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Implementation of the Health Belief Model to Explore Elderly Health Post Service Utilization in Jaten, Karanganyar District, Central Java, Indonesia

Herry Putut Cahyono[1)], Setyo Sri Rahardjo[2)], Bhisma Murti[1)], Revi Gama Hatta Novika[1)], Ika Sumiyarsi Sukamto[3)]

[1)]Master's Program in Public Health, Postgraduate School, Universitas Sebelas Maret
[2)]Faculty of Medicine, Universitas Sebelas Maret
[3)]Study Program of Midwifery, Faculty of Medicine, Universitas Sebelas Maret

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ABSTRACT

Background: The utilization of elderly integrated health post (posyandu) visits remains a significant issue affecting the health status of older adults. Elderly health post service serves as a community-based health service platform designed to cater to the needs of the elderly population. However, the utilization of elderly health post service visits is still very low. This study aims to analyze the factors associated with the utilization of elderly health post service services based on the Health Belief Model (HBM).

Subjects and Method: The study employed a cross-sectional design and was conducted in Jaten District, Karanganyar, Central Java, Indonesia, from March to April 2025. Sampling was carried out using a multistage sampling method, involving 210 elderly individuals from 30 existing elderly health post service centers. The dependent variable was the utilization of elderly health post service. The independent variables were perceived susceptibility, perceived severity, perceived benefit, perceived barrier, cues to action, and self-efficacy. Data were collected using a questionnaire. Path analysis was employed for data analysis.

Results: The utilization of elderly health post service was significantly influenced by perceived susceptibility (b= 0.22; 95% CI= 0.09 to 0.35; p= 0.001), perceived barrier (b= -0.29; 95% CI= -0.42 to -0.15; p <0.001), and self-efficacy (b= 0.13; 95% CI= 0.01 to 0.26; p= 0.038). It was indirectly affected by perceived benefits, perceived susceptibility, perceived severity, and cues to action.

Conclusion: The utilization of elderly health post service services is directly influenced by perceived susceptibility, perceived barriers, and self-efficacy. Indirectly, the utilization of elderly health post service visits is affected by perceived barriers, perceived benefits, perceived susceptibility, perceived severity, and cues to action.

Keywords: health belief model, community health service, elderly health post service

Correspondence:
Setyo Sri Rahardjo. Faculty of Medicine, Universitas Sebelas Maret. Jl. Ir. Sutarmi 36A, Surakarta 57126, Central Java, Indonesia. Email: setyosri@staff.uns.ac.id.

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BACKGROUND

One of the notable outcomes of development, particularly in the health sector, is the increase in life expectancy, which has consequently contributed to a growing elderly population. The World Health Organization (WHO) projects that the global population aged 60 years and older will reach 2.1 billion by 2050 (BPS, 2023). In Indonesia, elderly individuals comprised 11.75% of the population in 2023 (BPS, 2024). In Karanganyar Regency, the elderly population reached 146,465 people (15.40% of the total population of 950,783) (Karanganyar Regency Health Profile, 2024). The rising number of elderly individuals may create new social challenges, particularly if they become dependent on the working-age population. Older adults are at increased risk of health problems, with the most prevalent being visual impairments, followed by arthritis and hearing disorders (Thinley, 2021; Anil et al., 2021). To address these challenges, the government and relevant policymakers have established social and health services at various levels aimed at improving the health status of older adults. At the community level, these services are delivered through elderly health post service centers (Ministry of Health of the Republic of Indonesia, 2021).

Jaten Subdistrict is one of the subdistricts in Karanganyar Regency and is served by two community health centers (Puskesmas). Puskesmas Jaten I is responsible for five villages, with a total elderly population of 6,606, while Puskesmas Jaten II oversees three villages, with 6,587 elderly residents. Within their service areas, Puskesmas Jaten I manages 17 elderly health post service centers and Puskesmas Jaten II manages 12 centers, which have now been consolidated into Integrated Primary Service (ILP) health post service. These health post service are held once a month, with an average elderly attendance rate of 15.75% at Puskesmas Jaten I (Puskesmas Jaten I Profile, 2024) and 16.27% at Puskesmas Jaten II (Puskesmas Jaten II Profile, 2024). Various efforts have been undertaken to increase elderly health post service utilization, including community outreach and education on the benefits of health post service services, friendly service provision by health workers and community cadres, and organizing elderly exercise programs. However, the utilization of these health services remains far below the expected target of 70% (Ministry of Health of the Republic of Indonesia, 2021).

