



Quality of Antenatal Care at Urban and Rural Puskesmas (Public Health Center) in Jeneponto Regency

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Abstract

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BACKGROUND: Increased coverage antenatal care (ANC) occurring in developing countries do not guarantee the success of the ANC, it is because a high rate of maternal and neonatal mortality associated with inadequate and poor quality of maternal care, including ANC.

AIM: This study aimed to find out the differences in the quality of ANC in rural and urban primary health centers in Jeneponto Regency.

METHODS: This research aims to determine the different quality of ANC at urban and rural Puskesmas (public health center), Jeneponto regency. The type of the research was observational analysis with cross-sectional design. There were 139 fixed samples of rural and urban pregnant women visiting the Puskesmas, from October 2015 to May 2016. The samples were selected using stratified random sampling method from two Puskesmas of each area.

RESULTS: The results indicate that 52.6% of ANC quality is categorized bad. There is different ANC quality based on body weight, the height of fundus uteri, and administration of Fe tablet (0.038, 0.029, and 0.006). There is no difference of antenatal quality based on body height, LILA, fetus' heartbeat, fetus presentation, blood type and Hb, and immunization of TT (0.068, 0.501, 1.000, 1.000, 0.133, 0.263, and 0.530). Blood pressure is not analyzed.

CONCLUSION: There are three components that show differences in rural and urban health centers, namely, weight measurement, fundal height measurement, and FE tablet administration. As for the components of height measurement, assessment of nutritional status (MUAC), fetal presentation, examination of fetal heart rate, administration of TT immunization, and examination of blood type and hemoglobin. The component of blood pressure measurement was not included in the statistical test because all respondents received the examination.

Introduction

Increasing the quality of service coverage must be done to reduce maternal mortality, in Tanzania 94% of women make ANC visits and 54% do so with four visits. However, this is precisely in line with the increase in maternal mortality [1]. This shows that the quantity of coverage does not fully indicate the quality of service. In India, national survey results show that incentive programs for mothers and health institution workers as an increase in service coverage [2], [3]. This has not been matched by efforts to monitor and improve the quality of childbirth services so that it impacts on the unclear survival of mothers and babies [4].

Based on the previous exposure, it is known that improving health services have not been able to reduce maternal mortality rates so that adequate intervention is needed. There are two interventions that can be done in reducing the mortality rate, namely, antenatal care (ANC) and intrapartum services (labor and birth). The

essence of the ANC is preparing births for women and making them parents, preventing problems in women, pregnant women, and infants with early detection, eradication, and management of problems that affect the mother and baby during pregnancy [5]. Inadequate ANC services, both coverage and quality, will result in poor pregnancy outcomes [6].

Utilization of ANC services varies between countries based on the lack of utilization of ANC services in pregnant women in Asian and African countries with low incomes [7]. In a country, utilization of ANC services differs in maternal age, education, employment, family income, parity, residence, costs, and availability of health facilities [8], [9], [10], [11]. Based on the region of residence, several studies show that urban women visit ANC more often than rural women. Research conducted by Fekadu and Regassa [12] looked at the quality of ANC utilization programs in Ethiopia describing 15.6% of mothers living in urban areas receiving good services compared to in rural areas only 4.5% of mothers receiving good service quality due to

lack of skilled health workers. Other research shows that there is no difference in the use of ANC services in urban and rural areas [13], [14].

In Indonesia, pregnant women can obtain ANC services in various health facilities, namely, Puskesmas, Posyandu/Polindes, Hospitals, Maternity Homes, Doctors/Clinical Practices, and midwives practice [15]. Health facilities are provided to increase the coverage of maternal health services. Based on the Republic of Indonesia Ministry of Health's Report (2013), almost all pregnant women in Indonesia (95.4%) had already pregnancy check (K1) and the frequency of pregnancy at least 4 times during her pregnancy was 83.5%. The coverage of the first pregnancy check-up in the first trimester is 81.6% and the ANC frequency is 1-1-2 or K4 (at least 1 time in the first trimester, at least 1 time in the second trimester, and at least 2 times in the third trimester) by 70.4%. However, this shows that the high coverage has not yet fully demonstrated the quality of ANC services.

