Standardized Antenatal Care and Utilization of Skilled Birth Attendants in Indonesia

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Abstract

Context: Delivery with skilled birth attendants (SBAs) can lower maternal mortality rates. By 2013, the utilization of SBAs in Indonesia had reached 87.1%. This figure was still below the target of the Ministry of Health. The aim of this study was to determine the association of standardized antenatal care (ANC) with the utilization of SBAs. The study design was cross-sectional. The study sample consisted of respondents (N = 2,986) to the 2012 Indonesia Demographic and Health Survey (IDHS) (i.e., married women aged 15–49 years) who had a live birth a year prior to the survey. The data were analyzed by logistic regression. The results showed that almost all women (93.9%) utilized SBAs. The association of standardized ANC with the utilization of SBAs differed according to region, with women who attended four ANC visits and received the full complement of ANC services having the greatest opportunity to choose health workers as birth attendants as compared with women who did not attend four-visits and did not receive all components of ANC services.

Keywords: *Standardized ANC, utilization of SBAs*

Introduction

Delivery with skilled birth attendants (SBAs) is a critical strategy aimed at reducing maternal mortality[1]. A previous study suggested that increased utilization of SBAs was associated with decreased morbidity and maternal mortality[2]. In Indonesia, 87.1% of deliveries in 2013 were assisted by SBAs. However, there were variations in the rate of utilization of SBAs in provinces across Indonesia. Moreover, there was a dramatic gap in the highest and lowest rates of utilization of SBAs (i.e., 99.9% in the province of Daerah Istimewa Yogyakarta and 57.7% in Papua)[3].

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The utilization of SBAs is related to uptake of standardized antenatal care (ANC)[4]. Previous research showed that mothers who attended at least four visits as part of ANC, at least once in the first trimester, once in the second trimester, and twice in the third trimester, had a greater opportunity to utilize SBAs[5]. The utilization of SBAs was also associated with antenatal service components. The utilization of SBAs was more common among women who availed of components of antenatal services[6].

Maternal health programs in Indonesia recommend that pregnant women should attend at least four visits during pregnancy, with at least one visit in the first trimester, one visit in the second trimester, and two visits in the third trimester. In 2012, 74.0% of pregnant women in Indonesia attended four visits. This figure was below the target (95%) of the Ministry of Health for 2012[7]. In addition, there was a large difference across provinces in the proportion of women who attended four visits, with the highest in Daerah Istimewa Yogyakarta (85.5%) and

lowest in Maluku (41.4%)[3].

Although many studies have examined the association of ANC with the utilization of SBAs, these studies focused only on the number of ANC visits as a marker of ANC uptake[5,9]. Only a few studies have examined the relationship between components of antenatal services and the utilization of SBAs. The aim of the present study was to determine the association of standardized ANC with the utilization of SBAs. In this study, two aspects of standardized ANC were measured: the number of ANC visits and receipt of components of antenatal services.

Material and Method

This cross-sectional study used secondary data from the 2012 Indonesia Demographic and Health Survey (IDHS). The dependent variable was the selection of a birth attendant and the main independent variable was standardized ANC. The potential confounding variables were age, education level, occupation, joint decision maker, wealth index quintile, parity, pregnancy and delivery-related complications, residence area, region, insurance, and birth preparedness.

The selection of birth attendants was divided into two categories, namely health workers and non-health workers. Health workers included obstetricians, practitioners, midwives, and nurses. Non-health workers included traditional birth attendants or *dukun*, family or friends, others, and no attendants. Standardized ANC was considered as four-visits, at least once in the first trimester, once in the second trimester, and twice in the third trimester (*kunjungankeempat* i.e. K4). The antenatal service components included weight or height measurements, blood pressure measurements, uterine height measurements, laboratory examinations (blood or urine tests), iron supplements, tetanus toxoid immunization, and information about pregnancy-related complications ("7T" in Indonesia). Standardized ANC was categorized as follows: 1) not K4 and not 7T, 2) not K4 but 7T, 3) K4 but not 7T, and 4) K4 and 7T.

The sample in this study consisted of women aged 15–49 years ($N = 2,986$) from 25 households in selected census blocks who had a live birth within 1 year before the 2012 IDHS.

The data were analyzed using a binomial regression statistic test where an interaction assessment and confounding test were conducted. The interaction between standardized ANC variable and potential confounding variables were assessed using the forward method, in which the interaction variables were entered one by one into logistic regression model. Variables were considered to interact if they had a p-value < 0.05. The assessment of confounders was done by removing candidate confounding variables one by one, starting from the variable with the highest Wald p value. If the variable after being issued from the model caused an *odds ratio* (OR) of standardized ANC variable change greater than 10%, the variable was considered a confounder and remained in the model.

Results

The majority of mothers (78.2%) were in a non-risk age group (20-35 years). Among the study group, 1,747 (58.5%) respondents had a secondary school level education, 1,621 (54.3%) were unemployed, 662 (22.2%) were in the lower middle wealth index quintile, and 2,075 (69.5%) had 1–2 parity.

Of the 2,986 women included in this study, majority of them (62.8%) were"K4 but not 7T". Only 282 (9.4%) respondents were"K4 and 7T", 52 (1.7%) respondents were "not K4 but 7T", and 776 (26.0%) respondents were "not K4 and not 7T". The most common antenatal service components were uterine height measurements (2,955/99.0%), blood pressure measurements (2,910/97.5%), and weight or height measurements (2,879/96.4%).

