formula for a single population proportion that would provide 80% power to detect a 5% difference at α = 0.05 and which assumed that 10% of women would not respond. Multistage sampling was used to select the study population. After eligible women had signed an informed consent form, structured questionnaires were used to gather data. Ethics approval was received from the Health Research Board of the Ministry of Health in Kassala state. Women were asked about their delivery experience and their sociodemographic characteristics (age, parity, prenatal care in index pregnancy, education, and working status). Questions regarding barriers to hospital delivery (e.g. cost, lack of privacy, lack of approval of husband, and perceived low quality of service provided in hospitals) were included.
Factors associated with home delivery and institutional delivery in Kassala, eastern Sudan.a

<table>
<thead>
<tr>
<th>Variable</th>
<th>Home delivery (n = 389)</th>
<th>Institutional delivery (n = 297)</th>
<th>Univariate analysis</th>
<th>Multivariate analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>P value</td>
<td>OR (95% CI)</td>
<td>P value</td>
</tr>
<tr>
<td>Age ≤28.0 y</td>
<td>1.9 (1.4–2.6)</td>
<td>&lt;0.001</td>
<td>1.8 (1.2–2.5)</td>
<td>0.001</td>
</tr>
<tr>
<td>Primiparous</td>
<td>2.4 (1.5–3.7)</td>
<td>&lt;0.001</td>
<td>1.7 (1.0–2.8)</td>
<td>0.028</td>
</tr>
<tr>
<td>Maternal education ≥ secondary-school level</td>
<td>2.7 (1.6–4.5)</td>
<td>&lt;0.001</td>
<td>2.6 (1.5–4.5)</td>
<td>0.001</td>
</tr>
<tr>
<td>Husband education ≥ secondary-school level</td>
<td>1.8 (1.1–2.9)</td>
<td>0.019</td>
<td>1.0 (0.5–1.9)</td>
<td>0.996</td>
</tr>
<tr>
<td>Housewife</td>
<td>1.7 (1.1–2.6)</td>
<td>0.004</td>
<td>1.7 (1.1–2.70)</td>
<td>0.007</td>
</tr>
<tr>
<td>Use of prenatal care (≥1 visit)</td>
<td>8.3 (3.2–21.1)</td>
<td>&lt;0.001</td>
<td>6.1 (2.3–16.0)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* Values are given as number (percentage) unless otherwise indicated.

Data were analyzed using SPSS version 16.0 (IBM, Armonk, NY, USA). Means and proportions of sociodemographic characteristics were compared via t test and χ² test, respectively, between those who had an institutional delivery and those who had a home birth. Univariate and multivariate analyses were performed, with institutional delivery the dependent variable and sociodemographic characteristics the independent variables. P < 0.05 was considered to be statistically significant.

Of the 686 women enrolled in the study, 297 (43.3%) gave birth in an institution and 389 (56.7%) had a home birth (Table 1). In Zambia, the rate of health facility use for childbirth was 42.8% [3]. In neighboring Ethiopia, the use of an institution for birth was only 12.1% in 2010 [2]. The difference in prevalence of institutional delivery between the present study and the Ethiopian study may be due to the fact that home delivery forms part of Ethiopian custom and tradition [2].

The women who had an institutional delivery were significantly younger and had significantly lower parity than the women who delivered at home (mean age 26.3 ± 6.6 vs 29.2 ± 6.7 years [P < 0.001]; mean parity 2.9 ± 1.9 vs 3.8 ± 2.0 births [P < 0.001]). In logistic regression analysis, younger age (odds ratio [OR] 1.8; 95% confidence interval [CI], 1.2–2.5), primiparity (OR 1.7; 95% CI, 1.0–2.8), education to at least secondary-school level (OR 2.8; 95% CI, 1.5–4.5), employment (OR 1.7; 95% CI, 1.1–2.7), and use of prenatal care (OR 6.1; 95% CI, 2.3–16.0) were predictors for institutional delivery.

Thus, younger and primiparous women were almost twice as likely as older and multiparous women to deliver in an institution, which is consistent with results from other studies [2,4,5]. Younger women may be better educated than older women, while older and multiparous women may prefer giving birth at home because they have previously experienced home birthing safely and may be caring for older children.

In the present study, educated women were almost 3 times as likely as illiterate women to have an institutional delivery, echoing findings from studies in Ethiopia and Zambia [2,3]. The current study also showed that women who underwent prenatal care during their index pregnancy were approximately 6 times more likely to have an institutional delivery than women who had not attended prenatal care, which is also similar to findings in Ethiopia [2].

The reasons for home delivery were as follows: urgent delivery (193 [49.6%]), with no time to reach the hospital; bad previous experience with hospital delivery (32 [8.2%]); shyness (43 [11.0%]); fear of cesarean delivery (80 [20.6%]); and financial reasons (87 [22.4%]). Similarly, urgent delivery and financial cost were the most common reasons for home delivery in Uganda [6].

In summary, younger age, education to beyond secondary-school level, primiparity, and prenatal care were predictors for institutional delivery in the present study. Higher education and more use of prenatal care would increase the rate of institutional delivery.

Acknowledgments

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Conflict of interest

The authors have no conflicts of interest.

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[3] Hazemba AN, Siziya S. Choice of place for childbirth: prevalence and correlates of utili-