Implementation of Aceh Health Insurance (*Jaminan Kesehatan Aceh*) 2013–2021: Has health equity been achieved for all Acehnese after armed conflict?

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Abstract

Aceh Health Insurance (*Jaminan Kesehatan Aceh*—JKA) has been implemented since 2010 to increase the health equity by covering the health expenses and guaranteeing that all Acehnese are covered regardless of their economic, educational, and social statuses. However, since its implementation, there has been no study on its impact on health quality, particularly regarding the utilization of the main referral hospital (Dr Zainoel Abidin Hospital located in Banda Aceh) and the effects of the geographic accessibility and the number of specialist doctors in each regency/city on hospital utilization. This retrospective study assessed the equity factors during the Aceh Health Insurance implementation and during its integration to National Health Insurance (*Jaminan Kesehatan Nasional*—JKN) from 2013 to 2021 using data of travel time (time spent for travelling from the origin regency/city of referred patients to the main referral center) and healthcare resources (number of specialist doctors). The data were analyzed using Student's t-tests, Kolmogorov-Smirnov or Mann-Whitney U test when appropriate. Williamson Index was calculated to determine the disparities of health equity between regencies. Our data indicated the noticeably increase of health facilities utilization since the implantation of Aceh Health Insurance. However, there was no equity in the use of main referral facility by the residents in Aceh - was dominated by residents who lived closer and from more populated regencies/cities. In conclusion, there are accessibility and financial hardship barriers in accessing the health care facilities during the implementation of Aceh Health Insurance that need to be addressed by the government to achieve the health equity for all Acehnese.

Keywords: Universal health coverage, JKA, JKN, health equity, Aceh

Introduction

One of the main objectives of implementing a health insurance system using universal health coverage (UHC) is to ensure people are free from financial hardship and prevent them from

falling into poverty. UHC also aims to improve the equity in quality health services [1]. UHC system has been implemented in many countries globally including in Indonesia, an archipelago country in Southeast Asia. Aceh, the westernmost province in Indonesian archipelago, is located at the tip of Sumatra Island and had experienced armed conflict for almost 30 years and ended in 2005. Aceh also hit by an earthquake and tsunami which destroyed significant infrastructures and social systems of society in 2004 [2]. Aceh covers almost 58,377 km² area with varied geographical topology from mountains to coasts and it has quite a large income inequality. This condition prompts the Aceh government to organize a comprehensive health insurance system for its people. Since 2010, four years before Indonesia implemented National Health Insurance (*Jaminan Kesehatan Nasional*—JKN) system, Aceh had already implemented Aceh Health Insurance (*Jaminan Kesehatan Aceh*—JKA) sourced from Aceh Special Autonomy Fund [3]. JKA aimed to increase the health equity by covering the health expenses and guaranteeing that all Aceh residents are covered regardless of their economic, educational, and social statuses [3].

To support health services in Aceh, there are 61 units of government and private hospitals, and 381 units of Community Health Centers (*Puskesmas*) including inpatient Community Health Centers. The ratios of the healthcare workers per 100,000 population in Aceh vary, some have met or exceeded national target and WHO standard, but some have not. The ratio of specialist doctors is 23.82, general practitioners is 49.00, dentists is 9.00, and nurses is 213. However, there is unequal geographic distribution of health workers which most of them are accumulated in bigger cities, especially in the capital city Banda Aceh [3]. Therefore, whether JKA has benefited all Acehnese equally or only those who live in areas close to health facilities, and whether the poor citizens have benefited from it are still open to question.

Since JKA was implemented, there has been no publication on its benefits in terms of public accessibility in using health facilities for patient referral purposes. The accessibility or the intended ability to reach health services is within the dimensions of availability, affordability and geographic accessibility [4, 5]. The aim of this study was to obtain information about accessibility to referral health facilities during the implementation of JKA between 2013 and 2021.

