Predictors of Hospital Utilization Among Papuans in Indonesia

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Abstract

Hospitals were advanced referral health facilities or referrals for basic health services, it was very important for policymakers to know the factors that it was able to predict hospital use. The research objective was to determine the predictors of hospital use among Papuans in Indonesia. Data source from raw data of the 2013 Indonesia Basic Health Survey. Indonesia Basic Health Survey was a cross-sectional survey. The multi-stage cluster random sampling method was used to get 30,620 Papuan respondents. Multinomial Logistic Regression Test is used to determine the predictors of hospital utilization. There were 8 predictors of hospital utilization in outpatients used consisting of age, urban-rural area, gender, education level, socioeconomic status, insurance ownership, travel time and transportation costs, there were 5 predictor variables in hospital utilization in patients hospitalization consisting of gender, type of work, socio-economic status, travel time and transportation costs, and there were 2 predictors in hospital utilization in outpatient and inpatient care at the same time consisting of the cost of time travel and transportation to the hospital. Overall there were 9 predictor variables of hospital utilization in all categories (outpatient and inpatient).

Keywords: *hospital utilization, healthcare, Indonesian basic health survey.*

Background

Papua, which consists of two provinces, Papua and West Papua, is a province located at the easternmost tip of Indonesia. These two provinces fall into the backward category compared to other provinces located in the West. The provinces of Papua and West Papua often rank lower than many development performance indicators in Indonesia, including health development[1]. Data-based health policy is needed to accelerate health development in these two provinces, including data on the utilization of health.

Hospital is a health service institution that organizes individual health services in a comprehensive manner that provides inpatient, outpatient, and emergency services. Hospitals are advanced referral health facilities or referrals for basic health services. The importance of hospitals as plenary services is the basis of the argument that it is very important for policymakers to know the factors that are able to predict hospital utilization[2]. Evaluating the performance of the health care system, including hospitals, is important to support the performance of a better health system. It is the government's obligation to ensure good access to hospitals for all communities without exception.

Based on the background, the purpose of this study was to determine predictors of hospital utilization among Papuans in Indonesia. It is hoped that the results of this study can become the basis for health policymakers to develop better policies in improving the access of Papuans to hospitals.

Materials and Method

The data used in this analysis was the raw data of the 2013 Indonesia Basic Health Survey. The Indonesia Basic Health Survey was a national scale survey with a multi-stage cluster random sampling method carried out by the Ministry of Health of Indonesia. The Indonesia Basic Health Survey was a five-year survey that was taken using a structured questionnaire.

The population was an Indonesian citizen who lives on Papua Island. The analysis unit in this study were respondents aged 15 years and over. It is assumed that at this age the respondent can make his own decision, to utilize the hospital or not[3]. The sample size analyzed in this paper was 30,620 respondents.

The hospitals' utilization was people's access to hospitals, whether outpatient or inpatient. The time limit for outpatient was hospital use in the past month, while inpatient was the use of hospitals in the past year. It was assumed that the respondent can still remember the incidence of outpatient and inpatient properly.

Variable selection was done using the Chi-Square test to test the dichotomy variable, while the T-test was for continuous variables. This statistical test was used to assess whether there was a statistically significant relationship between the variables of hospital utilization as the dependent variable and the independent variable. There were 10 (ten) independent variables that will be tested as predictors of hospital utilization, namely age, the urban-rural area, gender, marital status, education, type of work, socioeconomic, insurance, travel time, and transportation cost to the hospital. The multinomial logistic regression test was used at the final stage to determine the variables that were predictors of hospital utilization among Papuans in Indonesia.

Findings

Bivariate analysis results show that there are significant differences between Papuans who utilize hospitals based on the category of urban-rural areas. On average Papuans who use hospitals are slightly older than those who do not use them. The results also show that Papuans who utilize hospitals are more women than men. This condition applies to all types of hospital utilization. Married people appear to dominate all types of hospital utilization. This difference is statistically significant.

Bivariate analysis results show that those who have educational status below the under primary school dominate hospital utilization. This result is in line with differences in utilization based on socio-economic status and type of work. The result illustrates that Papuans who utilize hospitals are dominated by very poor (quintile 1), and those who do not work. This condition is statistically significant. Three other variables, insurance ownership, travel time and transportation costs to the hospital, also had statistically significant differences in hospital utilization.

