



Costs and Impacts of Utilizing National Health Insurance Reducing the Economic Burden of Hypertension Patients

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ABSTRACT

The prevalence of hypertension ranks as the highest incidence of disease in Jambi Province in the last 5 years. The cost of treatment and management of hypertension that must be borne by the community is relatively high. The existence of a cost reduction from the National Health Insurance (JKN) program is expected to reduce the economic burden caused. This study aims to analyze the difference in the average costs due to hypertension between patients who use JKN and patients who pay out of pocket in Jambi City. A Study based on economic evaluation with a quantitative approach, was conducted in Jambi City in 2022. There were 165 respondents selected by purposive sampling technique. The study instrument was in the form of a questionnaire. Data processing using statistical software with descriptive statistical analysis stage and bivariate T-test analysis. The results of the study showed that there were differences in the average direct medical costs ($p = 0.000$), direct non-medical costs ($p = 0.034$), and the total costs due to hypertension ($p = 0.018$) between patients who used JKN and patients who pay out of pocket. The conclusion of the study is that the difference in the average costs incurred by hypertension sufferers who utilize JKN has an impact on reducing the family's economic burden, especially in the direct medical cost component.

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ABSTRACT

Prevalensi hipertensi menempati urutan teratas sebagai kejadian penyakit paling banyak di Provinsi Jambi dalam 5 tahun terakhir. Biaya pengobatan dan penanganan hipertensi yang harus ditanggung masyarakat relatif tinggi. Adanya penekanan biaya dari program Jaminan Kesehatan Nasional (JKN) diharapkan mengurangi beban ekonomi yang ditimbulkan. Studi ini bertujuan menganalisis perbedaan rerata biaya akibat penyakit hipertensi antara penderita yang memanfaatkan JKN dengan penderita yang mengeluarkan biaya dari kantong sendiri di Kota Jambi. Studi berbasis evaluasi ekonomi dengan pendekatan kuantitatif, dilakukan di Kota Jambi tahun 2022. Responden berjumlah 165 orang yang dipilih dengan teknik purposive sampling. Instrumen studi berupa angket. Pengolahan data menggunakan software statistik dengan tahap analisis statistik deskriptif dan analisis bivariat uji-T. Hasil studi bahwa terdapat perbedaan rerata biaya langsung medis ($p=0,000$), biaya langsung non medis ($p=0,034$), dan total biaya akibat penyakit hipertensi ($p=0,018$) antara penderita yang memanfaatkan JKN dengan penderita yang mengeluarkan biaya dari kantong sendiri. Kesimpulan studi bahwa perbedaan rerata biaya yang dikeluarkan penderita hipertensi yang memanfaatkan JKN berdampak pada penurunan beban ekonomi keluarga terutama pada komponen biaya langsung medis.

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INTRODUCTION

Hypertension is one of the non-communicable diseases with the prevalence of incidence continues to increase in many countries along with the times. The highest prevalence of hypertension is in African countries (27%) and the lowest in America (18%), while in low and middle income countries it is estimated that globally 1.13 billion individuals suffer from hypertension. The prevalence of hypertension increased in Indonesia from 25.8% in 2013 to 34.1% in 2018. Hypertension is a chronic disease that requires routine therapy to control blood pressure, because hypertension is an abnormal increase in blood pressure ($\geq 140/90$ mmHg) in the arteries continuously over a period that does not differentiate gender or age (WHO). Hypertension is latent, often unnoticed, and requires relatively large costs for treatment or care. Hypertension has the potential to cause catastrophic expenditures in the household, namely expenses for diseases that require large costs in treatment, have the potential or are accompanied by complications and can be life-threatening. On the other hand, the increase in the cost of health services continues to occur from year to year. This condition also has the potential to reduce the financial capacity of households to bear the economic burden of disease, including the poor.

The amount of costs borne by the community due to hypertension can be known through a cost analysis that measures the economic burden of the disease in monetary units, both direct medical and non-medical costs or indirect costs and estimating the maximum amount that can be saved if the disease occurs. Measurement can be based on the perspective of the patient, payer or health care provider. One example of the largest component of direct medical costs that patients must bear with hypertension is drug costs. The highest cost of anti-hypertensive drug combination of herbesser CD and candesartan was IDR434,632, while the lowest cost was the combination of amlodipine, candesartan and spironolactone, which was IDR213,284, (Baroroh dan Fathonah 2017).

