Urban–Rural Disparities of Facility-Based Childbirth in Indonesia

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ABSTRACT

Equitable distribution of health services between areas is still a problem in various countries. Even in developed countries. This condition also applies to the utilization of healthcare facilities for childbirth. To analyze the urban-rural disparities of facilities-based childbirth in Indonesia. The analysis in this study uses raw data from the 2017 IDHS. With stratification and multistage random sampling, 17,769 women aged 15-49 years with live births in the last 5 years were sampled. Data were analyzed using a Binary Logistic Regression test. Women in urban areas were probably 2.417 times more utilizing healthcare facilities for delivery than those in rural areas. Women with tertiary education were likely to be 1.709 times more utilizing healthcare facilities for delivery than those who don't. Richest women were probably 6.556 times more utilizing healthcare facilities for delivery than poorest women. Women who have health insurance maybe 1.437 times more utilizing healthcare for delivery than women who don't have. Women who know about the danger signs of pregnancy are more than 1.514 times more likely to utilize healthcare for delivery than those who don't know. Women who do ANC $\geq$ 4 times have the possibility of 1.729 times using healthcare facilities compared to those who do ANC less than 4. There were significant differences between women in urban and rural areas in utilizing healthcare facilities for delivery. Women who live in urban areas have a better chance to utilize healthcare facilities for delivery. The government needs to focus on women with low education and poor status. Interventions were needed by socializing the danger signs of pregnancy in rural areas. In addition, it was also necessary to expand the scope of membership of the National Health Insurance in rural areas.

Keywords: urban–rural, disparities, facility-based childbirth, health-care evaluation

1. INTRODUCTION

Equitable distribution of health services between areas is still a problem in various countries. Even in developed countries like the United States, this condition also still occurs. A study found that there are differences in health, access to and quality of healthcare between rural and urban areas in the United States [1][2][3]. Several studies in Africa and the European Union also revealed the same thing [4][5][6][7]. Thus it can be concluded that the disparity in health services between urban and rural areas is still a global problem.

Many factors affect the disparity in access to health services between urban and rural. Some of the reasons include religious fallacy, traditional views, and also limited access of women to decision making in the family, making many rural women not take advantage of modern health services in the delivery process [8][9][10]. Other causes are poor road quality and lack of transportation also The choice of place of birth is very important to study, because in areas that have limited access to delivery services in health facilities, tend to be followed by high cases of maternal mortality [18][19][20]. Based on the

contribute to the low willingness of women in rural childbirth in health facilities [11][12].

In general, several studies have found different community characteristics between those who live in urban and rural areas. Among them, the education status of rural communities tends to be lower than that of urban areas, opportunities to access information in rural communities are more limited, more rural communities especially women who are not working, and poverty is predominant in rural [12][13][14]. Other characteristics are geographical features that tend to be more severe, for example mountainous areas, uneven land contours, large forests, which have an impact on transportation difficulties, which will further strengthen the reluctance of people to go to health care facilities [15][16][17]. This is what causes residents to live in rural counties are more likely to have poorer health outcomes along with a variety of measurements that comprise the County Health Rankings' indexed domain of health quality [1].

background, this article was compiled to analyze urban-rural disparities of facility-based childbirth in Indonesia. The results of the study's analysis are useful for

policymakers to ensure more equal delivery of services between urban and rural areas.

2. METHOD

Data Source
The analysis in this study uses raw data from the 2017 Indonesian Demographic Data Survey (IDHS). The IDHS was part of the International Demographic and Health Survey (DHS) program conducted by the Inner City Fund (ICF). In Indonesia, the 2017 IDHS was carried out by the Central Statistics Agency (BPS), in collaboration with the National Population and Family Planning Board (BKKBN) and the Ministry of Health.
Stratification and multistage random sampling were used in the selection of the 2017 IDHS sample. The 2017 IDHS was conducted in 34 provinces in Indonesia from May to August 2017. The samples used in this study were urban poor women aged 15-49 years old who had given birth in the last 5 years. The sample size of the 2017 IDHS used in this analysis was 17,769 women.

Procedure
The 2017 IDHS has obtained ethical approval from the National Institute for Health Research and Development of the Indonesian Ministry of Health. The respondents' identities have all been deleted from the dataset. Respondents have provided written approval for their involvement in the study. The use of the 2017 IDHS data for this study has received permission from ICF International through its website: https://dhsprogram.com/data/new-user-registration.cfm.