Methods

This was a retrospective study to assess the accessibility of the utilization of referral health facilities from 2013 to 2021. The data was obtained from the primary source of Social Security Administrator (*Badan Penyelenggara Jaminan Sosial*—BPJS). The data was classified into two categories: before (2013) and after JKA was integrated to JKN. Data on numbers of specialist doctors were obtained from Regency Health Offices throughout Aceh.

The utilization of JKA by its memberships was calculated by dividing the number of Dr Zainoel Abidin Hospital patients (inpatients or outpatients) by total number of JKA memberships and multiplying it by 1,000. The Student's t-test was used to measure differences in utilization between JKA and JKN membership and the Kolmogorov-Smirnov was used to assess for two means before (2013) and after integration of JKA to JKN (2021).

The geographic accessibility was determined by the travel time (hours), which is the distance between the origin regency of referred patients and the main referral center in Banda Aceh (Dr Zainoel Abidin Hospital). It was categorized into <2 hours, 2–6 hours and >6 hours of travel based on data from Aceh Transportation Agency [6]. The Mann-Whitney U test were then used to measure significant differences among travel times.

The facility utilization (inpatient and outpatient cares) was calculated using univariate analysis and the differences in utilization for two periods (2013 and 2021) was measured using a Mann-Whitney U test. Then, regression was used to see the relationship between travel time and utilization. Disparities of the number of specialist doctors against the population of each regency/city was calculated using the Williamson Index.

Results

Jaminan Kesehatan Aceh utilization rate
Since JKA was implemented in 2010, the utilization rate of JKA by its members in Aceh main referral center, Dr Zainoel Abidin Hospital, had increased sharply, peaked in 2018

and 2019, before declining in 2020 and 2021 due to the COVID-19 pandemic (**Figure 1**).
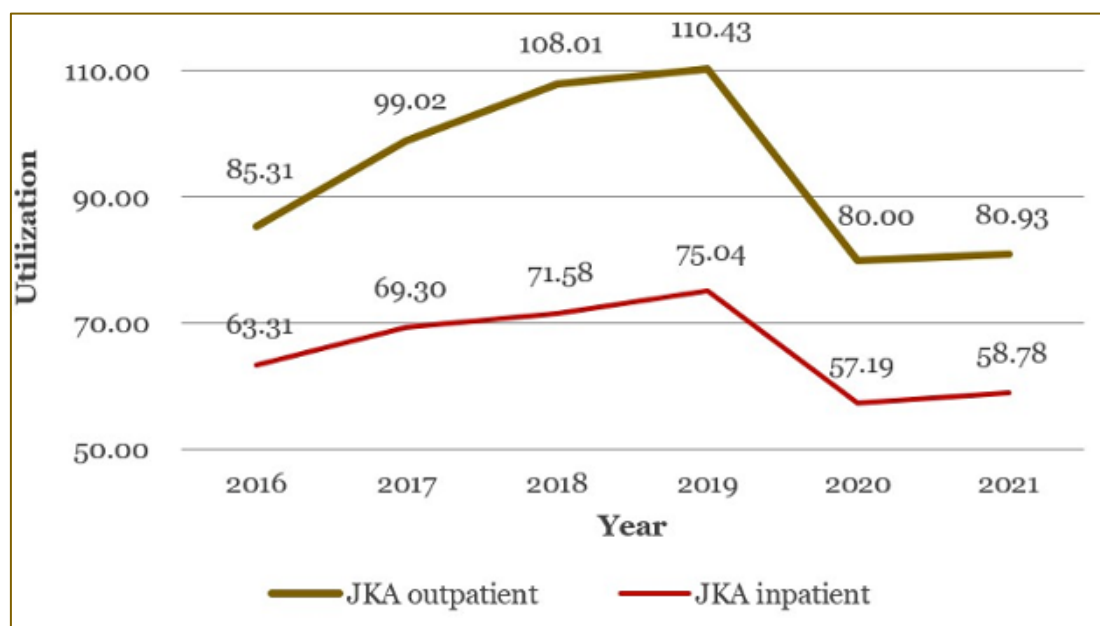

Figure 1. Utilization of JKA by inpatients and outpatients in Aceh main referral center (Dr Zainoel Abidin Hospital) from 2016 to 2021. The utilization is calculated by dividing the number patients (inpatients or outpatients) by total number of JKA memberships and multiplying by a thousand.

