Antenatal care and women’s birthing decisions in an Indonesian setting: does location matter?

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ABSTRACT

Introduction: Poor maternal health outcome, still a major health problem in developing countries, is influenced by both women’s personal characteristics and the characteristics of the place where they live. Identifying the spatial distribution and clusters of poor maternal health outcomes can assist in developing geographically specific interventions. This article examines the influence of urban and rural settings on antenatal care and birthing decisions in South Sulawesi, a province in Indonesia, and investigates the existence of geographical clusters of women’s decision regarding antenatal care and birth assistance.

Methods: Data were derived from a survey of 485 women who recently gave birth. Household coordinates, midwives’ location and hospital location were recorded using a handheld global positioning system (GPS). Logistic regression was used to examine the influence of place of residence on antenatal care and women’s birthing decisions. SaTScan software was used to identify the location of geographical clusters. ArcGIS v9.3 was used to visualize and interpret the distribution of facilities and clusters.

Results: Area of residence determines the likelihood of a woman presenting for antenatal care – care that pregnant women receive from skilled birth attendants. The likelihood of hospital delivery or delivery at home with the support of a skilled birth attendant (SBA), however, was not determined by residential area. Distance to nearest SBA, working as a village midwife, was associated with the likelihood to be assisted by her at home. Attendance of SBA at home, or delivery at a hospital, were clustered in urban areas at different geographical locations, but no similar clustering occurred in rural areas. In contrast, women with low numbers of antenatal care visits and a traditional birthing assistant (TBA) at home were clustered in particular rural areas, but low antenatal care visits and use of TBA were not clustered in urban areas.

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Conclusions: Although area of residence did not appear to influence the likelihood of women delivering at hospital or with SBA at home, clusters of women follow particular patterns of behaviour in different geographic settings. This clustering highlights the heterogeneity of both urban and rural areas.

Key words: antenatal care, birth assistance, GIS, Indonesia, maternal health, place of birth, spatial analysis.

Introduction

Millennium Development Goal 5 (MDG 5) is a global consensus to improve maternal health, aiming by 2015 to reduce the maternal mortality ratio (MMR) to three-quarters of the level of that in 1990. In Indonesia, however, in 2012 the MMR was 227 Indonesia wide, still far from target of 102 per 100,000 live births. Skilled attendance at birth is an important strategy to reduce maternal mortality, particularly in low to middle income countries where most maternal deaths occur. The utilisation of health services, including attendance for antenatal care, and health outcomes related to pregnancy and delivery, are determined by the social and environmental conditions of the places where people live. Access to skilled birth attendants (SBAs) is a major concern in Indonesia. Although there are different ways to measure this, geographic access is particularly relevant in rural areas and especially those in remote settings. Health services remain concentrated in central urban areas, and to reach these, many have to travel for extended periods from areas with poor road conditions and without public transport.

Geographic analysis provides an invaluable tool to understand the spatial patterning of access to maternal health services and maternal health outcomes. Although research on spatial patterning has focused mainly on diseases rather than non-disease health conditions, several studies have examined the association of maternal health outcomes with antenatal care, the demographic and socioeconomic characteristics of women, and types of birth attendance. Studies in Zambia, Kenya, Ghana and Indonesia all indicate that proximity to health services increases the likelihood to deliver at a health facility although variations across the studies in the measurement of distance, perceptions of distance, and travel time all inhibit comparability. In Indonesia, delivery in rural villages commonly occurs at home with SBAs, and in this context, in addition to distance to hospital for delivery, distance to nearest midwife needs to be taken into account to identify factors affecting their engagement at home deliveries.

While in general geographic factors are important, identifying clusters of health events has gained significance in population health, because of the capacity of this approach to identify variations in environmental exposure, access, and the availability of health services. In addition, people and communities tend to cluster in space in systematic ways that may predict the risk of disease or another adverse health event. Analysis using a geographic information system (GIS) enables public health researchers to explore geographic variations of both health behaviours and health outcomes, and so to examine geographic relationships between social and environmental factors pertaining to health outcomes. For example, understanding the geographical distribution of maternal health problems in public health policy formulation assists in identifying the occurrence of disparities by place, helping health providers to monitor health problems and decision makers to allocate resources on the basis of need.

Health outcomes are influenced variously by the availability and use of health services, the availability of transportation, ecological features of the environment including topography, and the social environment. Maternal health outcomes, including the decision about who will help to deliver, are influenced by individual, household and community factors. The availability of health care, including village-based midwives, and cultural beliefs about
numbers of women who deliver at hospital or delivered at home with SBA or TBA were higher at a particular time. However, the distribution of pregnant women on a monthly basis is not available from the District Health Office, making it difficult to assess possible selection bias in this study.

Conclusions

A spatial approach provides useful information on women’s use of maternal health services, with point data enabling the examination of individual antenatal care and birthing decisions. This approach can assist policy makers to identify areas with low accessibility to maternal health resources and to identify the prevalence of factors that contribute to poor maternal health outcomes. Deliveries at home with SBAs and at hospital are spatially clustered at different locations within urban areas, while poor antenatal care attendance and TBAs are clustered in rural areas.

Residence has a strong influence on frequency of antenatal care visits, but not on birthing decisions. Within rural areas, lack of prenatal care and the reliance on TBAs are not distributed randomly. Similarly, in urban areas, clusters of hospital or at-home SBA deliveries appear to reflect underlying geographical concentrations of wealth and income. Taken together, these findings highlight the importance of the locational analysis of behaviours and decision making when developing specific interventions to address social exclusion and poor health outcomes.

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