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The role of transportation to access maternal care services for women in rural Bangladesh and Burkina Faso: A mixed methods study

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ABSTRACT

Objective: To understand the role of transportation in accessing health care during pregnancy, delivery, and the postpartum period among women in rural Bangladesh and Burkina Faso. *Methods:* An exploratory mixed methods study was conducted in Mymensingh district in Bangladesh and Kaya district in Burkina Faso. We recruited 300 women from Bangladesh and 340 from Burkina Faso with a delivery outcome within one year of interview. Key informant interviews were conducted with 19 participants and 12 focus group discussions took place with attendees in selected community clinics. *Results:* Of the interviewees, 45.7% in Bangladesh and 73.2% in Burkina Faso reported having had health complications during their last pregnancy, delivery, or postpartum period. Of all women, 42.7% in Bangladesh and 67.4% in Burkina Faso sought facility care for their complications. Facility-based delivery was much higher in Burkina Faso (87.7%) than Bangladesh (38.2%). Literacy, transport availability, transportation costs, and travel time were associated with care seeking behavior. *Conclusion:* Lack of reliable transportation was reported as a significant barrier to accessing care during pregnancy, delivery, and postpartum by women in Bangladesh and Burkina Faso. Effort should be made to improve access to emergency obstetric care, and transport intervention should be strengthened.
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1. Introduction

More than 800 women die every day owing to complications of pregnancy and childbirth and almost all of these deaths occur in low- and middle-income countries (LMICs) [1]. Rural populations in LMICs often live hours away from the nearest health center, making it difficult to seek care for emergency health needs including services for obstetric complications [2–4]. The conceptual framework of delays by Thaddeus and Maine [2] deconstructed the process of accessing emergency obstetric care into three phases: (1) to take the decision to seek care; (2) to reach a health facility; and (3) to get necessary care at facilities. The second delay represents the distance from a health facility, the time to reach it, and implies the availability of transport as well as its costs. It has consequences on both the first and third delays.

Many studies have highlighted the importance of transportation to access health care and its consequences on maternal health outcomes. In Masvingo, a rural area of Zimbabwe, lack of access to transport accounted for 28% of maternal deaths compared with 3% in urban areas [5]. In South Africa, lack of transport to ensure the timely transfer of women between referral centers accounted for 13.6% of maternal deaths [6]. Transport costs to access health facilities can represent 25% of the total out-of-pocket expenditure on a healthcare visit in Brazil [7] and 28% in Cameroon [8]. In Nepal, to reach a health facility women walked (67%), or used stretchers (18%) or buses and taxis (15%); these figures account for both emergency and nonemergency transport [9]. Various interventions have been tried to address transportation problems; however, they lacked plans for sustainability, had difficulties in management, or did not follow clear maternal health outcomes [10–17].

In South Asia, Bangladesh has one of the lowest per capita investments in health care. Nearly 75% of women delivered at home and only 29% of women with obstetric complications were more likely to seek treatment from a facility in 2010 [18]. In cases of obstetric complications, the mode of transport is chosen based on: distance to the facility, economic status, availability of vehicles, and stage of labor [19]. Of those who visited a health facility or an informal provider,

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79% used some form of transport to reach the service; of those, 57% used three-wheeled rickshaws and rickshaw vans, 30% used motorized road transport, while only 0.8% used hospital ambulances [20]. Poor economic status unfavorably influences people's decisions to use emergency obstetric care facilities [21].

In West Africa, Burkina Faso ranked 177 on the global human development index of 182 countries [22]. According to the national census [23], the maternal mortality ratio is 307 per 100 000 live births, and that by the WHO's estimate is 400 per 100 000 live births [24]. Although about 73.2% of births are assisted by skilled birth attendants (SBAs), significant regional and socioeconomic disparities exist; the wealthiest group is three times more likely to deliver at a facility compared with the poorest [23,25]. To facilitate the poorest in accessing facility-based deliveries, out-of-pocket expenditures were significantly reduced through governmental subsidies [26]; however, the use of obstetric services continued to be low [27]. The role of transportation in terms of availability, quality, and cost could be related to the low use of these services and there is lack in information to guide transport intervention projects in this regard. Prior to implementation of a pilot transport intervention project, the aim of the present study—conducted in rural Bangladesh and Burkina Faso—was to understand contextual factors, the stakeholders' perspective, and the experience of women in relation to transportation availability, road communication systems, and cost for accessing maternal care services.