In the main JKA referral hospital (Dr Zainoel Abidin Hospital), the patients were categorized into five groups based on their health coverage memberships: JKA, *Penerima Bantuan Iuran Jaminan Kesehatan* (PBI-JKN), employees, non-employees, and informal sectors. Number of JKA users dominated with the same pattern over the 5-year period (**Figure 2**). It was followed respectively by PBI-JKN), employees, non-employees, and informal sectors users.
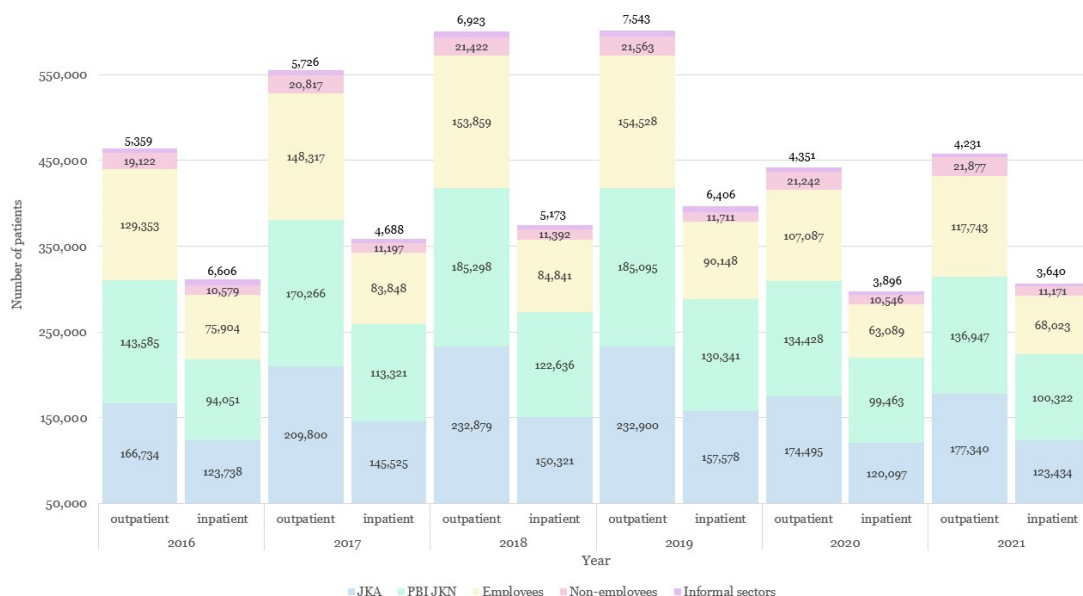

Figure 2. Number of inpatients and outpatients in Aceh main referral facility by health insurance participants during 2016-2021.

JKA participants are all Acehnese residents, including those who are neither poor nor incapacitated. Meanwhile, the PBI-JKN participants are classified as poor and needy people whose contributions are paid by the government as participants in the JKN program. Only the civil servants and state-owned enterprise employees were categorized as employees while the

non-wage-earner workers represented the non-employee category. Our analysis indicated that the utilization between JKA and JKN was different significantly ($p<0.05$).

The utilization of JKA for each regency in Aceh was then calculated before and after integration of JKA to JKN based on travel time from the regency to the provincial referral hospital (**Table 1**). The data indicated that the highest JKA utilization was by those who live less than two hours from the main referral hospital, Dr. Zainoel Abidin Hospital in Banda Aceh. The farther the distance, the less the use of JKA and the referral facilities. The number of utilizations of each regency/city in 2021 (after JKN integration) was better than compared to 2013 (before the integration). Mann-Whitney U test indicated that the utilization of JKA and referral facility was significantly different between those who lived closest to referral hospital (Banda Aceh and Great Aceh) compared to those who live far with more than two and six hours travel time ($p<0.05$ for both comparations).

