ORIGINAL ARTICLE

Evaluation of health-seeking behaviour among older people during the COVID-19 pandemic in Bali and Yogyakarta, Indonesia

Ni Wayan Suriastini[1], Bondan Sikoki[1], Rodhiah Umaroh[2], Dani Alfah[1], Endra Dwi Mulyanto[1], Naryanta[1], Amalia Rifana Widiastuti[1], Kusmaintan Widya Lestari[1]

[1] SurveyMETER, Yogyakarta, Indonesia
[2] Departement of Economics, Faculty of Economics and Business, Universitas Pembangunan aNasional "Veteran" Yogyakarta, Yogyakarta, Indonesia

Corresponding Author: Rodhiah Umaroh **Email:** dhiah.basuki@gmail.com

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ABSTRACT

The COVID-19 pandemic poses the highest risk to older people with comorbidities, as the rapid spread of the virus reduces the community's access to formal healthcare facilities. This leads to the search for medical alternatives from several informal health sources. Therefore, this study aims to evaluate healthcare-seeking behaviour (HSB) among older people during the COVID-19 pandemic. It also aims to determine the factors influencing this behaviour. Data were obtained from Older People Community-Based Study in Bali and Yogyakarta province, Indonesia, between December 2020 and March 2021, using a phone survey technique. These were analyzed using bivariate (Chi-square test) and multivariate (logistic regression) analyses, to examine the association between the binary outcome of HSB types and explanatory factors. The result showed that 58.3% of the 1241 participants were female, as most were elementary graduates (31.5%) with the average age being 69 years old. During the pandemic period, 49.8% sought medical care at formal health facilities, with a 36% reduction observed in the visitations to formal wellness centres, compared to the pre-pandemic interval. In the multivariate logistic regression, some positive and significant factors were found to influence HSB in visiting formal health facilities. These factors included higher education level/university (AOR=2.04, $p<0.05$), unemployed status (AOR=1.36, $p<0.05$), unhealthy lifestyle (AOR=2.53, $p<0.001$), chronic hypertension disease (AOR=1.78, $p<0.001$), diabetes (AOR=3.73, $p<0.001$), and lung disorder (AOR=2.76, $p<0.01$). In addition, the proportion of inappropriate HSB was relatively high, leading to the necessity to apply the following alternative healthcare techniques, (1) Telephone consultation with professional clinicians, and (2) Provision of village-level care agents, to help monitor older persons' medical conditions during a health crisis.

Key words:
COVID-19, older people, health-seeking behaviour

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INTRODUCTION

The massive spread of the Coronavirus disease (COVID-19) has been globally observed since its initial emergence in Wuhan, Hubei Province, China, in late 2019. This disease is associated with a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus, where the infected people often develop a breathing illness or pneumonia-like disorders.[1] It is also found to spread rapidly through human-to-human transmission, leading to uncontrollable infectious cases. Based on this rapid distribution, the World Health Organization declared the COVID-19 disease a global pandemic status.[2] In Indonesia, the initial case of this disease was confirmed by the government on March 2, 2020.[3] This continuously increased and reached approximately 1.6 million in a year, with a 2.7% mortality rate. In this case, the risk is reportedly higher for older people aged 60 yrs and above, with 49% of hospitalized and fatal cases subsequently observed.[4]

To prevent the virus propagation, the government imposed a regulation, including social/physical distancing, partial lockdown, and mobile restrictions. In early 2020, governors and mayors in 4 provinces and 22 cities established Large-Scale Social Restrictions (PSBB), although the effect was very low. When the spread of the virus became uncontrollable, the Indonesian central government then implemented a similar strategy in early 2021, under a different program, i.e., an emergency lockdown (*PPKM darurat*).[5] These regulations caused people to stay at home due to the closure of public facilities, such as schools, marketplaces, and worship centres. Besides this, people were also advised to avoid mass crowds and were forbidden to hold any gatherings. Subsequently, a temporary domestic travel ban was implemented across some regions and cities.[6,7] During this time, a reduction was observed in the number of Indonesians visiting formal healthcare services, according to previous reports in several hospitals and primary medical centres. The visitations to the antenatal and maternal services also reduced by approximately 30% and 3%, compared to the pre-pandemic period.[8,9] Although the hospitals had excellent services, patients' visitations decreased in the primary healthcare centres.[10]