In order to reduce the risk that people will bear health costs out of their own pocket, the Ministry of Health through the National Health Insurance (JKN) program organized by BPJS Health in 2014 guarantees services for several diseases including treatment and management of hypertension who are referred to specialists in internal medicine, according to medical conditions. experienced (Jabbar 2020). This effort is a form of transition from health financing in Indonesia to social health insurance, which previously used an out of pocket and financing from the government specifically for the poor (Supriyanto, Setyawan, dan Kes n.d.).

The findings in previous studies that health financing that must be borne by the community from their own pockets must be completely stopped because of the suppression of health costs from BPJS Health. Utilization of health insurance can only reduce catastrophic health expenditures by 12.97%. More than 50% of spending other than food in a month is diverted to inpatient expenses which must be spent by almost 77% of households in Indonesia (Situmeang dan Hidayat 2018).

As many as 65% of hypertension sufferers with Social Security Administrator for Health (BPJS Kesehatan) Recipients of Contribution Assistance (PBI) membership status still pay for their own health costs in Pamekasan Regency, the average direct cost incurred is IDR 157,600 and the average indirect cost is IDR 674,980 (Istiqomah, 2016). The total costs that must be borne by hypertension sufferers as outpatient BPJS participants at the Public health center in

1 year are in the range of IDR 36,140 to IDR 2,528,000 per patient with captopril single therapy. (Etika, Pristianty, dan Hidayati 2020). The average total direct medical costs of patients with hypertension without other diseases ranged from IDR 213,284 to IDR 434,632 (Baroroh dan Fathonah 2017).

Measurement of the economic burden on people with hypertension needs to be done in Jambi City through cost of illness analysis. In 2019, there were 21,092 residents of Jambi City aged 20 years suffering from hypertension. The incidence of hypertension has always been in the top position from 2016 to 2020 with a percentage range of 13.69% to 23.63% of the 10 most diseases recorded in all health centers in Jambi Province based on the Jambi Provincial Health Office report in 2020. This number has the potential to lead to catastrophic events due to the economic burden borne by the community in financing the treatment and management of hypertension. The results showed that the pattern of public health spending for chronic disease sufferers in Jambi City with the status of independent JKN participants tended to cause catastrophic 31.3% (Solida n.d.). JKN participants have the right to get various services from the basic benefit package without incurring service fees, even though there are costs outside of JKN's coverage that should be lower than those who do not use JKN at all or do not have health insurance.

METHODS

This study is based on economic evaluation with a quantitative approach using a cross-sectional design. The variables studied are independent variables consisting of direct medical costs, direct non-medical costs, indirect costs and total costs due to disease which are calculated based on the perspective of hypertension sufferers. Cost calculations were carried out for two groups of hypertension sufferers which were grouped based on the payment method used, namely hypertension sufferers who used the National Health Insurance (JKN) and hypertension sufferers at their own expense.

The selection of respondents using purposive sampling technique with inclusion criteria of hypertensive patients who have suffered from hypertension for at least the past year and are willing to be respondents. While the exclusion criteria are respondents who use health insurance other than JKN. The study was conducted in two working areas of Public health center in Jambi City considering the region with the highest incidence of hypertension in Jambi City in 2022.

The sample in this study amounted to 165 respondents, based on the minimum sample calculation of the Lemeshow formula. The grouping of respondents adjusted the findings in the field, that the group of hypertensive patients who used JKN amounted to 111 respondents and hypertensive patients with their own pocket funds amounted to 54 respondents.

Research data collection was done by interview technique using research questionnaire instrument. The questionnaire contains questions about the components of direct medical costs, direct non-medical costs, and indirect costs measured from the perspective of patients (hypertensive patients). The calculation of the estimated cost uses the formula for calculating the cost of illness for one year by considering the average total costs incurred each month.

Formula :

$$\text{Total cost of hypertension} = A+B+C = \{[(a1+a2+a3+a4+a5+a6) \times f] + (b \times f) + (c1+c2) \times d\}$$

A = Direct medical expenses for one month

B = Direct non-medical costs for one month

C = Indirect costs for one month

a1 = administration fee

a2 = examination and consultation fee

a3 = drug costs from health facilities

a4 = laboratory cost

a5 = cost of nutrition poly and nutrition consultation

a6 = cost of self-purchased medicine

b = transportation costs for patients and/or families for one treatment

c1 = total daily income of the patient

c2 = total income per day of family accompanying patient for treatment

f = frequency of treatment

d = number of working days lost in one month due to treatment

Data processing using statistical software through the stages of descriptive statistical analysis and bivariate analysis of the difference test. Descriptive statistical analysis explains the distribution of costs on each cost component. Bivariate analysis to examine the difference in the average cost of the two groups of respondents and the impact of using JKN in reducing the economic burden due to hypertension. Bivariate analysis using T-test analysis. Prerequisites that are passed before conducting the T-test are to perform the Shapiro Wilk normality test and homogeneity test with a significance level of p value > 0.005.