2. Materials and methods

The study used a mixed methods exploratory design collecting data from surveys, key informant interviews, and focus group discussions. In Bangladesh, the study was conducted at six community clinic coverage areas (Bonogram, Haliora, Nagpur, Olirghat, Shibpur, and Atarampur) in Nandail sub-district under Mymensingh divison. In Burkina Faso, the study areas included the four Centres de Santé et de Promotion Sociale (CSPS) (Secteur 6, Delga, Damesma, Tangasgo) in the Kaya sanitary district where a functional health and demographic surveillance system (Kaya HDSS) was available. Women who had a pregnancy outcome (live birth, still birth, or abortion) within one year of enrolment were included in the survey. Study participants were selected using systematic random sampling from a list prepared locally at the participating community clinic in Bangladesh and the CSPS in Burkina Faso of women who had pregnancy outcomes within one year of the beginning of the study.

A structured questionnaire was used to collect information on sociodemographic information, pregnancy and delivery outcomes, complications faced during pregnancy and delivery, care seeking practices, use of transportation to seek facility services, cost, and other challenges faced for care seeking during their most recent pregnancy and delivery. The questionnaire was administered in the local language by trained male and female interviewers recruited in the respective country. The minimum required sample size calculated for each country was 274 considering that 12% of the women perceived transportation as a barrier to seeking emergency obstetric care [20] with 4% precision of estimate and 95% confidence. The required number of samples in each of the health center coverage areas was allocated proportional to the number of women listed who had a delivery outcome in the respective center. Interviews were conducted at the health centers or in a common meeting place at village level.

In Burkina Faso, nine in-depth interviews took place with 3 midwives, 1 nurse, and 5 women who sought facility care during their most recent pregnancy. In Bangladesh, 10 in-depth interviews were conducted with 1 obstetrician, 1 union council chairman, 2 community leaders, and 6 women who sought facility care during their last pregnancy. Women who participated in the focus groups were also the participants in the survey, and were purposively selected based on information in the questionnaire to represent who had adverse conditions during pregnancy or delivery and those who sought care or not. Purposive sampling was used to choose the participants for the in-depth interviews to cover the range of service providers and other stakeholders as key informants. Semistructured interview guidelines were used to cover the themes of care-seeking for prenatal care, delivery, and postnatal care; complications developed during pregnancy; referral mechanisms; transportation used to access care; affordability of care; and suggestions for expected transportation. Twelve focus group discussions were conducted in total (six in each country). Ten participants in the focus group discussions included men and women who attended local health centers to maximize diversification of information within the groups. The data collection was done by the research interviewers selected and trained locally before the study.

Written consent was obtained from all study participants. The study was implemented with approval by ethics committees of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), the Ethics Committee for Health Research of Burkina Faso, and the research ethics committee of the University of Montreal Hospital Research Center (CRCHUM).

Descriptive analysis was done to understand the sociodemographic characteristics, morbidity during pregnancy and delivery, care seeking practices, use of transportation for care seeking, difficulties faced because of transportation for care seeking, cost, and affordability separately in the two countries. We used χ^2 statistics to assess differences between the key categories for facility care seeking during the last pregnancy, delivery, and the postpartum using a P value <0.05 for statistically significance. Qualitative information was analyzed through creation of a book of codes from text narrated from the interviews and focus groups. This book of codes emerged from the text reflecting the different themes identified in concordance with the study objectives. The book of codes was then revised by a research team member to ensure the themes were exhaustive and permitted an in-depth understanding of the context of the study population. Quantitative data were analyzed using SPSS version 20 (IBM, Armonk, USA) andQDA Miner (Provalis Research, Montreal, Canada) was used for qualitative data.

3. Results

3.1. Sociodemographic characteristics

The average age of the 300 survey participants in Bangladesh and 340 in Burkina Faso were 24.9 years and 26.5 years, respectively (Table 1). In Bangladesh, 21.7% of the participants were illiterate, whereas this figure was 87.1% in Burkina Faso. The average number of living children for women was 3.6 and 2.2 children, respectively, in Burkina Faso and Bangladesh.

3.2. Healthcare seeking during pregnancy and delivery

In Burkina Faso, 73.2% of women reported having had health complaints of various types during their last pregnancy, delivery, and the postpartum period, while this figure was 45.7% in Bangladesh. There were more than 30 symptoms reported by the participants, including abdominal pain, bleeding, edema, vomiting, high fever, delay in delivery, and seizure, among others. Women in both countries made similar care seeking efforts for such health issues; 93.4% in Bangladesh and 92.7% Burkina Faso (Figs. 1–3). Facility-based delivery was much higher in Burkina Faso (87.7%) than in Bangladesh (38.2%). The proportion of women who delivered at facilities varied across the study sites in both of the countries. For example in Nagpur in Bangladesh, only 2.3% of the women delivered at health facilities, whereas 28% did in Atarampur; similarly in Secteur 6 CSPS in Burkina Faso, 65.1% of the women delivered at health centers, whereas in Tangasgo it was 98.8%. Data from Bangladesh showed substantial differences across the community clinic areas concerning deliveries with SBAs; more than 70% of the women in

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