In the medical system, the authorities also prioritized emergencies and postponed routine health check-ups in formal wellness facilities.[11] However, the decrease in formal service utilization was influenced by the applicable regulations, stigma existence, and negative perceptions of the virus, as well as the patients and their families.[12] In this case, the infected people and their families experienced discrimination and were marginalized by the community due to the fear of viral contamination.[13] The appearance of cognitive dissonance also ensured the community's uncomfortable condition in using the health facilities. This was accompanied by the inefficiency of disseminating Covid-19 information, leading to a higher level of contamination fear.[14–16] In this situation, many people changed their behaviours toward using traditional medicine and treatment or buying medicine in a pharmacy without a prescription. This is due to the belief that the medications purchased are natural, effective, cheap and can be implemented independently.[1,17,18]

Irrespective of these conditions, inappropriate healthcare-seeking behaviour (HSB) is still not recommended during a health crisis. This is because the treatment from informal health sources should only be supplementary and not primarily implemented. The behavioural change is likely to increase the occurrence of the risk, especially for vulnerable groups such as older and diseased people. This was in line with multiple previous reports, where older

adults and people with underlying diseases such as hypertension, diabetes, respiratory disease, etc, are at greater risk of hospitalization and death from the virus.[19,20] According to Basic Health Research, 52% of older Indonesians had two or more diseases, predominately with four infectious disorders, including pneumonia, acute respiratory infections, tuberculosis, and diarrhoea.[21,22] These people tend to have more severe chronic conditions, with inadequate health checks worsening their health statuses.[3] In this case, the probability of undiagnosed COVID-19 reportedly increases and deteriorates the comorbidities. In addition, the risk for older people is likely doubled, since the fear of the virus appeared and indirectly affected mental health and insomnia elevation.[23] When the symptoms are treated late, increased mortality risk is expected.[24]

Several studies emphasizing healthcare-seeking behaviour (HSB) in an endemic or pandemic period were also carried out in developing and developed countries. During the COVID-19 pandemic, people's HSBs were modified, leading to increased self-medication and decreased hospital visitations in Lahore, Pakistan. In this context, misinformation, uncertainties, and panic attacks were also prominent factors.[25] In the Ethiopian tertiary care centre, this behaviour was subsequently transformed among the affected patients. This indicated more tangible effects for severe illness patients, fear of the virus, and transportation problems.[1] In Liberia, the facility-based delivery of healthcare was also significantly decreased during the Ebola outbreak.[26] Irrespective of these reports, limitations are still observed regarding the evaluation of care-seeking behaviour among older people, concerning their vulnerabilities to the Covid-19 infection. Therefore, this study aims to evaluate healthcare-seeking behaviour (HSB) among older people during the COVID-19 pandemic. It also aims to determine the factors influencing this type of behaviour. This is expected to substantially guide the formulation and implementation of several policies, which emphasize specific people's responses to health crises in developing countries.

METHODS

Data

Data were obtained from The Study of Community-Based Older people *(Studi Lanjut Usia Berbasis Komunitas)*, which was conducted by SurveyMETER. This subsequently collaborated with the Knowledge Sector Initiative in two Indonesian provinces, i.e., Bali and D.I. Yogyakarta, between December 2020 and March 2021. To prevent the spread of coronavirus, a phone survey technique was used in delivering the questions related to older people's health and socioeconomic conditions. In this case, the people aged 60 yrs and above were randomly selected through the listing process, from the integrated healthcare *(Posyandu lanjut usia)* in Yogyakarta and for Bali Provinces, the utilized sample was obtained from The Dementia Study in 2018.[27] Furthermore, 1241 of 1510 random participants were successfully interviewed after proportionate distribution to each district, i.e., 231 and 1010 in Bali and Yogyakarta, respectively. The remaining participants (269) had, however, failed to meet the required criteria due to several reasons, including phone number transformation, as well as the death and miscommunication of several older people to the older people was no longer able to communicate. The research has obtained ethical approval from the Ethics Committee of the Faculty of Medicine, Atma Jaya Catholic University, under No: 1447A/III/LPPM.PM.10. 05/12/2020.