RESULTS AND DISCUSSION

The results of univariate analysis, from 165 respondents studied, the age distribution of respondents is mostly in the age range of 61-70 years (51.5%). Almost all hypertension patients studied were the elderly age group. High risk

hypertension in the elderly group (Tirtasari dan Kodim 2019). There are more male hypertension patients (52.1%) compared to women (47.9%). Gender is also a factor that determines the risk of hypertension, previous studies have shown that men have a higher tendency to experience hypertension than women (Song et al. 2020).

Most of the respondents took their last education at the tertiary level (Diploma/S1/S2/S3), as many as 50.3%. The employment status of some respondents is not working (34.5%), because the majority of respondents are elderly hypertension sufferers who have entered retirement. Meanwhile, most of the job statuses are Civil Servants (52.1%) while the other 13.3% are self-employed. The patient's family income per month mostly exceeds the Jambi City Regional Minimum Wage (UMR) salary in 2022, which is IDR 2,900,000, by 63%. The income of people with hypertension per month will affect the health costs they will spend every month. One of the factors related to the pattern of family health financing is income (Solida n.d.). Families with income levels belonging to the well-off category will have the opportunity to arrange a larger allocation of health costs than families with income in the vulnerable category of poor.

Respondents were divided into two groups based on the method of payment, namely the JKN health insurance method and the out of pocket payment method. This grouping is to see how big the benefits of using JKN for hypertension sufferers who take advantage of health insurance organized by BPJS Health in providing health financing protection for participants. Respondents who always used JKN for the past 1 year to finance hypertension were 111 people (67.3%), while respondents who made self-payments (OOP) or general patients at the Public health center during the last 1 year for hypertension treatment were 54 people (32, 7%). The percentage of JKN users is higher than general patients because the JKN membership coverage in Jambi City has reached 94.55% in 2021.

Most people with hypertension who take outpatient treatment at the Public health center utilize JKN as the preferred method of financing. However, there are still some respondents who admit that they are JKN participants but -

Table 1
Frequency Distribution of Respondents Characteristics

Variables	Criteria	(f)	(%)
Age	- 41 - 50 years	2	1,2
	- 51 - 60 years	34	20,6
	- 61 - 70 years old	85	51,5
	- > 70 years old	44	26,7
Sex	- Male	86	52,1
	- Female	79	47,9
Education	- No school	4	2,4
	- Elementary school/equivalent	18	10,9
	- Middle school / equivalent	23	13,9
	- High school / equivalent	37	22,4
	- Diploma/S1/S2/S3	83	50,3
Work	- Doesn't work	57	34,5
	- Self-employed/Others	22	13,3
	- PNS/TNI/POLRI	86	52,1
Family Income	- < IDR 2,900,000	61	37,0
	- ≥ IDR 2,900,000	104	63,0
Payment Method	- Health Insurance (JKN)	111	67,3
	- Out of Pocket (OOP)	54	32,7

do not take advantage of their participation in health insurance because their membership status has been inactive due to arrears, unwillingness to pay BPJS health monthly premiums and reluctance to take care of active participation again, so they prefer to take treatment with the method of self-financing (OOP). This condition is a challenge for BPJS Kesehatan as the organizer of JKN in increasing the awareness of participants to remain active in JKN participation.