Almost all the women (93.9%) chose health workers as birth attendants. The most commonly selected health workers were midwives (65.8%), obstetricians (25.9%), practitioners (1.1%), and nurses (1.1%), whereas the most widely selected non-health workers were *dukun* (5.2%).

The multivariate analysis showed that there were nine confounding variables in this study, namely age, education level, joint decision maker, quintile of wealth index, parity, pregnancy and delivery-related complications, location (urban vs. rural), insurance, and delivery planning. In this study, the relationship between standardized ANC and the utilization of SBAs differed according to region. However, in all locations, women who attended four visits and received all antenatal service components had the greatest opportunity to choose health workers as birth attendants as compared with that of women who did not attend four-visits and did not receive the full complement of antenatal services.

The results showed that women with a high-school education were 2.6 times more likely to utilize SBAs as compared with those with no school education or just a primary-school education. Women in the highest wealth index quintile were 4.3 times more likely to utilize SBAs as compared with those in the lowest wealth index quintile. Women with 1–2 parity were 2.2 times more likely to utilize SBAs as compared with women with parity > 4. Women with pregnancy- and delivery-related complications were 2.1 more likely to utilize SBAs as compared with women with no complications. Women living in urban areas were 1.7 times more likely to utilize SBAs than those living in rural areas. Women with a complete birth preparedness plan were 2.5 times more likely to utilize SBAs as compared with those who had no birth preparedness plan.

Discussions

The majority of respondents (62.8%) attended four visits and did not receive all antenatal service components. In the study, 72.3% of women attended four visits (95% CI = 70.6–73.8%). This figure was still below the stated target of the Ministry of Health in 2012, which was 95%[7]. Various factors may explain the low proportion of four ANC visits. These include difficulty accessing health care facilities, low maternal knowledge of the importance of pregnancy checkups, cost issues[10], low maternal autonomy in health decisions, and violence in health services[11].

Women who attended four visits and received the full complement of antenatal service components had the greatest opportunity to choose health workers as birth attendants as compared with that of women who did not attend four visits or receive all antenatal service components. This finding was consistent with that of previous studies[4]. Antenatal care provides an opportunity for contact with health personnel and encourages pregnant women to give birth with SBAs. Contact with health personnel during pregnancy visits was associated with increased utilization of services at health facilities[12].Mothers who had frequent pregnancy check-ups and who felt comfortable with the service they received were more likely to utilize SBAs[11]

The opportunity to utilize SBAs was associated with education level, with the opportunity increasing in accordance with an increase in the education level of the mother. Educated mothers had better knowledge and information about health services than uneducated mothers[6]. Higher education levels resulted in increased concern and awareness of the importance of SBAs in childbirth. Knowledge of the importance of maternal health services enabled educated mothers to access high-quality services and to make decisions regarding the place of birth (hospital) and presence of birth attendants[13].

There was a significant association between decision makers and the utilization of SBAs. Mothers who made decisions about health problems, including pregnancy-related issues, with their husbands preferred health workers as birth attendants. This may be due to the fact that a prospective mother who discusses the issue of birth attendants with her husband receives financial and psychological support from her partner, in contrast to cases where others (i.e., mother, mother-in-law) make the decision regarding maternity helpers[14].

The higher the quintile of the mother's wealth index, the greater the opportunity to utilize SBAs. It may be explained by mothers with higher incomes in high wealth index quintiles having easier access to health services, resulting in increased utilization of SBAs[15].

The lower the parity of the mother, the more likely the mother was to utilize SBAs. Mothers who had given birth to many children had much experience of childbirth and therefore may prefer to give birth without the help of SBAs[16]. Multiparous mothers may assume that birth is a natural process, which does not require the presence of health personnel as birth attendants. Furthermore, poor experiences of childbirth with health workers in the past may cause multiparous mothers to prefer to give birth without the help of health workers[17].

Pregnancy and delivery-related complications were significantly associated with the utilization of SBAs. Mothers with complications during pregnancy and childbirth chose to deliver with SBAs[18]. Childbirth with SBAs was a critical intervention in the survival of mothers with labor-related complications because the majority of complications were not predictable[19].

Mothers living in urban areas more likely to utilize SBAs as compared with their counterparts living in rural areas. The finding is likely to be explained by a combination of higher income and easier access to health personnel in urban areas[20]. Women living in rural areas may have reduced access to health services.

In this study, having health insurance was not

significantly associated with the utilization of SBAs. The discord may be related to issues pertaining to access to health facilities and other costs. Indirect expenses, including transportation costs and unbundled service costs, may cause mothers to choose home births with the help of non-health workers[21].

Mothers who were well prepared for delivery were more likely to prefer delivery with SBAs than less well-prepared counterparts. The various components of birth preparedness plans influence access to health facilities. For example, planning transportation well in advance of delivery will benefit prospective mothers, especially those who live in rural areas far from health facilities[22].

The mother's occupation was not a confounder variable. This may be due to both employed and unemployed mothers having health insurance. In a previous study, health insurance was positively associated with the utilization of SBAs[23].

Conclusions

Once the data were controlled for age, education level, joint decision maker, quintile of wealth index, parity, pregnancyand delivery-related complications, urban versus rural location, health insurance, and delivery planning variables, women who attended four visits and received all antenatal service components had the greatest opportunity to utilize SBAs as compared with women who did not attend four visits and did not receive all antenatal service components.

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