Analytical strategy

To explore the health-seeking behaviour (HSB) among the participants, a questionnaire was used for asking questions about the preferable medical centres visited during the COVID-19 pandemic. In this case, eight options were provided, namely hospital (public and private), clinic, primary medical centre, private practice (doctor, midwife, etc.), older person integrated healthcare *(Posyandu lanjut usia),* pharmacy, other locations, and no action. Moreover, the participants were asked all the questions in the questionnaire, thus there were no missing data in this study. The health-seeking behaviour among the participants was also distinguished into two types, as observed in several previous studies.[28] In this case, appropriate HSB emphasized the consultation of participants at formal health facilities, such as hospitals, clinics, primary medical centres, private practices, and older person-integrated healthcare. Meanwhile, inappropriate HSB encompassed seeking treatment from informal health sources, including pharmacies, other locations (massage, traditional treatment, etc.), or no action. Based on the outcome variable, a binary option was utilized regarding the type of health facility visited by the participants during the pandemic, i.e., '1' and '0' when they decide to visit formal and informal medical centres, respectively.

The explanatory and predictor factors influencing HSB among older people included age, gender, education level, marital status, residential region (urban-rural), and income change. The participant's health condition also included the following, (1) self-reported health, (2) The status of activity in daily living (ADL) using the 10-items Modified Barthel Index,[29] and (3) Chronic diseases such as hypertension, cardiac, lung, and kidney diseases, diabetes, stroke, and cancer.

Data analysis

Data entry and analysis were performed using STATA version 17 software, through a descriptive statistical method (frequency and percentage). The bivariate analysis and a multivariate regression model were also employed to explore the association between the outcome and explanatory variables. Furthermore, the chi-square test was used in the bivariate analysis, with a logistic regression model applied to determine the factors influencing the HSB among older persons during the COVID-19 pandemic. Adjusted Odds Ratios and a 95% Confident Interval were also provided, to quantify the association in multivariate analysis.

RESULTS

Table 1 presents the socio-demographic characteristics of the participants, where the majority were aged 60-69 yrs (60.1%), with mean and maximum ages observed at 69 and 99 yrs, respectively. This indicated that 58.3% of the 1241 participants were female, with 31.5% and 39% being elementary school graduates and uneducated, respectively. More than half of them were also married in the survey (63.6%), with 52.8%, 57.9%, and 54.2% living in urban regions, experiencing an income decline, and presently employed during the pandemic period, respectively.

Table 1. Socio-demographic characteristics (N=1241)

	n	%
Age		
60-69	746	(60.1)
70 and older	495	(39.8)
Gender		
Male	517	(41.6)
Female	724	(58.3)
Education		
No schooling	484	(39.0)
Elementary	392	(31.5)
Junior high school	140	(11.2)
Senior high school	141	(11.3)
University	84	(6.8)
Marital status		
Unmarried	451	(36.3)
Married	790	(63.6)
Region		
Urban	656	(52.8)
Rural	585	(47.1)
Change in income		
Declined	719	(57.9)
Same/increased	522	(42.0)
Occupation		
Working	713	(52.4)
Not working	528	(42.6)

Figure 1 illustrates the preferences of the health facilities visited before and during the COVID-19 pandemic by the elderly. In this case, a decrease of about 36% was observed among the older people visiting formal health facilities, i.e., from 85.6-48.9% before and during the pandemic, respectively. Meanwhile, those seeking treatment from informal sources significantly increased during the Covid-19 period, almost four times higher than before the pandemic. Figure 2 describes the specific health facilities visited by the participants, with most of them consulting primary healthcare centres (45%), private practices (35%), and hospitals (24%) before the pandemic. Meanwhile, visitations slightly decreased significantly during the pandemic, especially in primary health and older people integrated healthcare, which had twofold and sevenfold reductions from pre-pandemic. This proved that the participants preferred to do nothing when sick, as observed by a sharp increase from 9% to 38%.