Based on the results of the Riskesdas of South Sulawesi [16] Puskesmas/Pustu were the most visited places for pregnant women during ANC (51.1%), practice midwives (17.4%), and Poskesdes/Polindes (10.6%). Puskesmas categories by region are divided into Puskesmas in urban areas, rural areas, and remote and very remote areas (Permenkes RI No. 75, 2014). In Jeneponto, Puskesmas only consist of Puskesmas in urban and rural areas. Urban health centers include Binamu Health Centers, City Binamu Health Centers, and City Bontosunggu Health Centers. Rural health centers include Bontomate'ne Puskesmas, Bululoe Puskesmas, Tamatea Puskesmas, Bontoramba Puskesmas, Bangkala Puskesmas, Kapita Puskesmas, Buludoang Puskesmas, Barana Puskesmas, Torana Puskesmas, Toro-Toro Puskesmas, Barana Puskesmas, Tino Puskesmas, Arungkeke Puskesmas, Kapita Puskesmas, Buludoang Puskesmas, Barana Puskesmas, Toro-Toro Puskesmas, Barana Puskesmas, Toba Puskesmas, Arungkeke Puskesmas, Arungkeke Puskesmas, Tolo Puskesmas, Barolo Puskesmas, Barolo Puskesmas, Tolo Puskesmas, Puskesmas Tompo Bulu, and Puskesmas Rumbia.

Jeneponto is one of the areas in South Sulawesi which is a health problem area (Riskesdas, 2014). In the last 3 years, the trend of maternal mortality has fluctuated, successively from 2013 to 2015 with figures of 170, 235, and 170/100,000 live births, DEPEs Jeneponto, 2015). However, this is inversely proportional to the coverage data K1 and K4 which are quite good. In 2013, k1 and k4 coverage, coverage of deliveries assisted by Nakes was 97.6%, 89.8%, and 88.6%, respectively. In 2014, k1 and k4 coverage, coverage of deliveries assisted by Nakes was 97.8%, 84.7%, and 86.6% whereas in 2015, coverage of k1 and k4, coverage of deliveries assisted by Nakes, respectively, 100.4%, 87.0%, and 96.2% (DEPEs Jeneponto, 2015). Seeing this, further investigation

is needed regarding the quality of ANC services in Jeneponto Regency.

Materials and Methods

This research was carried out in the Jeneponto District Health Centers. This type of research is observational analytic with cross-sectional design. The population in this study was pregnant women visiting the Puskesmas from October 2015 to May 2016, as many as 4156 pregnant women. The Puskesmas included in this study were randomly selected where out of the eighteen Puskesmas in Jeneponto there were three urban Puskesmas and 15 rural Puskesmas.

The selected urban area health centers are Binamu City Health Centers and Binamu City Health Centers, while the selected rural area health centers are the Bonto Matene Health Center and the Bonto Ramba Health Center. The sample in this study was pregnant women who visited to use ANC services in the Jeneponto health center and met the inclusion and exclusion criteria. Based on the sample calculation above, the total sample of each Puskesmas in rural and urban areas is 139 pregnant women and the total sample is 278 pregnant women. The number of samples drawn from each Puskesmas was carried out using stratified random sampling technique. Secondary data were obtained from data on visits of pregnant women from the Jeneponto District Office recapitulation. Primary data obtained from direct observations in the field. Data analysis was performed using the SPSS program and statistical tests using bivariate tests.

Results

The results showed that the majority (29%) of respondents were in the 20–24 years group, following the 25–29 years age group, and the smallest were in the ≥ 40 years group. Based on education, half of the respondents (48%) only completed elementary school education (48%), there were 26% respondents who completed high school education, while the least were respondents who graduated from college. Based on gestational age, most respondents were in the third trimester of pregnancy (49.35), and then those in the second trimester (38.5%) and the least were respondents in the first trimester (12.2%) (Table 1).