The Health Belief Model (HBM) encompasses core concepts that aim to predict why individuals engage in specific actions to maintain, protect, and manage their health conditions. This model identifies and guides interventions based on four primary assessment aspects: perceived susceptibility (the extent to which elderly individuals feel vulnerable to diseases or health problems), perceived severity (the extent to which elderly individuals believe that potential illnesses may have serious consequences), perceived benefits (the extent to which elderly individuals believe that visiting a health post service provides advantages in preventing or addressing health issues), and perceived barriers (the extent to which elderly individuals perceive obstacles or difficulties in visiting a health post service). More recently, HBM theorists have incorporated self-efficacy (the extent to which elderly individuals feel confident in their ability to perform the actions required to visit a health post service) and cues to action (stimuli or triggers that motivate elderly individuals to take action, such as attending a health post service) as additional factors influencing health-related behavioral decisions (Green et al., 2020).

Based on the above discussion, this study is important to conduct in order to analyze the application of the Health Belief Model in the utilization of elderly health post service services in Jaten Subdistrict, Karanganyar Regency.

SUBJECTS AND METHOD

1. Study Design

The study employed an observational analytic design with a cross-sectional approach. Data collection was conducted in Jaten Subdistrict, Karanganyar Regency, from March to April 2025.

2. Population and Sample

The study population comprised elderly individuals residing in Jaten Subdistrict, Karanganyar Regency. A total of 210 elderly participants were randomly selected from 30 existing elderly health post service centers using a multistage sampling method (McCombes, 2023).

3. Study Variables

The dependent variable was the utilization of elderly health post service. The independent variables were constructs of the Health Belief Model, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

4. Operational Definition of Variables

The utilization of elderly health post service was defined as the number of visits made by elderly individuals to the health post service within the past six months, as recorded in the Child and Maternal Health book.

Perceived susceptibility refers to an individual's assessment of the risk of becoming ill, specifically the awareness of potential undesirable outcomes (Green et al., 2020).

Perceived severity refers to an individual's evaluation of the seriousness of a disease, condition, or undesirable outcome and its potential consequences (Green et al., 2020).

Perceived benefits refer to an individual's assessment of the positive outcomes resulting from the adoption of a promoted action (Green et al., 2020).

Perceived barrier refers to an individual's evaluation of factors that impede the adoption of a promoted action, such as visiting the elderly health post service (Green et al., 2020).

Cues to action are external or internal triggers that motivate elderly individuals to attend the health post service (Duah & Rosenberg, 2023).

Self-efficacy is an individual's confidence in their ability to overcome barriers (Duah & Rosenberg, 2023).

5. Study Instruments

The data were collected using a questionnaire. The questionnaire included Health Belief Model constructs, covering perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy, as well as the utilization of elderly health post service visits.

6. Data analysis

Univariate analysis was conducted on continuous data to obtain the mean, standard deviation, and minimum and maximum values. Bivariate analysis was performed to examine the influence of independent variables on the dependent variable using simple linear regression with a significance level of $p < 0.05$. Multivariate analysis was conducted to explore complex relationships among variables, including direct and indirect effects, using path analysis.

7. Research Ethics

Ethical issues in the study, including informed consent, anonymity, and confidentiality, were carefully addressed throughout the research process. Ethical

approval was obtained from the Research Ethics Committee at Dr. Moewardi Hospital, Surakarta, Indonesia, under approval number 425/III/HREC/2025, dated March 5, 2025.

RESULTS

1. Univariate analysis

The univariate analysis in this study described the frequency distribution of sex, age, and utilization of elderly health post service visits. Table 1 presents the mean, standard deviation, minimum, and maximum values of the study subjects. The average age of respondents attending the elderly health post service was 67 years, with the youngest being 61 years and the oldest 95 years. In the past six months, the average number of health post service visits was five, ranging from a minimum of one visit to a maximum of six visits.

Table 1. Age Characteristics and Utilization of Elderly Health Post Service Visits Among Respondents

Variables	Mean	SD	Minimum	Maximum
Age (years old)	67.04	6.57	61	95
Utilization of elderly health post service	5.30	11.1	1	6

Based on Table 2, of the 210 respondents, the majority were female, totaling 160 individuals (76.19%), while males accounted for 50 individuals (23.81%).