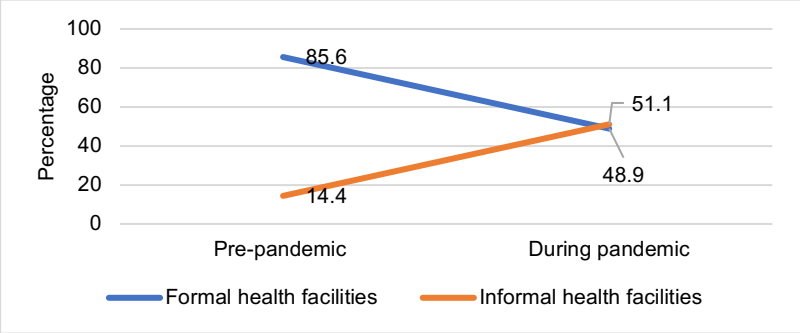

Figure 1. The proportion of health facilities visited before and during the COVID-19 pandemic.

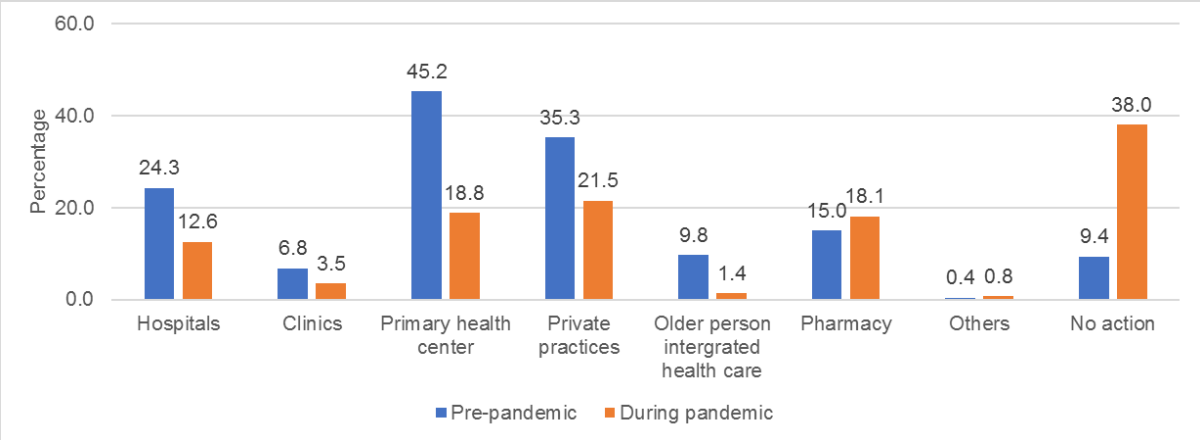

Figure 2. The proportion of types of health facilities visited before and during the COVID-19 pandemic

Table 2 presents the bivariate analytical results (Chi-square test), where more than half of the participants, aged 60-69 (51.8%) and males (50.8%), preferred to seek treatment from informal health sources during the pandemic. This indicated that the greater proportion of participants engaging in informal health consultations was dominated by those with elementary school level (52%), uneducated (54%), unmarried (51.5%), living in urban residences (51.6%), and presently employed (56.2%). Regarding the health conditions, the older people reporting unhealthiness and ADL limitations were more likely to seek healthcare from formal medical sources (68.2% & 56.3%), compared to their healthy and independent counterparts. Those with chronic diseases also consulted the formal facilities than the informal ones. In the bivariate analysis, the factors influencing the type of older people's HSB during the COVID-19 pandemic included education level (p0.027), occupation (p<0.001), self-reported health (p<0.001), ADL (p0.005), as well as the chronic diseases of hypertension (p<0.001), cardiac ailment (p<0.001), diabetes (p<0.001), lung disease (p<0.001), kidney disease (p0.003), and stroke (p0.012).