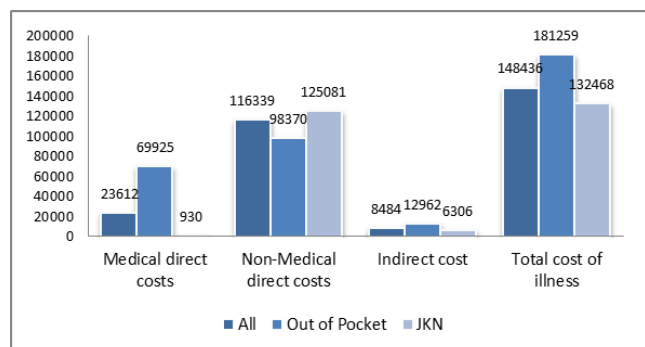


Figure 1
Components of the Average Cost of Patients with Hypertension

Based on the patient's perspective, the average direct medical costs incurred by hypertension sufferers for one year is IDR 23,612, with a range of costs of at least IDR 0, and a maximum of IDR 250,000. Direct medical costs are costs incurred by patients directly after getting an examination or health service action. In general, direct medical costs are in accordance with the nominal stated on the billing data at a health service facility, whether it is a health center, clinic or hospital. In this study, direct medical costs were calculated from the patient's perspective regarding the costs incurred for; administrative costs, examination and consultation fees, drug costs from health facilities, laboratory fees, costs for nutrition poly and nutrition consultations and costs for self-purchased drugs which are summed based on the frequency of costs incurred by patients for treatment of hypertension for one year.

For patients who use the out-of-pocket payment method, the average direct medical cost incurred is IDR 69,925, for one year with a range of costs incurred at a minimum of IDR 20,000, and a maximum cost of IDR 250,000, for one year. This amount is obtained from the results of data collection on the average general patient who takes outpatient treatment to the Public health center which will only cost IDR 5,000 for one examination and includes drug costs.

The average direct medical cost for hypertension sufferers who use JKN is IDR 930, with a range of direct medical costs of at least IDR 0, and a maximum of IDR 30,000. The distribution results show that the average direct medical costs incurred by hypertension sufferers who pay out of their own pocket are higher (IDR 69,925,) compared to the average cost incurred by hypertensive patients using JKN (IDR 930,).

Information from the Public health center officers who are responsible for the control of non-communicable diseases that the cost for treating hypertension in JKN patients is free or free. Hypertensive patients using JKN will not incur direct medical costs or IDR 0, if they only use outpatient services at the Public health center for one year.

Generally, patients from Public health center with hypertension in Jambi City will go to the Public health center once per month for treatment. This routine visit is carried out by most of the elderly who are active JKN participants to take routine hypertension medication every month.

However, there are also some hypertensive patients using JKN who still incur direct medical costs because they buy hypertension medicines at other health facilities that are needed and are not available at the Public health center up to a nominal value of IDR 30,000 for one year. This amount is still below the average direct medical costs that hypertension sufferers must pay at their own expense. This condition shows that some JKN participants still have the possibility to incur direct medical costs because some of the medical needs that are not covered by JKN are proven not to be in large nominal amounts.

For general patients who take treatment for hypertension, will only be charged an administration fee and medication with a total of IDR 5,000, in one examination. If you don't need other services, such as nutrition consultation or laboratory checks, the total direct medical cost for a general patient is IDR 60,000 per year for the treatment of hypertension if you only use outpatient services at the Public health center. The majority of general patients who use the out-of-pocket payment method are independent JKN participants who are not active due to their unwillingness to pay JKN contributions every month. The main reason put forward is the need for treatment or healing of diseases which are considered not comparable to the JKN contributions that must be issued every month.

The non-medical direct costs incurred by hypertension sufferers on average ranged from IDR 116,339, with the minimum cost range from IDR 0, to the most, which was IDR 480,000, for one year. Direct non-medical costs come from transportation costs incurred by people with hypertension and or their accompanying families for one visit to a health center or health facility multiplied by the frequency of medical visits every month, multiplied by 12 to obtain the total cost for one year.

For hypertensive patients using JKN, the average non-medical direct cost incurred for one year is IDR 125,081, with the minimum cost range being IDR 0, and the highest cost being IDR 480,000. In patients with hypertension who paid for it from their own pocket, the average non-medical direct cost incurred was IDR 98,370, with a minimum cost range of IDR 0, and the highest cost is IDR 288,000. The results of the distribution of each group of patients with hypertension, the average non-medical direct costs were more for hypertensive patients using JKN (IDR 125,081,) compared to hypertension sufferers who paid for it at their own expense (IDR 98,370,).

The difference in the average amount of direct non-medical costs will be greatly influenced by the frequency with which hypertension sufferers visit the Public health center or other health facilities to perform treatment or health services needed by hypertension sufferers. Hypertensive patients using JKN have had a special time for regular visits with hypertension sufferers to the Public health center every month, so that with this monthly routine, the average non-medical direct costs incurred are greater than those for hypertension sufferers who pay out of their own pocket.