Table 2. Participants' Gender Characteristics

Variabel	Category	n	%
Sex	Male	50	23.81
	Female	160	76.19

2. Bivariate analysis

Table 3 shows that perceived susceptibility (b= 0.06; 95% CI= -0.01 to 0.14; p= 0.039), perceived severity also had a positive effect on the utilization of elderly health post service visits (b= 0.11; 95% CI= -0.03 to 0.24; p= 0.025), perceived benefit (b= 0.17; 95% CI= 0.00 to 0.33; p= 0.048), cues to action (b= 0.08; 95% CI= -0.03 to 0.19; p= 0.150), and self-efficacy had a positive effect on the utilization of elderly health post service visits (b= 0.36; 95% CI= 0.09 to 0.62; p= 0.007) had a positive effect on the utilization of elderly health post service. Perceived barrier had a negative and significant effect on the utilization of elderly health post service (b= -0.11; 95% CI= -0.17 to -0.47; p= 0.001).

Table 3. Results of Simple Regression Analysis of the Relationship Between Elderly Health Post Service Utilization and Each Health Belief Model Construct

Variables	b	95% CI		p
		Lower limit	Upper limit	
Perceived susceptibility	0.06	-0.01	0.14	0.039
Perceived severity	0.11	-0.03	0.24	0.025
Perceived barrier	-0.11	-0.17	-0.47	0.001
Perceived benefit	0.17	0.00	0.33	0.048
Cues to action	0.08	-0.03	0.19	0.150
Self efficacy	0.36	0.09	0.62	0.007

3. Multivariate analysis

Table 4 shows that perceived susceptibility had a positive effect on the utilization of elderly health post service visits (b = 0.22; 95% CI= 0.09 to 0.35; p= 0.001). This indicates that higher perceived susceptibility, as a construct of the Health Belief Model, is associated with an increase of 0.22 units in health post service utilization.

Perceived barriers had a negative effect on health post service utilization (b = -0.29; 95% CI = -0.42 to -0.15; p < 0.001), indicating that lower perceived barriers are associated with a 0.29-unit increase in utilization.

Self-efficacy had a positive effect on health post service utilization (b = 0.13; 95% CI = 0.01 to 0.26; p = 0.038), suggesting that higher self-efficacy is associated with a 0.13-unit increase in utilization.

Perceived barriers had a negative effect on self-efficacy (b = -0.17; 95% CI = -0.30 to -0.04; p= 0.009), indicating that higher perceived barriers reduce self-efficacy by 0.17 units.

Perceived benefits had a positive effect on self-efficacy (b= 0.18; 95% CI= 0.05 to 0.31; p= 0.007), showing that higher perceived benefits increase self-efficacy by 0.18 units.

Cues to action had a positive effect on self-efficacy (b = 0.14; 95% CI = 0.01 to 0.27; p = 0.031), indicating that stronger cues to action increase self-efficacy by 0.14 units.

Perceived susceptibility had a positive effect on perceived barriers (b = 0.35; 95% CI= 0.24 to 0.47; p < 0.001), suggesting that higher perceived susceptibility is associated with a 0.35-unit increase in perceived barriers.

Perceived severity had a positive effect on perceived benefits (b = 0.34; 95% CI = 0.22 to 0.45; p <0.001), indicating that higher perceived severity is associated with a 0.34-unit increase in perceived benefits.

Table 4. Path Analysis Results of the Application of the Health Belief Model in Elderly Health Post Utilization

Dependent variables	Independent variables	b	95% CI		p
			Lower limit	Upper limit	
Direct effect					
Utilization of elderly health post service	→Perceived susceptibility	0.22	0.09	0.35	0.001
	→Perceived barrier	-0.29	-0.42	-0.15	<0.001
	→ Self-efficacy	0.13	0.01	0.26	0.038
Indirect effect					
Self-efficacy	→ Perceived barrier	-0.17	-0.30	-0.04	0.009
	→ Perceived benefit	0.18	0.05	0.31	0.007
	→ Cues to action	0.14	0.01	0.27	0.031
Perceived barrier	→ Perceived susceptibility	0.35	0.24	0.47	<0.001
Perceived benefit	→ Perceived severity	0.34	0.22	0.45	<0.001

