The Border–Non-Border Areas Disparities in Hospital Utilization in Kalimantan Island, Indonesia

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Abstract

The border area is one area that needs government attention. The study was aimed at analyzing disparities in hospital use in Kalimantan based on the border-non-border area category. The study was conducted using data from the 2013 Indonesian Basic Health Survey. With the multi-stage cluster random sampling method, 69,043 respondents were obtained. In the final stage, a Multinomial Logistic Regression test was performed to determine any disparities. The study results found that the utilization of inpatient at the hospital for those living in the border area has a probability of utilization of 0.653 times compared to those who live in non-border areas. Those who live in the border have a lower chance than those who live in non-border areas of using inpatient hospital. The results of the study also found 8 other predictors that influence hospital utilization among adults in Kalimantan Island, Indonesia. The eight predictors are the type of place of residence, marital, education, work type, socioeconomic, health insurance, travel time, and transportation cost. It could be concluded that there was a disparity in hospital utilization in the border–non-border areas in Kalimantan Island, Indonesia. Those living in border areas have a lower likelihood of inpatient utilization than those living in non-border areas.

Keywords: *Disparities, hospital utilization, border areas, inpatient-outpatient, Kalimantan.*

Introduction

The government should guarantee access to the same health services for the people in its territory[1]. Every individual must have the same opportunity to access health services based on their needs[2]. Unlinking or devalue disparities utilization of health services is the concentration of health planners and policy makers[3]. This must be done as one of the efforts to improve the health care system performance indicator on a state.

As a referral facility, hospitals are often not built in border areas. This situation took place for reasons of transportation accessibility. The government builds hospitals in areas with better transportation availability. This condition is to ensure easier public access[4].

One of the areas that have a direct border with neighboring countries is Kalimantan Island. Kalimantan is an area that has the widest border with neighboring countries (Malaysia and Brunei Darussalam). Topographically, Kalimantan Island is dominated by forest areas.

Based on the background description, the study is aimed at analyzing disparities in hospital utilization in Kalimantan based on the category border areas - non-border areas. The results of this study can be used as input for health policymakers in determining policies that can have an impact on reducing disparities in border areas.

Materials and Method

The study was conducted by analyzing hospital utilization data from the 2013 Indonesian Basic Health Survey data. The 2013 Indonesian Basic Health Survey is a national scale survey conducted by the National Institute of Health Research and Development. The use of hospitals includes public and private hospitals. The unit of analysis in this study was the Indonesian population on Kalimantan Island, aged 15 years and over. At that age, it was assumed that the respondent is an adult, could make his own decision whether to use the hospital or not. Globally, Riskesdas was conducted with a sample size of 1,027,763 individuals. The sample

analyzed based on the unit of analysis was 69,043 respondents.

The category of hospital utilizationwas public access to the hospital, whether it was outpatient or inpatient. Based on the data received, outpatient variables were those carried out by the respondent in the past month. Being hospitalized was what the respondent did in the past year. The decision to use this time limit assumes that the respondent could remember both the outpatient and inpatient events well. The border area category was the regency/city on Kalimantan Island which was directly adjacent to neighboring countries (Malaysia and Brunei Darussalam). There were 7 border districts out of 55 regencies/cities, namely Sambas, Bengkayang, Sanggau, Sintang, Kapuas Hulu, Malinau, and Nunukan.

In the early stages of statistical analysis, Chi-Square was used for dichotomous variables and t-test for continuous variables. This test was used to assess whether there was a statistically significant difference in border-non-border areas. Based on the dependent variable (ordinal) category, the estimation was carried out using the binomial logistic regression test to study the disparities between border-non-border areas in hospital utilization and to check ORs and their statistical significance.

Results and Discussion

Based on Table 1, it can be seen that there is a statistically significant difference in hospital utilization between border-non-border areas observed in all characteristics, except age characteristics. Table 1 shows that both regions have greater utilization of inpatient care than outpatient care.