Table 2. Bivariate analysis of health-seeking behaviour among older persons during COVID-19 pandemic

Variables	Care from informal health sources N=634 (51.1%)	Care from formal health sources N=607 (48.9%)	p-value
Age			
60-69	387 (51.8)	359 (48.1)	0.490
70 and older	247 (49.8)	248 (50.1)	
Gender			
Male	263 (50.8)	254 (49.1)	0.900
Female	371 (51.2)	353 (48.7)	
Education			
No schooling	252 (52.0)	232 (47.9)	0.027
Elementary	214 (54.5)	178 (45.4)	
Junior high school	66 (47.1)	74 (52.8)	
Senior high school	72 (51.0)	69 (48.9)	
University	30 (35.7)	54 (64.2)	
Marital status			0.690
Married	407 (51.5)	383 (48.4)	
Unmarried	227 (50.3)	224 (49.7)	
Region			0.660
Urban	339 (51.6)	317 (48.3)	
Rural	295 (50.4)	290 (49.5)	
Change in income			0.590
Declined	372 (51.7)	347 (48.2)	
Same/increased	262 (50.1)	260 (49.8)	
Occupation			<0.001
Working	401 (56.2)	312 (43.7)	
Not working	233 (44.1)	295 (55.8)	
Self-reported health			<0.001
Healthy	543 (56.9)	411 (43.0)	
Unhealthy	91 (31.7)	196 (68.2)	
ADL			0.005
Independent	514 (53.2)	452 (46.7)	
Dependent	120 (43.6)	155 (56.3)	
Chronic disease			
Hypertension			<0.001
Yes	136 (37.2)	229 (62.7)	
No	498 (56.9)	378 (43.1)	
Cardiac			<0.001
Yes	21 (30.8)	47 (69.1)	
No	613 (52.2)	560 (47.8)	
Diabetes			<0.001

Variables	Care from informal health sources N=634 (51.1%)	Care from formal health sources N=607 (48.9%)	p-value
Yes	25 (21.9)	89 (78.0)	
No	609 (54.1)	518 (45.9)	
Lung disease			<0.001
Yes	10 (20)	40 (80)	
No	624 (52.4)	567 (47.6)	
Kidney disease			0.003
Yes	7 (24.1)	22 (75.8)	
No	627 (51.7)	585 (48.3)	
Stroke			0.012
Yes	13 (31.7)	28 (68.2)	
No	621 (51.7)	579 (48.3)	
Cancer			0.140
Yes	4 (30.7)	9 (69.2)	
No	630 (51.3)	598 (48.7)	

In this report, the problems experienced by the participants during formal health consultations before and during the pandemic were also determined, as depicted in Figs. 3a and 3b. This showed that the most common problem encountered before the Covid-19 outbreak was the long queues in obtaining medical care services. However, worry becomes the most prominent problem experienced by the participants during the pandemic. This was due to its sharp increase from 1.4% to 3.4% before and during the pandemic, respectively. These results were in line with Kuo, et. al., where a markedly progressive improvement was observed in the value of the older Taiwanese people's fear of the COVID-19 virus.[14] A moderate score of this fear was similarly found among the Iranian elderly people.[15] In addition, good preventive behaviour, as well as appropriate and efficient information dissemination was found to reduce the fear of COVID-19.[15,30]

Problems experienced by the older people during formal health facilities' consultations