In patients who pay their own expenses, the frequency of paying direct non-medical costs will fluctuate, adjusting to needs, so that transport costs are more varied and not routine. In addition, the distance factor and the vehicle used is also a determinant of the amount of direct non-medical

costs incurred. Most people with hypertension have access to a distance of no more than 5 km from the Public health center or health facility, therefore there are also hypertension sufferers who do not incur transportation costs because they do not have close walking distance to the Public health center or health facility. On the other hand, the farther the distance from the house to the Public health center or health facilities for the treatment of hypertension, the greater the transportation costs incurred.

The average indirect cost of hypertension sufferers is IDR 8,484, with a range of costs of at least IDR 0, and a maximum cost of IDR 700,000. Indirect costs are calculated based on the amount of income per day for patients with hypertension and the amount of income per day for accompanying families with hypertension for treatment multiplied by the number of working days lost in one month due to hypertension treatment.

The average indirect cost of hypertension sufferers with costs from their own pockets is IDR 12,962, with the minimum cost range being IDR 0, and the maximum cost is IDR 700,000. Meanwhile, the average indirect cost of JKN users with hypertension is IDR 6,306, with a value range of at least IDR 0, and the maximum cost is IDR 700,000. The results of the distribution of indirect costs show that the average indirect costs incurred by hypertension sufferers with costs from their own pockets are more (IDR 12,962,) compared to hypertensive patients using JKN (IDR 6,306,).

Indirect costs are closely related to the type of work of people with hypertension or the work of accompanying

families who accompany them during treatment. Most of the respondents had no work status, and most of the respondents made treatment visits independently without being accompanied by a working companion. Therefore, in this study, it was found that the indirect costs incurred by hypertension sufferers, both JKN users and costs from their own pockets (mode) were IDR 0.-.

The average total cost due to hypertension is IDR 148,436, for one year with the smallest total cost range is IDR 0, and the maximum total cost is IDR 1,060,000,. The total cost due to hypertension is a calculation of the sum of costs incurred for direct medical costs, direct non-medical costs and indirect costs incurred by people with hypertension. In this study, the period used for calculating COI is the total cost for one year.

For hypertension sufferers who pay out of their own pocket, the average total cost used for hypertension treatment for one year is IDR 181,259, with a range of the minimum total cost of IDR 48,000, and the maximum total cost of IDR 1,000,000. -. The average total cost incurred by hypertensive patients using JKN is IDR 132,468, with a total cost range of at least IDR 0, and a total cost of IDR 1,060,000 at most. The results of the distribution of total costs show that the average total cost of patients with hypertension with payments from their own pockets (IDR 181,259,) is more than that for hypertensive patients using JKN (IDR 132,468,).

Table 2
Differences in Average Costs Due to Hypertension on JKN Users and Payments from Your Own Pocket

Variables	Groups	n	Mean	SD	db	T(t-test)	P-value
Medical direct cost	JKN	111	1081.08	5174.474	163	22.465	0.000
	Out of pocket	54	69925.93	31522.290			
Non-medical direct cost	JKN	111	125081.08	78881.169	163	2.132	0.034
	Out of pocket	54	98370.37	67964.557			
Indirect cost	JKN	111	6306.31	66441.060	163	0.521	0.603
	Out of pocket	54	12962.96	95257.934			
Total cost	JKN	111	132468.47	116497.781	163	2.385	0.018
	Out of pocket	54	181259.26	136290.088			

The results of the normality test using the Shapiro-wilk sig value as a prerequisite for analyzing using the T test with a significance level > 0.05 resulted that the data were normally distributed and homogeneous. The measurement of the difference in the mean of each cost incurred for hypertension is based on the acquisition of a significance value of P-value <0.005 in Table 2. It can be concluded that there is a significant difference in the average direct medical costs between hypertensive patients using JKN (M=1081.08; SD=5174,474) with hypertension sufferers who pay out of pocket (M=69925.93; SD= 31522.290), t(163) = 22,465; p= 0.000. There is a significant difference in the average non-medical direct costs between hypertensive patients using JKN (M=125081.08; SD=78881.169) and hypertension sufferers who pay their own expenses (M=98370.37; SD= 67964.557), t(163) =2.132; p= 0.034. There is no significant difference in the mean indirect costs between hypertensive patients using JKN (M=6306.31; SD=66441.060) and hypertension sufferers who pay their own expenses (M=12962.96; SD= 95257.934), t(163) = 0.521; p= 0.603. There is a significant difference in the mean total costs due to disease between hypertensive patients using JKN (M=132468.47; SD=116497.781) and hypertension patients

who pay their own expenses (M=181259.26; SD= 136290.088), t(163) = 2.385; p= 0.018.