Table 1. Utilization of JKA in provincial referral hospital, Dr. Zainoel Abidin Hospital, based on travel time from the regency to the provincial referral hospital

Travel time (regency/city)	Utilization of the JKA in provincial referral hospital	
	Before integration to JKN	After integration to JKN
Less than 2 hours (average)	8.81	4.73
Banda Aceh	11.36	9.27
Great Aceh	6.26	0.19
2-6 hours (average)	1.21	0.26
Aceh Jaya	3.30	0.10
West Aceh	2.38	0.25
Sabang	1.82	0.08
Pidie	1.14	0.55
Bireuen	0.60	0.36
Nagan Raya	0.19	0.17
Pidie Jaya	0.06	0.14
Lhokseumawe	0.19	0.46
More than 6 hours (average)	0.82	0.09
North Aceh	2.85	0.01
East Aceh	2.75	0.22
Central Aceh	0.92	0.18
Southwest Aceh	0.61	0.20
South Aceh	0.67	0.17
Langsa	1.18	0.13
Simeulue	0.31	0.06
Aceh Singkil	0.28	0.02
Bener Meriah	0.18	0.06
Aceh Tamiang	0.05	0.06
Gayo Lues	0.03	0.04
Southeast Aceh	0.01	0.02
Subulussalam	-	0.04
Total average	1.69	0.56

The utilization is calculated by dividing the number patients (inpatients or outpatients) by total number of JKA memberships and multiplying by a thousand

This study also found that there was an increasing utilization of JKA in the hospitals in line with the increase in the number of specialists during the 2017–2021 period. Further analysis showed that the increased utilization of hospital resources related to the number of specialists' utilization had a significant level of 99%, with $R^2=0.329$ and the model found significant explain the hospital from 2017–2021 ($p<0.05$) (**Figure 3**).

Health disparity between regencies in Aceh

The disparities of hospital resources among regencies/cities in Aceh after integration into JKN (2021) was evaluated using Williamson Index with number of specialist doctors as the indicator. This study found that there were increases in specialists' numbers from year to year, but further analysis showed that there were still disparities in the number of specialists among regencies. Calculation of the disparities on specialists in Aceh pointed out the distribution inequalities with Williamson Index 0.2 (**Figure 4**). Its distribution was condensed in the regencies or cities with

larger populations, such as North Aceh, East Aceh, and Pidie. The least accumulation was in Sabang, Aceh Singkil and Gayo Lues.
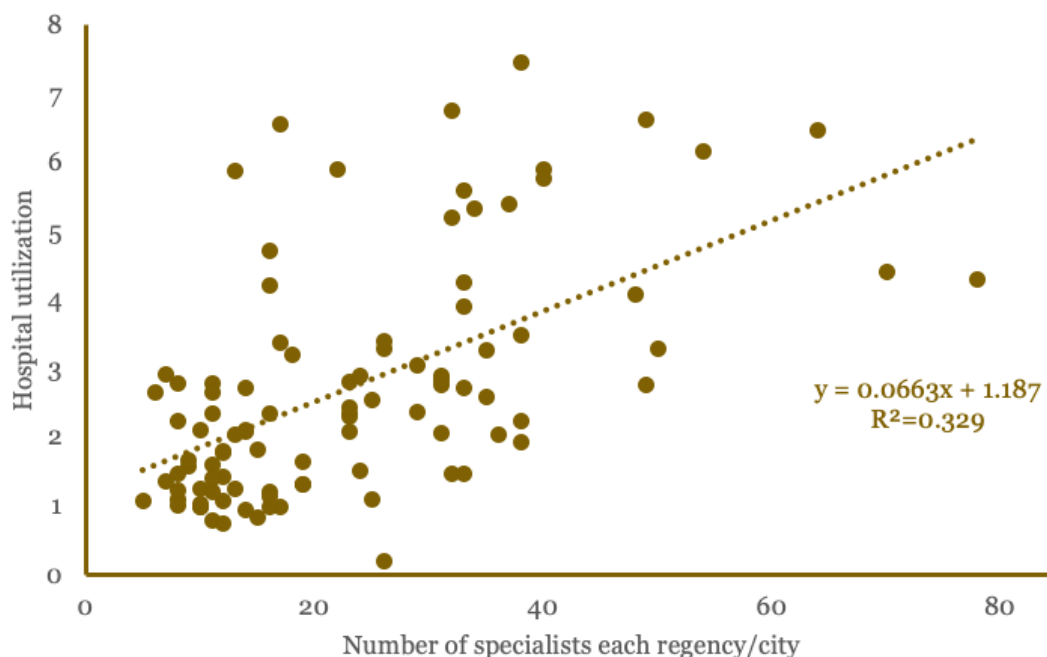