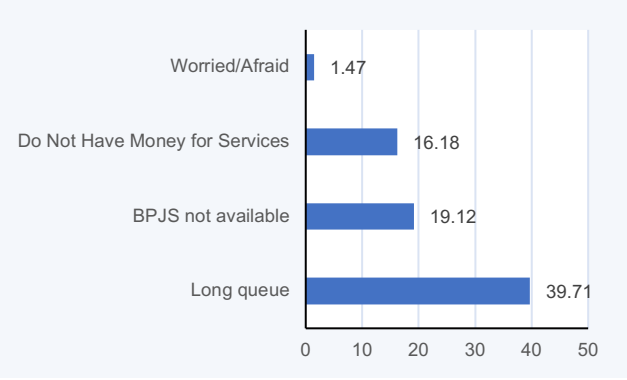

Figure 3a. Before the COVID-19 pandemic

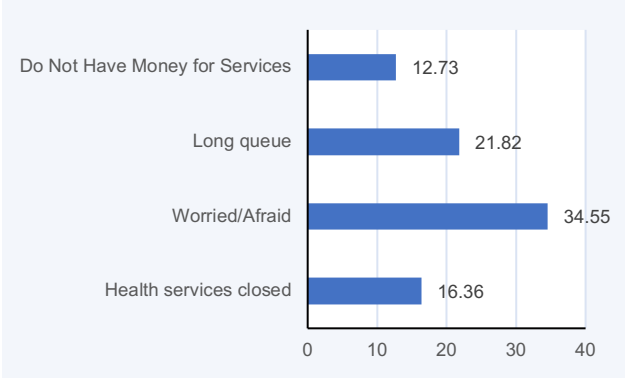

Figure 3b. During the COVID-19 pandemic

Multivariate logistic regression was performed to determine the explanatory factors influencing HSB among older people, as shown in Table 3. This indicated a positive and significant association between several variables and the usage of formal health facilities during the COVID-19 pandemic. These variables emphasized the participants graduating from university (AOR=2.04; p<0.05), presently

unemployed (AOR=1.36; p<0.05), reportedly unhealthy (AOR=2.53; p<0.001), as well as having hypertension (AOR=1.78; p<0.001), diabetes (AOR=3.73; p<0.001), and lung disease (AOR=2.76; p<0.01).

Table 3. Multivariate logistic regression of the factor associated with HSB among respondents

Variables	Coef.	SE	AOR[b]	[95% conf.	interval]
Education					
No schooling[a]			1.00		
Elementary	-0.09	0.15	0.91	0.68	1.22
Junior high school	0.19	0.21	1.21	0.79	1.84
Senior high school	-0.06	0.22	0.93	0.6	1.45
University	0.71	0.28	2.04*	1.17	3.53
Occupation					
Working[a]			1.00		
Not working	0.31	0.15	1.36*	1.02	1.81
Self-reported health					
Healthy[a]					
Unhealthy	0.93	0.16	2.53***	1.87	3.44
Chronic disease		.			
Hypertension	0.58	0.14	1.78***	1.35	2.35
Diabetes	1.32	0.25	3.73***	2.28	6.11
Lung disease	1.02	0.38	2.76**	1.3	5.82
Constant	-0.95	0.23	0.38***	0.24	0.6

*Note: [a] reference group; [b] Adjusted Odds Ratio; * p<0.05, ** p<0.01, *** p<0.001. Only significant results presented.*

DISCUSSION

This study aimed to determine the determinants of health-seeking behaviour among older people in Indonesia, where 48.9% of the 1241 participants used formal health facilities during the COVID-19 pandemic. This showed that the participants with appropriate HSB were slightly lower than those having inappropriate behaviours. This behavioural proportion was lower and relatively higher than those in Sleman Regency (Indonesia) and Malaysia, where approximately 72.4% and 19.5% utilized primary and public health services during a partial lockdown, respectively.[31,32] In addition, a 36% reduction was observed in the visits to formal health facilities during the pandemic compared to the pre-pandemic period. This proved that the utilization of formal facilities was not optimal throughout the pandemic. These results were in line with several previous studies, where 42% and 73% reductions were observed in ED and primary healthcare visits in the USA and Singapore, respectively.[33,34] This was due to the fear of the Covid-19 virus and the government's recommendation to postpone medical check-ups, except in emergencies. Based on the survey, approximately 34.5% of the participants were scared of the virus and being infected by medical staff at formal healthcare facilities. This was considerably in line with many reports, e.g., in Ethiopian hospitals, where fear caused a drastic reduction in follow-up treatment losses.[1] Hospital visits were also averted in Central Java provinces, Indonesia, due to high fear and stress levels.[10] In addition, the

significant reduction aligned with Italy's daily increasing mortality.[35]