The population in Kalimantan predominantly lives in urban areas, both those categorized as border areas and non-border areas. Meanwhile, based on their gender, those on the border were more dominant by men, while those living outside the border were dominated by women. In general, those who were divorced mostly lived in non-border areas.

Table 1 shows that both the border area and the non-border area are dominated by people with primary school education and below. Meanwhile, the type of work in the border areas is dominated by those who work as farmers/ fishermen/labor, while those who live in non-border areas are dominated by those who do not have a job.

Table 1. Descriptive statistic(n=69,043)

Characteristic	Area		All	P
	Border	Non-Border		
Hospital Utility				0.000
• Outpatient	59 (0.6%)	516 (0.9%)	575 (0.8%)	
• Inpatient	78 (0.8%)	897 (1.5%)	975 (1.4%)	
• Outpatient + inpatient	26 (0.3%)	139 (0.2%)	165 (0.2%)	
• No utilization	9458 (98.3%)	57870 (97.4%)	67328 (97.5%)	
Type place of residence				0.000
• Urban	3076 (32.0%)	26972 (45.4%)	30048 (43.5%)	
• Rural	6545 (68.0%)	32450 (54.6%)	38995 (56.5%)	
Age (mean)	9621 (38.40)	59422 (38.69)	69043 (38.65)	0.083
Gender				
• Male	4890 (50.8%)	29010 (48.8%)	33900 (49.1%)	
• Female (Ref.)	4731 (49.2%)	30412 (51.2%)	35143 (50.9%)	
Marital status				0.000
• Single	2372 (24.7%)	12500 (21.0%)	14872 (21.5%)	
• Married	6722 (69.9%)	42558 (71.6%)	49280 (71.4%)	
• Divorce (Ref.)	527 (5.5%)	4364 (7.3%)	4891 (7.1%)	

Characteristic	Area		All	P
	Border	Non-Border		
Education level				0.000
• Primary school & under	5361 (55.7%)	29038 (48.9%)	34399 (49.8%)	
• Junior high school	1952 (20.3%)	12184 (20.5%)	14136 (20.5%)	
• Senior high school	1749 (18.2%)	14117 (23.8%)	15866 (23.0%)	
• College (Ref.)	559 (5.8%)	4083 (6.9%)	4642 (6.7%)	
Work type				0.000
• No work	3257 (33.9%)	23677 (39.8%)	26934 (39.0%)	
• Public servant/army/police	481 (5.0%)	3361 (5.7%)	3842 (5.6%)	
• Employee	443 (4.6%)	5489 (9.2%)	5932 (8.6%)	
• Entrepreneur	1305 (13.6%)	9079 (15.3%)	10384 (15.0%)	
• Farmer/Fisherman/Labor	3644 (37.9%)	15312 (25.8%)	18956 (27.5%)	
• Others (Ref.)	491 (5.1%)	2504 (4.2%)	2995 (4.3%)	
Socioeconomic status				0.000
• Quintile 1	2264 (23.5%)	9707 (16.3%)	11971 (17.3%)	
• Quintile 2	1796 (18.7%)	10701 (18.0%)	12497 (18.1%)	
• Quintile 3	1796 (18.7%)	11697 (19.7%)	13493 (19.5%)	
• Quintile 4	1636 (17.0%)	11989 (20.2%)	13625 (19.7%)	
• Quintile 5 (Ref.)	2129 (22.1%)	15328 (25.8%)	17457 (25.3%)	
Insurance				0.000
• No insurance	4644 (48.3%)	28518 (48.0%)	33162 (48.0%)	
• Askes, Jamkesmas, Jamkesda, Jamsostek	4913 (51.1%)	29115 (49.0%)	34028 (49.3%)	
• Others (Ref.)	64 (0.7%)	1789 (3.0%)	1853 (2.7%)	
Travel time				0.000
• ≤15 Minutes	2136 (22.2%)	23065 (38.8%)	25201 (36.5%)	
• >15 Minutes (Ref.)	7485 (77.8%)	36357 (61.2%)	43842 (63.5%)	
Transportation Cost				0.000
• ≤IDR 15,000	2140 (22.2%)	25928 (43.6%)	28068 (40.7%)	
• >IDR 15,000	7481 (77.8%)	33494 (56.4%)	40975 (59.3%)	