The quality assessment in this study was divided into good quality, minimum quality, and lack of quality (Table 2). The results showed that the highest percentage was in rural health centers with the category of poor quality as many as 95 respondents (65.1%).

Table 1: Distribution of respondents based on characteristics

Karakteristik	Frekuensi	%
Age (Year)		
≤19	32	11
20–24	79	29
25–29	65	23
30–34	44	16
35–39	47	17
≥40	11	4
Education		
Not completed in primary school	24	9
Graduated from elementary school	132	48
Graduated from middle school	40	14
Graduated from high school	73	26
Graduated from college	9	3
Gestational age		
Trimester I	34	12.2
Trimester II	107	38.5
Trimester III	137	49.3

For the minimum quality category, the quality of ANC in urban health centers (66.7%) is higher than in rural areas (33.3%). Statistical test results showed that there were differences in ANC quality based on rural and urban health centers ($p = 0.000$).

Table 2: Antenatal care quality analysis based on Puskesmas in rural and urban areas in Jeneponto regency

Quality of ANC	Puskesmas in Urban		Puskesmas in Rural		Total	p-value
	n	%	n	%		
Good quality	6	33.3	12	66.7	18	100
Minimum quality	38	33.3	76	66.7	114	100
Low Quality	95	65.1	51	34.9	146	100

In this study, the components of pregnancy examination consisted of 11 components, namely, height measurement, weight measurement, nutritional status assessment (LILA), fundal height measurement, blood pressure measurement, fetal presentation, examination of fetal heart rate, giving TT immunization, giving FE tablets, and examination of blood type and hemoglobin (Table 3). The results showed that of the 11 components, there were three components that showed differences in rural and urban health centers, namely, weight measurement, fundal height measurement, and FE tablet administration. As for the components of height measurement, the assessment of nutritional status (MUAC), fetal presentation, examination of fetal heart rate, administration of TT immunization, and examination of blood type and hemoglobin. The component of blood pressure measurement was not included in the statistical test because all respondents received the examination.

Respondents who did not get the highest height measurement services were in the Community Health Center in 104 people (53.9%). Statistical test results showed that there was no difference in ANC quality based on height measurements in rural and urban health centers ($p = 0.068$). Respondents who received the highest weight measurement services were in the Community Health Center as many as 104 people (54.5%). Statistical test results showed that there were differences in ANC quality based on weight measurements in rural and urban health centers ($p = 0.038$). Respondents who did not get the

Table 3: ANC quality difference analysis based on pregnancy examination components in Jeneponto District and rural health centers

Components of pregnancy checking	Puskesmas in urban		Puskesmas in rural		Total	p-value
	n	%	n	%		
Height measurement						
Yes	50	58.8	35	41.1	85	100
No	89	46.1	104	53.9	193	100
Weight measurement						
Yes	104	54.5	87	45.5	191	100
No	35	40.2	52	59.8	87	100
LILA measurement						
Yes	41	53.9	35	46.1	76	100
No	98	48.5	104	51.5	202	100
Uterine fundus height measurement						
Yes	125	53	111	47	236	100
No	14	33.3	28	66.7	42	100
Blood pressure measurement						
Yes	139	50.0	139	50.0	278	100
No	0	0	0	0	0	100
Fetus presentation						
Yes	95	50.3	94	49.7	189	100
No	44	49.4	45	50.6	89	100
Fetal heart rate examination						
Yes	95	50.3	94	49.7	189	100
No	44	49.4	45	50.6	89	100
Tetanus immunization						
Yes	52	53.1	46	46.9	98	100
No	87	48.3	93	51.7	180	100
Provision of FE tablets						
Yes	87	44.4	109	55.6	196	100
No	52	63.4	30	36.6	82	100
Blood type examination						
Yes	12	70.6	5	29.4	17	100
No	127	48.7	134	51.3	261	100
Inspection of Hb						
Yes	46	45.1	56	54.9	102	100
No	93	52.8	83	47.2	176	100

highest nutritional status measurement (LILA) service were in the Community Health Center in 104 people (51.5%). Statistical test results showed that there was no difference in ANC quality based on height measurements in rural and urban health centers ($p = 0.501$) (Table 3).