Costs incurred due to illness are economic burdens that must be borne by patients due to their illness. The costs caused by hypertension are not as much as other chronic diseases such as cancer which requires chemotherapy or kidney disease which requires hemodialysis treatment. However, in previous studies it was found that the average cost incurred by people with hypertension can also be an economic burden that can disrupt household health expenditures and lead to economic fragility. (Mulianingsih, Endarti, dan Widayanti 2021). This is caused by hypertension which is classified as a chronic disease that requires drug consumption throughout the year.

The direct medical costs of hypertension that have been financed through the JKN program organized by BPJS Health have a positive impact on the participants. The difference in the average direct medical costs between patients with hypertension who pay out of pocket (IDR 69,925,) and JKN users (IDR 930,) is IDR 68,995, so that in this study the results obtained that the use of JKN succeeded in reducing direct medical costs in patients with hypertension by 98.7%. In addition, the difference in the average direct medical costs

caused by the use of JKN ($p = 0.000$) is also evidence that the use of JKN has an impact in reducing the family's economic burden due to hypertension.

For JKN users, the most cost component they have to incur comes from direct non-medical costs including transportation costs for routine examinations or taking medicines to the Public health center every month, which are almost fixed and can be estimated. This treatment routine is a predisposing factor for patient compliance in taking medication and accelerating the healing of hypertension (Scuteri et al. 2021). Meanwhile, for hypertension sufferers who pay their own costs, the largest component of costs incurred comes from direct non-medical costs, accompanied by direct medical costs. The activity of checking or searching for hypertension drugs is more uncertain, because the group that does not have health insurance will only seek health services when needed, so that illness will determine the frequency of patients seeking treatment. The more uncontrolled hypertension due to drugs, sufferers even tend to seek treatment outside of formal health facilities so that it will increase the costs incurred and tend to worsen the condition of the illness. (Etika, Pristianty, dan Hidayati 2020).

This indicates that the frequency and behavior of hypertensive patients in seeking treatment at health facilities is the trigger for the difference in the average cost. If the intensity of hypertension sufferers in seeking treatment is reduced, the expenditure for direct non-medical costs will decrease. This is an input for stakeholders that the intensity of treatment for hypertension sufferers must be reduced by accelerating the healing of the disease which is supported by rational treatment. Previous studies have shown that the existence of the JKN program has resulted in health care providers taking advantage of better access to quality and affordable medicines (Soewondo dan Sarnantio 2019). So that through the use of JKN, it is hoped that the healing of the disease will be faster and reduce the costs incurred. Therefore, this finding becomes a recommendation for stakeholders to increase public understanding and awareness of the importance of participating in the JKN program and using the benefit package provided by JKN.

For people with hypertension, the use of JKN will help hypertensive patients more routinely in obtaining treatment to speed up healing so as to reduce costs. The already high coverage of JKN participation has not been the trigger for high JKN utilization (Noerjoedianto dan Subandi 2021). Previous studies have stated that the presence of JKN can have an impact in significantly reducing costs on household spending (Tarigan dan Suryati 2018). The government must be aggressive in socializing the benefits of JKN in maintaining the health and economic integrity of the household, especially in reducing the economic burden due to hypertension. Studies have shown that although the health financing system in Indonesia still uses out of pocket payment methods, Indonesia still has a way to develop a fair and equitable health financing system that ensures people with economically vulnerable poverty will be financially protected by maximize the universal coverage of the use of health insurance (Cheng et al. 2022).

CONCLUSIONS AND SUGGESTIONS

The average cost incurred by hypertension sufferers is IDR 148,346, per year. There is a significant difference in the average total cost of disease between hypertensive patients

using JKN and those with hypertension who pay out of pocket. The use of JKN reduces the economic burden on households with hypertension in direct medical costs. It is recommended to stakeholders to increase promotional activities, educate and increase public awareness about the importance of using health insurance that can help reduce the economic burden on families due to hypertension.

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Conflict of Interest Statement

The authors declared no conflict of interest in this study

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