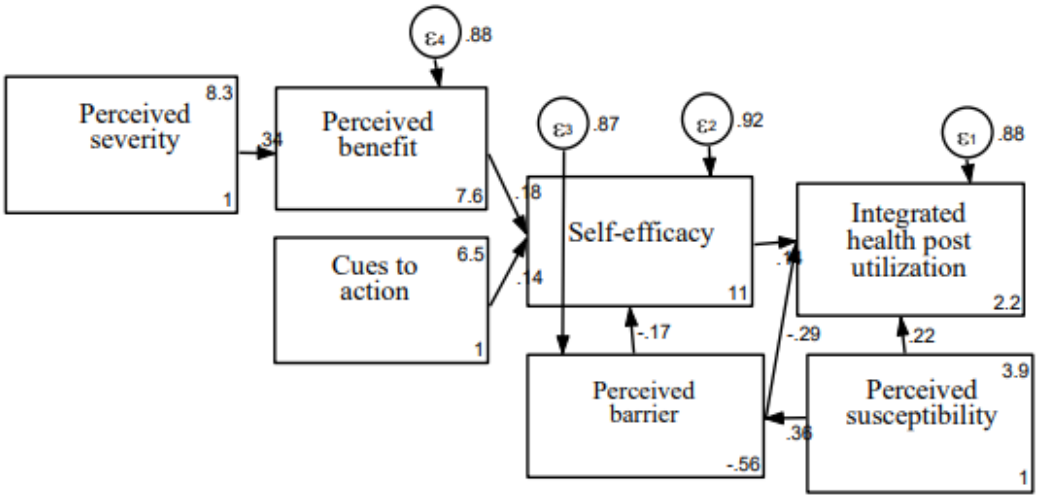

Figure 1. Path Analysis Diagram of the Application of the Health Belief Model Theory in the Utilization of Elderly Health Post Services

DISCUSSION

1. The Effect of Perceived Susceptibility on the Utilization of Elderly Health Post Services

This study found a positive effect of perceived susceptibility on the utilization of elderly health post service visits. This finding aligns with the study by Luquis and Kensinger (2019), which identified a relationship between perceived susceptibility to health issues and the use of preventive services in the United States. Similarly, Prihatiningsih et al. (2020) reported that perceived vulnerability to disease was associated with the utilization of health services among the elderly. Older adults who perceive themselves as frail or at high risk of health problems are more likely to participate actively in health post service programs. Key factors contributing to this vulnerability include economic inactivity, existing health problems, and the need for a caregiver.

Furthermore, Xie et al. (2020) found that elderly individuals who perceive themselves at high risk of health decline are more inclined to utilize community and primary health services. Older adults who feel susceptible to illness are more motivated to monitor their health regularly. When elderly individuals recognize their vulnerability to disease or declining physical function, they are more motivated to seek protection or preventive measures, such as attending health post service visits. This is consistent with the findings of Nurdin et al. (2024), which indicate that elderly individuals who perceive themselves at high risk for conditions such as hypertension or diabetes are more active in participating in health post service activities due to concerns about potential disease complications.

2. The Effect of Perceived Barriers on the Utilization of Elderly Health Post Services

This study found a negative effect of perceived barriers on the utilization of elderly health post service visits. This finding is consistent with Duah and Rosenberg (2023), who reported a significant negative relationship between perceived barriers to seeking health services and the actual use of health services. Perceived barriers are a strong predictor of low compliance with preventive health services. Similarly, Putra et al. (2023) noted that barriers such as distance, discomfort, social stigma, lack of

family support, and transportation issues are associated with lower visit rates to health post service. Gupta et al. (2019) also found that obstacles such as cost, accessibility, and feelings of fear or embarrassment lead elderly individuals to avoid community health services.

Ayuningsih et al. (2015) emphasized that although older adults are at high risk for disease and seek prevention through early detection at health post service, factors such as the location of the health post service, work commitments, feelings of being unneeded, and attitudes of health workers act as psychological barriers, influencing elderly perceptions and limiting their attendance. Furthermore, Kim et al. (2018) reported that perceptual barriers, such as believing that routine check-ups are unimportant and lacking trust in community services, serve as major obstacles in elderly perceptions of health post service utilization.