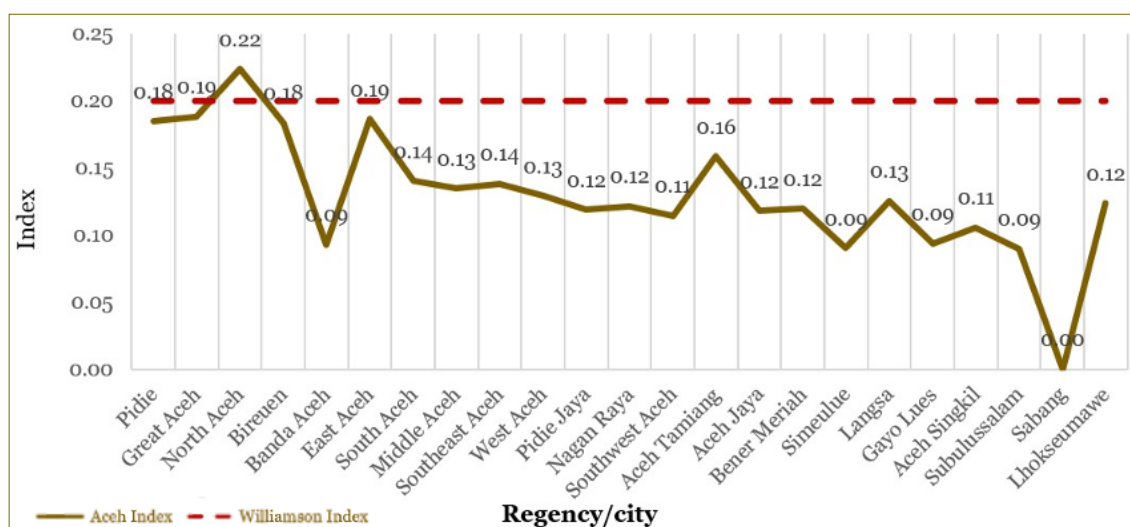Figure 3. Correlation between hospital utilization and number of specialists between 2017–2021.

Figure 4. Disparities of the number of specialist doctors against the population by regency/city.

Discussion

In this study, there were three indicators used to measure health equity in Aceh: the utilization of Dr Zainoel Abidin Hospital in Banda Aceh as the main referral hospital during JKA implementation; the geographic accessibility; and the number of specialist doctors in each regency/city. Such information will be very useful for decision-makers in planning future health services to respond to community needs.

JKA implementation affected the number of patients in the main referral facility positively. A study in Japan found the similar pattern which there was an increasing utilization of hospital admission after the expansion coverage of the universal insurance [7]. However, the utilization of referral facilities was still dominated by those living in Banda Aceh and its surroundings.

According to the Institute of Medicine's Committee, there are three important factors in determining facility utilization and health status: personal, financial, and structural factors [8]. Aceh has significant concerns on the financial and structural components because it is the poorest province in Sumatra island and the sixth poorest province in Indonesia [9], and it spans on 58,377 km² area with varied type of terrains.

The financial factor can be indicated by the high number of JKA and PBI-JKN users using referral facilities as well as the small number of referred patients who came from the regency/city with high poverty. It is possibly because these UHCs only cover medical expenses but no other personal expenses, such as the transportation fee of the patients and their caregivers.

