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Timing and utilization of antenatal care services in Liberia: Understanding the pre-Ebola epidemic context

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ABSTRACT

In Liberia, 75% of those who died from 2014 Ebola epidemic were women and the effects of this gruelling epidemic were more severely felt by pregnant women. This immediately raised fears about the long-term impacts of the epidemic on maternal and child health. As part of a larger study, this paper uses Andersen's behavioural model of health care utilization and Goffman's stigma theory to explain the timing and utilization of maternal health services before the outbreak of the Ebola epidemic as a background to the potential long-term effects on maternal health. We conducted survival and multiple regression analysis using the 2007 (N = 3524) and 2013 (N = 5127) Liberia's Demographic and Health Survey (LDHS) data. Our sample consisted of women of reproductive age (15–49 years) that had given birth in the last five years preceding the survey year. The findings show that from 2007 to 2013, there was an overall improvement in the timing of first antenatal care (ANC) visits (TR = 0.92, $p < 0.001$), number of ANC visits and delivery with skilled birth attendants. The results also show county and regional disparities in the utilization of ANC services with South Eastern A region emerging as a relatively vulnerable place. Also, access to ANC services defined by distance to a health facility strongly predicted utilization. We argue that the Ebola epidemic likely eroded many of the previous gains in maternal health care, and may have left a lingering negative effect on the access and utilization of maternal health services in the long-term. The study makes relevant policy recommendations.

1. Introduction

In Sub-Saharan Africa (SSA), three-quarters of maternal deaths are due to direct obstetric causes such as hemorrhage, sepsis and hypertensive disorders (Ronsmans and Graham, 2006; Khan et al., 2006; WHO, 2014), conditions that can easily be averted through skilled delivery and provision of emergency obstetric care. Meanwhile, utilization of skilled delivery remains low with only half of pregnant women delivering with a skilled attendant and the rates are worse off in rural communities (WHO, 2014). Yet the World Health Organization's (WHO) standard for the provision of effective ANC states that "all pregnant women should have at least four assessments by or under the supervision of a skilled attendant. These should as a minimum, include all the interventions outlined in the new WHO model and ANC visits spaced at regular intervals throughout pregnancy, commencing as early as possible" (WHO, 2007: 49).

Early utilization of ANC in the first trimester of pregnancy and attending at least four ANC visits during pregnancy are vital for reducing both child and maternal mortality rates (WHO, 2014; Spinelli et al., 2003). For instance, during ANC visits, the expectant mother is educated on health promotion, healthy diets and lifestyle choices that can improve her health and that of her fetus (Thangaratinam et al., 2012). Also, early ANC visits may result in early detection of possible pregnancy and delivery complications that can be resolved if preventative actions are taken (Ewigman et al., 1993). It has also been advocated that through ANC visits, women can build familiarity with health professionals which helps to reduce the emotional burden related to seeking skilled and

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facility based deliveries (Barber, 2006; Adjiwanou and LeGrand, 2013).

The fourth and fifth Millennium Development Goals (MDGs) aimed to reduce infant mortality by two-thirds and maternal mortality by three-quarters between 1990 and 2015 through universal access to professional health services for maternal care. These targets were not achieved in many low income countries partly because of under-utilization of maternal healthcare services (WHO, 2015; Hansen and Schellenberg, 2016; Islam and Yoshida, 2009). While global maternal mortality rates declined from 385 deaths per 100,000 live births in 1990 to 216 in 2015 (Alkema et al., 2015), maternal mortality rates remain high in Sub Saharan Africa (500 per 100,000 live births) with significant geographical variations (WHO, 2015; Hansen and Schellenberg, 2016). For instance, mortality rates exceed 500 per 100,000 live births in fragile economies such as Guinea, Liberia, Sierra Leone, Central African Republic, Democratic republic of Congo and South Sudan (Alkema et al., 2015), three of which were severely hit by the Ebola epidemic. With the failure in achieving the global MDG targets (Hansen and Schellenberg, 2016), it is not surprising that the Sustainable Development Goals (SDGs) has as one of its sub targets to reduce the global maternal mortality ratio to less than 70 per 100,000 live births, end preventable deaths of newborns and children under 5 years of age while aiming to reduce neonatal mortality to 25 per 1000 live births in all countries by 2030 (SDGs, 2015). It is well known that women of low socioeconomic status and in socially marginalized populations tend to have poor access to professional health services and the worst health outcomes (Silal et al., 2012). In SSA, the pervasive nature of poverty in both rural and urban areas means that without sustained investments in maternal and child health programs and services aimed at improving access and utilization, the ambitious SDG targets are unlikely to be met (Alkema et al., 2015; World Bank, 2013; Gabrysch and Campbell, 2009).