3. The Effect of Self-Efficacy on the Utilization of Elderly Health Post Services

This study found a positive effect of self-efficacy on the utilization of elderly health post service visits. This finding is consistent with Duah and Rosenberg (2023), who reported a significant positive relationship between self-efficacy and the use of health services; individuals with higher self-efficacy are more likely to take initiative in seeking and utilizing available health services.

Similar results were reported by Ling et al. (2023), emphasizing that self-efficacy is a strong predictor of treatment adherence, particularly among the elderly. This supports the present study's finding that older adults who believe in their ability to maintain their health are more likely to actively utilize health post service services. Self-efficacy, defined as an individual's confidence in their ability to organize and execute actions to achieve specific goals, plays a critical role in health behaviors, including the use of health services.

Prabasari (2021) noted that self-efficacy is a dominant psychological component influencing elderly individuals' decisions to utilize health post service services. Older adults with high self-efficacy tend to be more aware of the importance of health maintenance and more motivated to seek medical assistance when experiencing health problems. They feel capable of making health-related decisions, such as when to undergo check-ups, selecting appropriate health facilities, and following medical procedures. High self-efficacy enables individuals to overcome barriers such as fear of diagnosis, costs, stigma, or the complexity of the health system. Individuals with high self-efficacy are more likely to adhere to treatment and routine health monitoring.

Additionally, Charkhchi et al. (2018) found that among elderly women, self-efficacy positively correlated with adherence to mammography screenings. Those confident in their health-related decision-making were more likely to undergo regular health check-ups.

4. The Effect of Perceived Barriers on Self-Efficacy

This study found a negative effect of perceived barriers on self-efficacy. This finding aligns with Eun et al. (2008), who reported that perceptions of physical and social limitations hinder older adults in developing confidence to undergo routine health check-ups or attend community health services. Elderly individuals with physical limitations, such as reduced mobility, vision, or hearing, often experience lower self-confidence. Similarly, social limitations, such as rarely leaving the house or interacting with the surrounding com-

munity, reduce their confidence in attending community-based health services.

Djabar et al. (2021) also reported a relationship between perceived barriers and adherence to visits to elderly health post service centers. Among the elderly, high self-efficacy enables them to access health services more confidently, overcome obstacles, and follow medical advice.

Consistent with Muflikhah et al. (2016), higher perceived limitations among older adults are associated with lower utilization of health post service services. These barriers include the distance required to reach health post service centers and the costs incurred to participate. Perceived barriers such as transportation difficulties, financial constraints, physical limitations, and lack of social support reduce elderly individuals' confidence in their ability to perform health-promoting actions (self-efficacy), ultimately leading to lower health post service attendance.

5. The Effect of Perceived Benefits on Self-Efficacy

This study found a positive effect of perceived benefits on self-efficacy. This finding aligns with Muflikhah et al. (2016), who reported that the greater the perceived benefits, the higher an individual's motivation (self-efficacy) to participate in elderly health post service and utilize its services. Self-efficacy acts as a mediator, determining the extent to which older adults actually attend and make use of health services.

Lee et al. (2022) found that elderly individuals who perceive community health services as beneficial exhibit higher self-efficacy and are more active in making regular visits to health centers. The perception of benefits from preventive services plays a crucial role in enhancing participation, particularly when combined with confidence in one's ability to attend and follow service procedures. Perceived benefits are an important predictor of health behavior, but their effect is often strengthened through self-efficacy. Individuals are more likely to take action when they believe that the action is beneficial and that they are capable of performing it.

This study reinforces the notion that high perceived benefits alone do not automatically lead to action; they must be accompanied by self-efficacy. Older adults who recognize the benefits of health post service but lack confidence in their ability to attend (due to frailty, limited mobility, or dependence on others) may not participate. Therefore, health post service programs should not only highlight the benefits of services but also strengthen elderly individuals' confidence through educational and social approaches.

6. The Effect of Cues to Action on Self-Efficacy

This study found a positive association between cues to action and self-efficacy. This finding is consistent with the study by Chen et al. (2019), which reported that cues to action do not have a direct effect on healthy behavior but can strengthen individual beliefs, including perceived susceptibility, perceived severity, perceived benefits, and self-efficacy, which ultimately facilitate the development of healthy behaviors. This result is also in line with the study by Djabar et al. (2021), which indicated that older adults' intention to attend integrated health posts for the elderly represents a preliminary step preceding the actual behavior of active participation. Field evidence suggests that most older adults who intend to actively participate in elderly health posts perceive participation as a means of maintaining their health. Strong cues to action, such as having a regular visit plan and receiving information from health workers, substan-

tially influence older adults' decisions to attend these services. Positive intentions are likely to enhance motivation to engage in beneficial behaviors, which in turn yield positive outcomes. When such behaviors are performed consistently, they may become internalized and sustained over time, ultimately contributing to the formation of individuals with enduring positive health behaviors.