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

Based on socioeconomic status, the border areas are dominated by those in quintile 1 (the poorest), while those in non-border areas are dominated by those in quintile 5 (the richest). Based on the ownership of insurance in the two regions, it is dominated by those who have insurance managed by the government (Askes, Jamkesmas, Jamkesda, Jamsostek), although with a slightly higher proportion who do not have insurance at all.

Based on the travel time it takes for the community to get to the hospital, table 1 shows that in the two dominant regions the travel time is over 15 minutes. But with a bigger proportion in the border area. This condition is in line with the transportation costs required to get to the hospital. In the border area, people who need transportation costs more than IDR 15,000 have a larger proportion.

Table 2. The results of multinomial logistic regression (n=69,043)

Predictor	Outpatient			Inpatient			Outpatient + Inpatient		
	OR	Lower Bound	Upper Bound	OR	Lower Bound	Lower Bound	OR	Lower Bound	Upper Bound
Region: Border	0.936	0.711	1.232	0.653*	0.516	0.826	1.510	0.983	2.319
Type of place of residencey: Urban	1.250*	1.007	1.553	0.980	0.834	1.151	1.138	0.770	1.682
Gender: Male	1.111	0.914	1.351	1.097	0.944	1.275	1.141	0.793	1.643
Marital Status: single	0.244*	0.167	0.357	0.351*	0.264	0.466	0.324*	0.156	0.673
Marital Status: married	0.631*	0.477	0.835	0.741*	0.597	0.921	0.883	0.510	1.530
Education: under primary school	0.846	0.601	1.192	1.001	0.755	1.326	0.698	0.382	1.276
Education: junior high school	0.776	0.544	1.109	0.766	0.569	1.030	0.471*	0.245	0.905
Education: senior high school	0.894	0.660	1.210	0.786	0.603	1.023	0.469*	0.261	0.843
Work: No work	2.109*	1.245	3.573	1.311	0.949	1.813	0.833	0.457	1.518
Work: Public servant/army/police	1.578	0.876	2.841	0.839	0.557	1.264	0.267*	0.111	0.645
Work: Employee	1.362	0.763	2.430	0.869	0.596	1.267	0.277*	0.118	0.646
Work: Entrepreneur	1.350	0.775	2.351	0.816	0.573	1.160	0.396*	0.195	0.803
Work: Farmer/fisherman/labor	1.253	0.711	2.207	0.703*	0.495	0.999	0.407*	0.202	0.821
Socioeconomic: quintile 1	0.326*	0.214	0.498	0.453*	0.342	0.599	0.352*	0.171	0.727
Socioeconomic: quintile 2	0.494*	0.358	0.683	0.712*	0.571	0.888	0.575	0.330	1.002
Socioeconomic: quintile 3	0.629*	0.484	0.817	0.686*	0.561	0.839	0.641	0.395	1.041
Socioeconomic: quintile 4	0.785*	0.633	0.975	0.855	0.718	1.018	0.864	0.575	1.300
Insurance: No insurance	0.252*	0.176	0.362	0.348*	0.259	0.467	0.210*	0.113	0.391
Insurance: Askes, Jamkesmas, Jamkesda, Jamsostek	0.606*	0.434	0.846	0.621*	0.468	0.824	0.392*	0.219	0.704
Travel time: ≤30 Minutes	1.514*	1.193	1.923	1.319*	1.098	1.586	0.995	0.650	1.523
Transportation cost: ≤IDR 15,000	1.189	0.938	1.508	1.243*	1.037	1.492	1.875*	1.210	2.906

Note: The reference category is "No Utilization"; 95% Confidence Interval for OR; *Significant at level 95%.