The results also showed that the probability of seeking appropriate healthcare improved with the education level elevation. This indicated that the university-level participants were twice more likely to visit formal health facilities during the COVID-19 pandemic, compared to the uneducated elders. These were in line with a previous report, where education affected HSB through literacy and knowledge, which improved the essential awareness of health and seeking appropriate healthcare for older people.[36] It was also consistent with other related previous reviews, regarding the health-seeking behaviour among elderly people.[37,38] Moreover, the unemployed participants were more likely to be a significant predictor of better HSB, compared to those presently working. This was not in line with Feyisa et al., where financial dependency was the main reason, as employed older persons had a higher likelihood of accessing appropriate HSB.[39] Besides possessing better financial resources to access formal care sources, these employed people also had appropriate health conditions during the pandemic. This often led to the postponement of formal healthcare visits, with self-medication being adopted. These results were in line with some self-reported health reviews, where healthy older persons were more likely to skip formal healthcare visits than their unhealthy counterparts. This was because less urgent direct contact needs to be minimized between medical staff and patients, to eliminate staff-to-patient virus transmission and vice versa.[40,41] During the pandemic, many people were also conscious of their health, leading to the visitation of medical facilities by only unhealthy people.[42]

Based on the results, several chronic diseases were found as significant predictors of appropriate HSB during the COVID-19 pandemic. These underlying diseases included hypertension, diabetes, and lung disorder. According to several studies, hypertension, diabetes, chronic obstructive pulmonary disease (COPD), and asthma were among the top comorbidities in COVID-19 patients.[43,44] In Indonesia, hypertension and diabetes are the main comorbidities contributing to the mortality of these patients.[45] This confirmed that older people with these comorbidities were more vulnerable and severely ill, as well as have a higher death risk of COVID-19.[46] Based on the World Health Organization, unhealthy people should be better protected from this infection with immediate treatment from formal healthcare centres.[47] In addition, inappropriate HSB such as self-medication, traditional medicine, or no action, were likely to worsen symptoms, serious adverse effects, drug interaction, and microbial resistance, especially among vulnerable people.[48]

LIMITATION

This study only adopted a telephone survey scheme involving no face-to-face meetings, with the interviewer losing control of reading the participants' facial expressions for answer confirmations. In addition, the selected samples were only those reachable through the telephone. In this case, only those with good physical and cognitive conditions were also interviewed, allowing selection bias in the sample. Despite these limitations, this is still the first report to use telephone surveys on older people's health during the COVID-19 pandemic in Indonesia.

CONCLUSION

The COVID-19 pandemic impacted the health-seeking behaviour of older persons in Indonesian communities. Based on the results, approximately 49.8% of the 1241 participants utilized formal health

facilities for medical consultations. This showed that more than half of the people had inappropriate HSB during the COVID-19 pandemic. A 36% visitation reduction to formal health facilities was also observed throughout the pandemic. Furthermore, a major decrease was found in the number of visits to primary and older person integrated healthcare centres, although the inactivity of participants towards illness cure sharply increased. The fear of COVID-19 was also the most common problem experienced by older people, regarding the acquisition of formal healthcare services. These results subsequently indicated that high educational level, presently unemployed status, adverse self-reported health, and comorbidities such as hypertension, diabetes, and lung disease, were the positive and significant factors associated with appropriate HSB. Meanwhile, the portion of inappropriate HSB was relatively high. This leads to the necessity to apply alternative healthcare techniques such as professional clinicians' telephone consultation and the provision of village-level care agents, to help monitor older persons' health conditions during a medical crisis.

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