Data Analysis
Childbirth at a health service facility was a delivery at a health center (Puskesmas), clinic or maternity hospital, the practice of health workers and hospitals [21]. The 2017 IDHS data was obtained through a structured questionnaire. Variables analyzed included place of residence, age, education level, work status, marital status, parity, wealth status, cover by health insurance, the autonomy of family finances, the autonomy of health, knowledge of pregnancy, knowledge of delivery, and antenatal care.
Statistical analysis using Chi-Square was carried out for dichotomous variables and t-test for continuous variables. This statistical analysis was conducted to assess whether there were differences in childbirth service that were statistically significant between the types of urban and rural areas. Estimates are performed using Binary Logistic Regression because of the nature of the dependent variable. All statistical analyses were carried out using SPSS 21 software.

3. RESULTS AND DISCUSSION

Results
The co-linearity test was carried out in the first step, before carrying out the multinomial logistic regression test. Co-linearity test results were shown in Table 1 that there is no co-linearity between the dependent and independent variables.

Table 1. Results for the co-linearity test of Facility-based Childbirth in Indonesia

Variables	Collinearity Statistics	
	Tolerance	VIF
Place of Residence	0.796	1.257
Region	0.941	1.063
Age	0.585	1.709
Education level	0.708	1.412
Work status	0.944	1.060
Marriage status	0.812	1.232
Parity	0.538	1.858
Wealth status	0.613	1.632
Health insurance	0.959	1.042
The autonomy of family finances	0.805	1.242
The autonomy of Health	0.727	1.376
Know the dangers of the pregnancy	0.900	1.111
Antenatal care	0.876	1.142

*Dependent Variable: Place of Delivery

Table 1 showed that the tolerance value of all variables is greater than 0.10. While the VIF value for all variables is less than 10.00. Then referring to the basis of decision making in the multicollinearity test it can be concluded that there are no symptoms of multicollinearity in the regression model.

Table 2 shows that there are differences between women who use healthcare facilities for delivery in rural

and urban areas for all characteristics that are observed to be statistically significant, except for work status and autonomy for family financial. Table 2 informs that women who use healthcare facilities for delivery are more dominant than those who deliver at nonhealthcare facilities.

Table 2. Descriptive Statistic of Facility-Based Childbirth by Place of Residence in Indonesia

Characteristics	Place of Residence		All	P
	Urban	Rural		
Place of Delivery				0.000
- Nonhealthcare Facilities	1182 (13.55%)	3788 (41.87%)	4970 (27.97%)	
- Healthcare Facilities	7541 (86.45%)	5258 (58.13%)	12799 (72.03%)	
Age (mean)	8723 (31.24)	9046 (30.48)	17769 (30.85)	0.000
Education level				0.000
- No education (ref.)	41 (0.47%)	228 (2.52%)	269 (1.51%)	
- Primary	1433 (16.43%)	2998 (33.14%)	4431 (24.94%)	
- Secondary	5269 (60.40%)	4610 (50.96%)	9879 (55.60%)	
- Higher	1980 (22.70%)	1210 (13.38%)	3190 (17.95%)	
Work status				0.112
- No work (ref.)	4603 (52.77%)	4881 (53.96%)	9484 (53.37%)	
- Work	4120 (47.23%)	4165 (46.04%)	8285 (46.63%)	
Marriage status				0.001
- Never married (ref.)	4 (0.05%)	25 (0.28%)	29 (0.16%)	
- Married/Living with Partner	8457 (96.95%)	8755 (96.78%)	17212 (96.87%)	
- Divorced/Widowed	262 (3.00%)	266 (2.94%)	528 (2.97%)	
Parity (mean)	8723 (2.39)	9046 (2.62)	17769 (2.51)	0.000
Wealth status				0.000
- Poorest (ref.)	832 (9.54%)	4101 (45.33%)	4933 (27.76%)	
- Poorer	1387 (15.90%)	2083 (23.03%)	3470 (19.53%)	
- Middle	1836 (21.05%)	1412 (15.61%)	3248 (18.28)	
- Richer	2176 (24.95%)	946 (10.46%)	3122 (17.57%)	
- Richest	2492 (28.57%)	504 (5.57%)	2996 (16.86%)	
Health insurance				0.000
- No (ref.)	2955 (33.88%)	3746 (41.41%)	6701 (37.71%)	
- Yes	5768 (66.12%)	5300 (58.59%)	11068 (62.29%)	
The autonomy of family finances				0.692
- No (ref.)	2252 (25.82%)	2359 (26.08%)	4611 (25.95%)	
- Yes	6471 (74.18%)	6687 (73.92%)	13158 (74.05%)	
The autonomy of Health				0.004
- No (ref.)	1122 (12.86%)	1296 (14.33%)	2418 (13.61%)	
- Yes	7601 (87.14%)	7750 (85.67%)	15351 (86.39%)	
Know the danger signs of pregnancy				0.000
- No (ref.)	2534 (29.05%)	3830 (42.34%)	6364 (35.82%)	
- Yes	6189 (70.95%)	5216 (57.66%)	11405 (64.18%)	
Antenatal care				0.000
- < 4 times (ref.)	1782 (20.43%)	2457 (27.16%)	4239 (23.86%)	
- ≥ 4 times	6941 (79.57%)	6589 (72.84%)	13530 (76.14%)	

Note: Chi-Square test was used for dichotomous variables; T-test for continuous variables.