Respondents who received the highest fundus uteri height measurement services were in the Community Health Center as many as 125 people (53%). Statistical test results showed that there was a difference in ANC quality based on the measurement of uterine fundus height in rural and urban health centers ($p = 0.029$). Respondents who received fetal presentation services as well as examining the highest fetal heart rate were in the Community Health Center in 95 people (50.3%). Statistical test results showed that there was no difference in ANC quality based on fetal presentation in rural and urban health centers (Table 3).

Respondents who received the highest FE tablet delivery services were in the Community Health Center in 109 people (55.6%). Statistical test results showed that there were differences in ANC quality based on FE tablets in rural and urban health centers ($p = 0.006$). Respondents who did not get the highest blood type examination services were in the Community Health Center in 127 people (51.3%). Statistical test results showed that there was no difference in the quality of the ANC based on blood type examination in rural and urban health centers ($p = 0.133$). Respondents who did not get the highest blood type examination

services were in the Community Health Center in 127 people (51.3%). Statistical test results showed that there was no difference in the quality of ANC based on blood type examinations in puskesmas in rural and urban areas ($p = 0.133$) (Table 3).

Discussion

This study found that 52% of pregnant women received poor ANC in Jeneponto District, 51% received minimum ANC, and only 6.4% received good ANC. Poor quality of ANC for pregnant women assumes that getting a pregnancy check under six components based on gestational age, is said to be of minimum quality if the mother gets seven or eight components, and is said to be of good quality if all components of ANC are fulfilled according to the gestational age. Ideally, pregnant women receive minimum ANC based on their gestational age. However, this study found that the percentage of pregnant women who received minimum and bad services was almost the same.

The high percentage of pregnant women who receive poor quality services is due to some components of the examination that was not given to pregnant women at the time of the examination at the puskesmas and there was a statement from the official that the component was not provided on the grounds that the regent stock was depleted.

Based on the 11 components of ANC that was linked in this study, only three components showed that there were differences in the provision of the examination components in puskesmas in rural and urban areas. The three components are weight, fundal height, and FE tablets.

Body weight measurements should ideally be given at each pregnancy check-up visit. However, this study found that weight measurements at rural health centers were better than urban health centers. This means that the distribution of weight measurement components is uneven in Jeneponto Regency. Based on field observations related to body weight measurements, the tools used during pregnancy checks in all puskesmas use manual body scales. The result of the interview with the midwife in charge stated that the scales were a division tool from the center and they did not pay attention to the effectiveness of the tools.

The study also found that there were differences in the provision of FE tablets in rural and urban health centers. The results of the same study conducted in Nigeria Ajayi [17] found that there were differences in the administration of FE tablets in villages and cities. In this study, administration of FE tablets was higher in urban health centers than in rural health centers. Ideally, pregnant women get 90 tablets during

pregnancy. However, in this study, as many as, 30% of respondents did not get FE tablets. The results of interviews with health workers stated that the FE tablet was adjusted to the condition of pregnant women when visiting the health center. If pregnant women come with a yellow/pale face, with complaints of nausea/vomiting in trimesters II and III, then given a 10-strip FE tablet. Besides, the provision of FE tablets also adjusted to the presence or absence of logistics available at the time although FE tablets should be given from the first contact with pregnant women and given at least 90 tablets during pregnancy. The administration of FE tablets is different for each gestational age, that is, 1000 mg during a total pregnancy. The need for iron in trimesters II and III cannot be fulfilled from food alone, although the food eaten is of good quality and high bioavailability of iron, but iron must also be supplied from other sources to be sufficient. Giving FE tablets to pregnant women can reduce the proportion of anemia because it increases hemoglobin in the blood up to 0.7 g/dl every week [18].