Other factors such as birth-parity and marital status, individual characteristics such as mothers' education, and also religion have been shown to influence the utilization of maternal health care services (Rishworth et al., 2016; Atuoye et al., 2015; AbouZahr and Wardlaw, 2003; Chakraborty et al., 2003). In particular, education provides women with autonomy in decision making, and has been identified to have the greatest impact on reproductive behaviours (Monden and Smits, 2012; Jejeebhoy, 1995). Furthermore, religious beliefs and their associated practices may constitute barriers to the access and utilization of maternal and newborn health services (Gyimah et al., 2006; Ganle et al., 2015). It is also important to recognize the role of the broader historical context (e.g., the impact of Liberia's civil war between 1989 and 2003) as well as national policies relating to the provision and cost of health care that may influence care utilization.

After going through a terrible civil war, maternal health outcomes in Liberia were beginning to recover from their earlier low rates (Petit et al., 2013). For instance, maternal mortality estimates showed that rates declined by 48% between 1990 and 2013, from 1200 to 640 deaths per 100,000 live births (WHO, 2014). Among pregnant women, 66% attend at least four ANC visits with 46% deliveries being assisted by skilled health personnel (WHO, 2014). Despite significant progress, geographical disparities in access to maternal health services remain. For instance, 84% and 53% of the poor and rural residents were reported to have little access to maternal health services respectively (LDHS, 2013). Consequently, Liberia remains in the list of countries with very high maternal mortality rates (WHO, 2014).

Unfortunately, the 2014 Ebola epidemic overwhelmed the health-care system, with anecdotal reports indicating that the epidemic may have eroded an already fragile maternal health care system. For example, according to Bernstein (2014), from May to August 2014 the percentage of infants delivered by a skilled birth attendant sharply declined (52%–38%) in comparison with the same period in 2013. Similar declines were seen with the percentage of woman who received prenatal care within six weeks of confirming their pregnancies (41%–25%) as well as women who had received treatment for malaria (48%–29%), among other measures (Bernstein, 2014). Though the epidemic has been stopped, the diversion of attention from maternal and child health issues to concentrate on Ebola could also lead to a resurgence of high maternal and child mortality that would undermine progress made over the years. Furthermore, the long-term effects of the stigmatization of pregnant women during the epidemic is a key concern; and the current worry is that the Ebola epidemic may not only have eroded many of previous maternal health gains, but also left a lingering stigma with potential negative long-term effects on the access and utilization of care.

As part of a larger study to understand the potential long term impact of Ebola on maternal health in Liberia, this study investigates the timing, access and utilization of maternal care services over time (2007 and 2013) as a background to the post-Ebola epidemic effects on the access to and utilization of care. We analyzed county level variations to illuminate the nature and extent of observed and unobserved contextual effects that affect maternal health care utilization. We hypothesized that care and utilization of maternal health care after the Liberian civil war had improved over time (2007–2013). With regards to future outcomes, we argue that the Ebola epidemic may derail the gains achieved after the civil war.

1.1. Theoretical framework

Theoretical constructs from Andersen (1968, 1995) behavioural model of health service utilization and Erving Goffman (1963) theory of stigma formed the overarching framework for this research. Andersen's widely acknowledged model has been applied extensively to study maternal health services utilization (Fosu, 1994; Chakraborty et al., 2003; Magadi et al., 2007). Based on the model, individual and contextual determinants of access and utilization of maternal healthcare include: (1) need for services as indicated by being pregnant or birthing experience and perceptions of the capacity of the health care system; (2) predisposing factors such as demographic characteristics (age, region and place of residence) and beliefs including religious beliefs, attitudes towards health services, knowledge of services and values (Andersen, 1995), and (3) enabling factors, including household resources and accessibility to health care in terms of distance and financial ability. Population-based studies of maternal health service utilization in SSA have supported the Andersen model, suggesting an appraised need for services based on predisposing factors and enabling factors (Arthur, 2012; Dixon et al., 2014; Singh et al., 2014). Yet, in the context of the Ebola epidemic, the absence of health care providers offering relevant services, the inability to differentiate between Ebola and other febrile diseases at onset, and the fear of contracting Ebola at a health facility can also prevent pregnant women from seeking reproductive health services (Davtyan et al., 2014; Walker et al., 2015; Menéndez et al., 2015).

In Liberia, the stigma that was associated with pregnant women during the epidemic draws attention to a need to understand how psychosocial factors may influence health service use in context (Weiss and Ramakrishna, 2006; Link and Phelan, 2006; Walker et al., 2015; Menéndez et al., 2015; Delamou et al., 2014). Consequently, this analysis is informed by Goffman's (1963) conceptualization of stigma as a powerful, discrediting and tainting social label that fundamentally changes the way individuals' view themselves or are viewed by other people. According to Goffman