Furthermore, even though JKA users outweighed the PBI-JKN, it certainly indicated that the implementation of health insurance in Aceh has been pro-poor. The number of utilizations of each regency/city in 2021 was better than in 2013 (**Table 1**). There were always convincing numbers of outpatients that surpassed the inpatients during the observed years. A study in China [11] found similar result in their health insurance claims where the richer people prefer to use the hospital for outpatient care, whereas the poor use the primary health care for both inpatient and outpatient care [11]. Moreover, this present study found the increase of hospital utilization in line with the increase of specialist number during the period 2017–2021 (**Figure 3**).

The structural factor, including the distance to the health facilities, is one of the important factors that must be considered in planning the construction of health facilities [4, 13]. This present study confirmed that people who live in an area with the shortest travel time had the highest utilization of the primary health facility, whereas people with a longer travel time tended to have a lower hospital utilization. The similar result was found in Ghana [14]. In addition, it is also related with the number of patients' visit [15] and the special efforts were needed for those whom live far from the health centers [4].

The equity distributions of health facilities were represented by the important health resources, such as number of specialist doctors, which can describe people's accessibility to health services [16, 17]. The inappropriate distribution harms the allocation of resources and increases the cost of services [18]. It is caused by the distribution of the health resources without considering a need-oriented understanding and it is seen as more problematic than the lack of allocation of the resources themselves [19].

This present study revealed the increase in the numbers of specialist doctors from year to year during the implementation of health insurance. It was indicated by a significant correlation between hospital utilization and the increased number of specialists ($p<0.05$). Although the number of specialist doctors were increased, but the current ratio (0.14 per 1000 residents) was still much lower than the WHO standard which is 1 per 1000 residents [20]. Furthermore, our data indicated that the most specialists are concentrated in cities or regencies with a large population. Even though there was a study trying to adjust the healthcare demand and resources, but it was difficult to create the equity because it was complex and limited available data, especially in developing countries [21].

The disparities of the specialist numbers were calculated using Williamson Index that showed the inequality distribution in Aceh regencies/cities. It is suggested that a small regency with not many population numbers could have better Williamson Index compared to the big regencies. The geographic imbalances in healthcare workers supply did not only occur in the developing countries, such as Indonesia and Iran [16], but was also found in the developed countries such as European countries [22], and all Organization for Economic Co-operation and Development (OECD) countries [23]. The specialists tended to stay in big regencies/cities because of several factors such as the areas are attractive to live and work in, better recruitment and payment systems, and the prestige [23]. Another study found that the career and professional aspect, working conditions, personal, cultural, and living conditions are some of the factors as well [24]. Moreover, other factors also play important roles, such as regional policies in terms of developing specialist doctors, regional health systems, development of hospital service systems, planning for resource development, supervision and awards [25]. However, Aceh local governments consider a single financial factor, in the form of incentives, to be the only influential factor in attracting doctors to serve in the rural regions while often ignoring other factors that can encourage specialist doctors to stay in the rural for the long term [26].

There are some of the limitations of this study that need to be discussed. Some of the data are only available from 2017 to 2021 making we could not analyze them since 2013. This study was also unable to analysis the data of personal, financial, and structural factors that are important factors to determine the facility utilization and health status during the implementation of the JKA.

Conclusion

The implementation of JKA in Aceh noticeably increased the utilization of health facilities by the Aceh residents. The utilizations of the main hospital are dominated by people who live closer (less than 2 hours of travel time) and from big cities, especially Banda Aceh where the main referral hospital is located. There is no visible equity in the use of referral facilities by the residents from regencies in Aceh. The accessibility and financial hardship are still become the barriers for the community when referred to the main referral center in Banda Aceh.

Ethics approval

Not required.

Acknowledgments

Conflict of interest

The authors declare that they have no competing interests.

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Underlying data

Derived data supporting the findings of this study are available from the corresponding author on request.

How to cite

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