Table 2 shows that the average person living in urban areas is slightly older than in rural areas. Indonesian women who have given birth in the last five years are also dominated by those who have secondary education and have married/living with a partner, both in urban and rural areas.

Table 2 informs that Indonesian woman who gave birth in the last five years in urban areas had a lower average parity than women who lived in rural areas. In urban areas, Indonesian women who have given birth in the last five years are dominated by the richest women, while those in rural areas are the opposite, dominated by the poorest women. In the category of health insurance ownership, Indonesian women who gave birth in the last five years in both areas were dominated by women covered by insurance. Indonesian women who gave birth in the last five years in both areas were also dominated by those who had autonomy in determining their own health. Indonesian women who gave birth in the last five years in urban and rural areas were dominantly aware of the danger signs of pregnancy, and also dominantly did antenatal care more than 4 times.
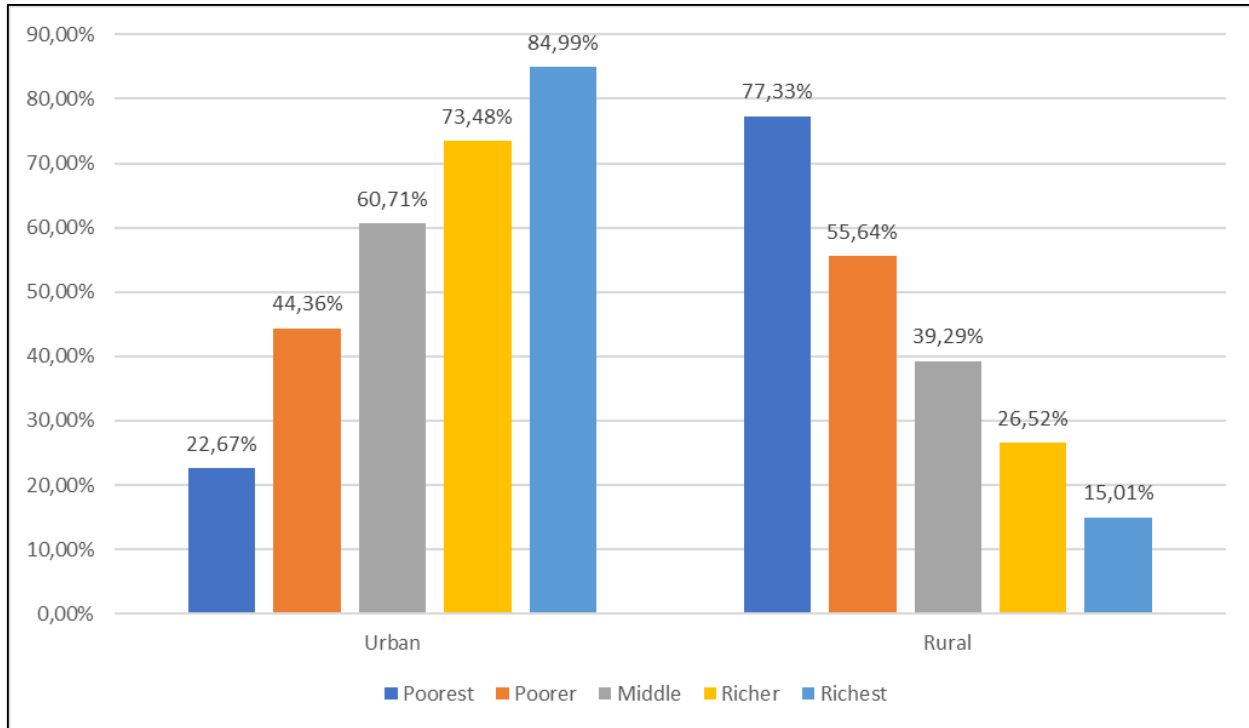
Figure 1. Distribution of women who use the healthcare facilities for delivery in Indonesia

Figure 1 shows that Indonesian women who gave birth the last five years in urban areas, the richest were the most utilizing the healthcare facilities for delivery in Indonesia. The opposite condition applies to women who live in rural areas, the poorest are the most utilizing the healthcare facilities for delivery in Indonesia.

Table 3 displays the results of the binary logistic regression test to illustrate the disparity between the utilization of healthcare facilities for delivery in urban and rural areas. As a reference, the chosen category is "nonhealthcare facilities". Table 3 shows the significant differences between women in urban and rural areas in utilizing healthcare facilities for delivery. Those who live in urban areas are 2.417 times more likely to use healthcare facilities for delivery than those living in rural

areas (OR 2.417; 95% CI 2.219-2.633). Table 3 informs that age and parity in women significantly contribute to the utilization of healthcare facilities for delivery.