Table 2 presents the results of the multinomial logistic regression test to describe the differences in hospital utilization in border areas - non-border areas in Kalimantan. As a reference, the category "no utilization" was selected. Table 2 shows that in inpatient utilization in the hospital, those living in border areas had 0.653 times the probability of utilization compared to those living in non-border areas (OR 0.653; 95% CI 0.516-0.826). This means that those who live in border areas have a lower chance than those who live in non-border areas to use inpatient care at the hospital. Meanwhile, both outpatient and outpatient and inpatient utilization did not show a statistically significant difference between the two regions.

To overcome disparities in hospital utilization in border areas, the Government of Indonesia has issued a special policy on disadvantaged areas, borders, and islands. This policy was released to reduce inequality in health services in these special areas, including border areas[5,6].

Table 2 also shows the differences in hospital utilization based on the type of place of residence. Those who live in urban areas are 1.250 times more likely to benefit from outpatient hospital care than those who live in rural areas (OR 1.250; 95% CI 1.007-1.553). Based on their marital status, those who are single and married have a lower chance of utilization than those who are divorced. This condition applies to both outpatient and inpatient utilization.

Disparities of hospital utilization related to rurality do not only happen in Indonesia. The research results with the focus of disparities in many countries reporting the disparities existing, among others in China, Canada, and Ethiopia.[7–9]

Based on the education level, Table 2 shows that the categories of utilization, as well as outpatient and inpatient in the junior high school and senior high school, are likely to be lower than those with a college education. Meanwhile, in the category of work type, those who do not work have the possibility of using outpatient at the hospital 2.109 times those who work in other categories (OR 2.109; 95% CI 1.245-3.573). Higher education levels are often found to be positive predictors of health performance[10,11]. Otherwise, a low education level is a barrier to performance in the health sector[12,13].

Meanwhile, in outpatient utilization, the better the socioeconomic level, the better the possibility of outpatient utilization. This condition also applies to the use of inpatient. The same condition can be seen in the category of insurance ownership. Those with government-managed insurance had a better chance of using hospitals than those without, and those with privately-managed insurance had better utilization rates than those with government-managed insurance. Similar information is also found in previous studies[14,15]

Table 2 shows that those with a travel time of less than or equal to 30 minutes had a chance of using outpatient hospitals 1.514 times than those with a travel time of more than 30 minutes (OR 1.514; 95% CI 1.193-1.923). Meanwhile, those with transportation costs of less than IDR 15,000 were more likely to use inpatient care 1.243 times than those who had transportation costs of more than IDR 15,000 (OR 1.243; 95% CI 1.037-1.492). On a broader national scale, travel time and transportation costs are also found to be determinants of hospital utilization[16–18].

Conclusions

Based on the research results, it can be concluded that there is a disparity of hospital utilization in the border - non-border areas in Kalimantan Island, Indonesia. Those living in border areas have a lower likelihood of inpatient utilization than those living in non-border areas.

The results also found 8 other predictors that affect hospital utilization among adults in Kalimantan Island, Indonesia. The eight predictors are the type of place of residence, marital status, education level, work type, socioeconomic status, health insurance, travel time, and transportation cost.

Acknowledgments: The author would like to thank the NIHRD for allowing the use of the 2013 Indonesian Basic Health Survey.

Source of Funding: Self-funding

Conflict of Interest: The authors declare no conflict of interest, financial or otherwise.

Ethical Clearance: The 2013 Indonesian Basic Health Surveyhad ethical clearance that was approved by the national ethical committee in the NIHRD (ethic number: 01.1206.207). Informed consent was used during data collection, which considered aspects of data collection procedure, voluntary, and confidentiality.

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