The results of the bivariate analysis showed that all variables tested were significant and could be continued with multinomial logistic regression. Table 1 shows the results of multinomial logistic regression tests to determine predictors of hospital utilization among Papuans in Indonesia. In this multinomial logistic regression test, "no utilization" was used as a reference.

Table 1. Multinomial Logistic Regression of Hospital Utilization among Papuans in Indonesia

Predictor	Outpatient			Inpatient			Outpatient + Inpatient		
	OR	Lower Bound	Upper Bound	OR	Lower Bound	Upper Bound	OR	Lower Bound	Upper Bound
Age	1.008*	1.001	1.015	1.005	0.996	1.015	1.005	0.988	1.022
Area: Urban	0.667*	0.532	0.837	0.970	0.723	1.302	0.715	0.414	1.234
Gender: Male	0.782*	0.660	0.925	0.711*	0.565	0.895	0.674	0.441	1.031
Marital Status: single	0.713	0.459	1.108	0.561*	0.314	1.004	0.586	0.221	1.556
Marital Status: married	1.126	0.801	1.582	0.958	0.621	1.479	0.762	0.372	1.562

Education: under primary school	0.661*	0.470	0.930	0.756	0.480	1.190	1.010	0.391	2.604
Education: junior high school	0.853	0.602	1.209	0.824	0.518	1.309	1.059	0.402	2.791
Education: senior high school	1.037	0.767	1.401	0.834	0.554	1.257	1.177	0.487	2.848
Work: No work	0.948	0.640	1.402	0.622*	0.401	0.965	1.651	0.509	5.357
Work: Public servant/army/police	1.331	0.853	2.075	0.647	0.375	1.115	1.299	0.327	5.159
Work: Employee	0.786	0.453	1.364	0.553	0.284	1.079	1.038	0.207	5.209
Work: Entrepreneur	1.049	0.666	1.653	0.645	0.383	1.087	1.700	0.461	6.269
Work: Farmer/fisherman/labor	0.781	0.524	1.164	0.571*	0.360	0.905	1.228	0.369	4.081
Socioeconomic: quintile 1	2.637*	1.836	3.789	0.924	0.580	1.474	1.588	0.647	3.898
Socioeconomic: quintile 2	1.633*	1.151	2.315	1.111	0.718	1.719	1.543	0.660	3.605
Socioeconomic: quintile 3	1.617*	1.146	2.283	1.376	0.906	2.090	1.654	0.717	3.813
Socioeconomic: quintile 4	1.469*	1.053	2.051	1.561*	1.056	2.306	1.381	0.599	3.183
Insurance: No insurance	0.303*	0.175	0.527	0.936	0.371	2.359	0.634	0.081	4.944
Insurance: Gov-run Insurance	0.707	0.419	1.192	1.536	0.623	3.791	1.915	0.261	14.040
Travel time: ≤ 30 minutes	2.940*	2.349	3.680	1.458*	1.053	2.018	1.907*	1.072	3.392
Transport. Cost: ≤ 15000 IDR	1.465*	1.166	1.841	1.560*	1.134	2.145	1.875*	1.056	3.329

Note: Reference category was "no utilization"; confidence interval of 95% for OR; *significant at 95% level.

Table 1 shows that the predictor of hospital utilization in the outpatient category which proved significant there were 8 variables. The predictors are age, urban-rural area, gender, education level, socioeconomic status, insurance ownership, travel time and transportation cost. Table 1 shows that Papuan who lives in urban areas was 0.667 times using a hospital compared to Papuan who lived in rural areas (OR 0.667; 95% CI 0.532–0.837). It was also seen that Papuan males were 0.782 times compared to Papuan females in utilizing the hospital (OR 0.782; 95% CI 0.660-0.925). Papuan with an education level of under primary school 0.661 times using a hospital compared to college graduates (OR 0.661; 95% CI 0.470-0.930). Table 1 also shows significant socioeconomic status as a predictor of hospital utilization in the outpatient category. This significance applies to all socioeconomic statuses, at least the poorest Papuans used the hospital 2.637 times compared to the richest Papuans (OR 2.637; 95% CI 1.836-3.789). Papuan, who does not have insurance, uses 0.303 times compared to Papuan who has insurance that is managed by private. Papuan with travel time ≤30 minutes utilizing hospital outpatient 2.940 times compared to Papuan who had longer travel time (OR 2.940; 95% CI 2.349-3.680). Papuan with transportation costs of 15,000 IDR utilizing a hospital 1.465 times greater than Papuan which has more expensive transportation costs (OR 1.465; 95% CI 1.166-1.841). The exchange rate of 15,000 IDR equivalent to around 1 $ US.