This study found that in both rural and urban health centers, height measurements had no difference. This is because the tendency for height checks is only done during the first visit of pregnant women at the puskesmas. The results of interviews with health workers stated that because their height did not change in the near term so they only did height checks at the first visit of the pregnant women both at the time of the mothers with gestational age trimester II and trimester III. This is in accordance with the provisions Ministry of Health RI [19] that height measurements are only carried out at the first visit of pregnant women.

Similar to height measurement, this study found that the measurement of nutritional status (LILA) in both rural and urban health centers did not have a difference. This is because the measurement of LILA is only done at the first visit of pregnant women, while the number of respondents in this study was mostly in the second and third trimester of pregnancy (87.8%). The results of the study by Ververs [20] show that measurement of MUAC in pregnant women is an indicator of protein-nutrient deficiency, especially if height and weight measurements are not carried out.

Blood pressure is a component of the examination carried out 100% both in rural and urban health centers so that there is no bivariate analysis. This shows that the most routine component in the puskesmas is a blood pressure check. The results of the same study conducted in Nigeria by Fagbamigbe and Idemudia [2] and in Tanzania by Sarker [21] that blood pressure testing is the most frequent component of ANC for pregnant women (91%). If related to the use of tools that are in accordance with the standards, there is one health center that does not use blood pressure measuring instruments with mercury indicators.

Examination of uterine fundus height, fetal heart rate and fetal presentation are examinations of

the abdomen in pregnant women. In this study found that examination of fundal uterine height in rural and urban health centers had differences, while examination of fetal heart rate and fetal presentation did not have differences in the two regions. The difference in the two regions in the examination of the fundus uteri height is due to the highest examination in Puskesmas in rural areas. The results of a different study conducted by Ajayi [17] found that abdominal examination in pregnant women did not have a difference either in the village or in the city. However, the abdominal examination in the study included the three examinations of uterine fundus height, MUAC, and height not by differentiating between examinations. There is no difference in examination of fetal presentation and fetal heart rate in the two regions because most examinations are performed starting at the end of the second trimester. The official stated that in general the fetal heart rate can only be felt at 20 weeks gestation.

Tetanus toxoid administration was also included in the component that had no difference in both rural and urban health centers found in this study. The absence of this difference is due to the tendency of this examination to be varied at each gestational age of pregnant women. In this case adjusted for the interval of TT immunization. However, if the pregnant woman forgets the last time she did the TT immunization, and then the immunization will be repeated to TT1. The results of a different study conducted by Ajayi [17] found that there were differences in the administration of TT injections in villages and cities in Nigeria. Giving TT injections is higher than in cities.

In this study, laboratory examination only included two tests, namely, examination of hemoglobin blood type. Both are examination components that have no difference in both rural and urban health centers. Blood type examination is the component of the examination that is most rarely given to pregnant women. This is because most pregnant women already know their blood type and the existence of a health center that does not provide these components.

Hemoglobin examination in rural and urban health centers is done if pregnant women come with an indication that the face is pale/yellowing so that during observation, not all pregnant women are given these components. The results of a different study conducted in Nigeria by Ajayi [17] found that there were differences in hemoglobin examinations in rural and urban areas where examinations in urban areas were more adequate and complete.

A smaller decrease in hemoglobin level during pregnancy from early to mid-pregnancy or at the end of pregnancy is associated with LBW infants, Z-score birth weight, placental weight, and placental ratio [22] Decreased hemoglobin in the blood causes anemia in pregnant women. Severe anemia from early pregnancy is also associated with poor birth, for example, LBW [23].

Recommendation

There is a need for equitable delivery of components of ANC in both rural and urban health centers by providing training and knowledge about ANC to midwives concerned.

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