Table 3 shows that women with tertiary education are likely 1.709 times more likely to use healthcare facilities for delivery than those without schooling (OR 1.709; 95% CI 1.249-2.338). While marriage status does not show a significant effect.

Richest women are 6.556 times more likely to use healthcare facilities for delivery than poorest women (OR 6.556: 95% CI 5.487-7.835). While women who have health insurance are 1.437 times more likely to use healthcare facilities for delivery than women who are not covered by health insurance (OR 1.437; 95% CI 1.330-1.551).

Table 3. Binary Logistic Regression of the Place of Delivery in Indonesia (n=17,769).

Predictor	Healthcare Facilities		
	OR	Lower Bound	Upper Bound
Place of Residence: Urban	*** 2.417	2.219	2.633
Age	*** 1.038	1.030	1.046
Education level: Primary	* 1.387	1.034	1.860
Education level: Secondary	*** 1.891	1.409	2.537
Education level: Tertiary	** 1.709	1.249	2.338
Marriage status: Never Married	0.539	0.237	1.226
Marriage status: Married/Living with Partner	0.548	0.237	1.270
Parity	*** 0.789	0.764	0.815
Wealth status: Poorer	*** 1.901	1.722	2.099

Wealth status: Middle	*** 2.669	2.383	2.990
Wealth status: Richer	*** 3.158	2.775	3.595
Wealth status: Riches	*** 6.556	5.487	7.834
Health insurance: Yes	*** 1.437	1.330	1.551
Autonomy of Health: Yes	1.012	0.897	1.141
Know the danger signs of pregnancy: Yes	*** 1.514	1.401	1.636
Antenatal care: ≥ 4 times	** 1.729	1.585	1.885

Note: ∗ p < 0.05; ∗∗ p < 0.01; ∗ ∗ ∗p < 0.001.

Table 3 informs that the autonomy that women have in determining their own health needs does not show a significant effect on the utilization of healthcare facilities for delivery. While knowledge of the danger signs of pregnancy is proven to be influential. Women who know about the danger signs of pregnancy are 1.514 times more likely to use healthcare facilities for delivery than those who don't (OR1.514; 95% CI 1.401-1.636).

Table 3 shows that the frequency of antenatal care is also a predictor of the utilization of healthcare facilities for delivery. Women who did antenatal care four or more times during pregnancy were 1.729 times more likely to use healthcare facilities for delivery than those who did antenatal care less than four times (OR 1.729; 95% CI 1.585-1.885).

Discussion
The results showed that women who live in urban areas use healthcare facilities for delivery better than women who live in rural areas. This is in line with the results of other studies on urban-rural disparities in the utilization of health service facilities in Indonesia, both in basic services at the Healthcare Center [22], and referral services in hospitals [23], which shows better utilization in urban areas.

Research by taking the theme of disparity between urban and rural areas in several countries also shows consistent results. Not only about the utilization of health services, including access to health information, which shows a disparity between urban and rural areas, including in China [24][25], India [26], Iran [27], Malaysia [28], and Africa [7].

Generally, development in rural areas in Indonesia tends to be slower than urban areas, including in the health sector. The private sector prefers to participate in development in urban areas. This is because of the denser population density, so it is more profitable economically [29][30][31]. The government must be able to respond to this condition, it needs ongoing evaluation to ensure efforts to minimize the disparity between the two regions, and ensure better access in rural areas [5][32][33].

In addition to disparities between urban and rural areas, other predictors of healthcare facilities for delivery utilization found were education level, parity, wealth status, health insurance, knowledge of the danger signs of pregnancy, and frequency of antenatal care. The higher level of education of women is statistically significant in increasing deliveries to health care facilities. In general,

the level of education is directly proportional to wealth status and knowledge of the danger signs of pregnancy. The higher the level of education, the better the wealth status, the more understanding about the danger signs of pregnancy, the more will increase the utilization of health care facilities in childbirth [34][35][36].

Various studies in several countries on the impact of ownership of health insurance have found findings that have increased the use of health services that is far better [37][38][39][40]. The same conditions apply to Indonesia [23][41]. Not only in the use of childbirth services, but also in the use of antenatal care services [36].

4. CONCLUSION
Based on the results of the study it can be concluded that there is a significant disparity between women in urban and rural areas in the utilization of healthcare facilities for delivery. Women who live in urban areas have better possibilities to utilize healthcare facilities for delivery. The government must focus more on targeting women with low and poor education. Interventions are needed to socialize the danger signs of pregnancy in rural areas. In addition, it is also necessary to expand the scope of membership of the National Health Insurance in rural areas.

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