The hospitals' utilization in the inpatient category, there are 5 variables that proved significant as predictors. The predictors are gender, type of work, socioeconomic status, travel time and transportation cost. In the inpatient category, Papuan males were 0.711 times compared to Papuan females (OR 0.711; 95% CI 0.565-0.895). Papuan had a single status of 0.561 times compared to Papuan who was divorced (OR 0.561; 95% CI 0.314-1.004). Papuan who did not work 0.622 times used an inpatient compared to Papuan who had other categories of work (OR 0.622; 95% CI 0.401-0.965). The rich Papuans (Quintile 4) had utilized 1.561 times compared to the richest Papuans (Quintile 5)(OR 1.61; 95% CI 1.056-2.306). Papuans who have travel time to hospital ≤30 minutes utilize inpatient 1.458 times compared to those who have longer travel time (OR 1.458; 95% CI 1.503-2.018). Papuan with transportation costs of 15,000 IDR utilizing inpatient 1.560 times compared to Papuan which has more expensive transportation costs (OR 1.560; 95% CI 1.134-2.145).

Whereas in hospital utilization in the outpatient category and inpatient there are only 2 types of variables that are proven significantly as predictors. The two variables are time travel and transportation costs to the hospital. Papuans who have travel time ≤30 minutes 1.907 times use the hospital more than Papuan who has travel time >30 minutes (OR 1.875; 95% CI 1.056-3.329). While Papuan has a transportation cost of ≤15000 IDR 1.875 times more utilizing a hospital than Papuan who has transportation costs > 15000 IDR (OR 1.875; 95% CI 1.056-3.329).

The results showed that several demographic factors were found to be predictors of hospital utilization, namely age, gender, marital status, education level and type of work. Gender is a predictor in outpatient and inpatient categories. Papuans female utilizes hospitals more than Papuans male. Marital status partially predictors in the inpatient category. Education level partially predictor in outpatients, while types of work also found partially to be predictors in inpatient categories, but not in other categories. The study results that significantly showed demographic factors as predictors of hospital use were in line with research in Ghana[4], German[5], and Turkey[6].

Socioeconomic status became a very convincing predictor in the outpatient category. This condition is in line with some of the results of other studies that examined the same thing[7]. Often socioeconomic is used as an indicator to evaluate the performance of the health service system to predict disparities[8,9], inequity[10], and inequality[11].

Insurance ownership was also found to be a significant predictor in hospital utilization in the outpatient category. Those who do not have insurance have low utilization. The results of this study are in line with the objectives of the universal coverage policy launched by the Indonesian government to provide universal access to health services[12]. Health finance policies to improve public access are also carried out in several other countries by gradually implementing universal coverage. Evaluation of the implementation of financing policies in some of these countries shows positive results[13], although there are still some obstacles to the implementation of financing policies in other conditions[14].

Other predictors found were physical access variables indicated by travel time and transportation costs to hospitals. It is evident that better physical access makes better hospital utilization in outpatient and inpatient categories. These results are in line with the results of other studies in Indonesia[15,16], and recent research in several other countries, including Iran[17], China[18], and Italia[19]. Pre-hospital factors are recommended in health economics studies because they significantly affect hospital accessibility, both in travel time and transportation costs[20].

The results of this study cannot be separated from limitations, because this study is more superficial. Predict the phenomenon of surface hospital use. Need more in-depth research qualitatively to be able to better understand the reasons behind each phenomenon revealed in this study.

Conclusion

Based on the results of the study it can be concluded there were 9 predictor variables hospitals utilization (outpatient and inpatient) consisting of age, urban-rural area, gender, education level, work type, socioeconomic status, insurance ownership, travel time and transportation cost.

Source of Funding: Self-funding

Conflict of Interests: Nil

Ethical Clearance: During the data collection

process, informed consent was used with consideration of voluntary aspects, confidentiality, and procedures for collecting data. The 2013 Riskesdas has an ethical clearance certificate issued by the national ethics committee in NIHRD (code of ethics number: 01.1206.207).

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