Kim et al. (2023) reported that self-efficacy has a strong positive correlation with dementia prevention behaviors. In addition, cues to action were found to contribute significantly to such behaviors, both directly and indirectly through the enhancement of self-efficacy. When older adults receive strong cues to action, such as obtaining information from health workers or having a regular visit plan, these cues promote higher levels of self-efficacy, namely older adults' confidence in their ability and entitlement to attend integrated health posts for the elderly. Increased self-efficacy subsequently leads older adults to feel more confident and motivated, ultimately resulting in more active and regular utilization of health post service services. Although cues to action play an important role, their effectiveness in improving the utilization of elderly health posts is highly dependent on self-efficacy. Therefore, health programs should provide clear and consistent cues to action while simultaneously strengthening older adults' self-efficacy through education, social support, and recognition of their participation.

7. The Effect of Perceived Susceptibility on Perceived Barriers

This study found a positive effect of cues to action on self-efficacy. This finding aligns with Chen et al. (2019), who reported that cues to action do not directly influence health behaviors but can strengthen individual beliefs, such as perceived susceptibility, perceived severity, perceived benefits, and self-efficacy, ultimately promoting the development of healthy behaviors.

Similarly, Djabar et al. (2021) noted that the intention of elderly individuals to participate in health post service activities serves as a preliminary step before active engagement. Field observations indicate that most older adults who intend to participate in health post service programs do so with the motivation of maintaining their health. Strong cues to action, such as having a scheduled visit plan and receiving information from health workers, significantly influence their decision to attend health post service. Positive intentions foster motivation, which leads to positive actions; repeated actions internalize into consistent behavior, ultimately shaping a health-conscious individual.

Kim et al. (2023) reported that self-efficacy is strongly and positively correlated with dementia-prevention behaviors. Furthermore, cues to action contribute significantly to these behaviors, both directly and indirectly, by enhancing self-efficacy. When elderly individuals receive strong cues to action (e.g., information from health workers or a regular visit schedule), their self-efficacy—confidence in their ability and eligibility to attend health post service —increases. Enhanced self-efficacy makes elderly individuals more confident, motivated, and ultimately more active in utilizing health post service services regularly.

Thus, cues to action are essential, but their effectiveness in increasing health post service utilization heavily depends on self-efficacy. Health programs should provide clear and consistent cues to action while simultaneously strengthening elderly self-efficacy through education, social support, and recognition of their participation.

8. The Effect of Perceived Severity on Perceived Benefits

This study found a positive association between perceived severity and perceived benefits. This finding is consistent with the study by Duah and Rosenberg (2023), which reported that higher levels of perceived disease severity are associated with greater utilization of health care services. Older adults tend to believe that advancing age is accompanied by increasing disease severity, and they often perceive that illnesses that were previously easy to treat become more severe and difficult to cure in later life. Similarly, Muflikhah et al. (2016) reported that older adults perceive their illnesses as becoming more serious compared with when they were younger, which in turn encourages them to engage more actively in preventive efforts to avoid illness.

Handayani et al. (2024) demonstrated that individuals with a high perception of disease severity are more likely to utilize health care services, particularly in the context of infectious diseases such as tuberculosis. Perceived severity refers to an individual's belief regarding the seriousness of a disease or health condition. It constitutes an important determinant that motivates individuals to engage in preventive or curative actions. While perceived severity functions as an emotional trigger, perceived benefits act as a catalyst for action. Therefore, to enhance the utilization of health care services, public health campaigns should emphasize both the severity of the disease and the tangible benefits of available health care services.

This finding is consistent with Rochmah et al. (2021), who reported that perceived benefits significantly strengthen the effect of perceived severity on visits to health care facilities. Perceived benefits reflect the extent to which individuals believe that a particular action, such as accessing health services, will reduce the risk or impact of disease. When individuals perceive that treatment or health examinations will yield positive outcomes, their likelihood of seeking health care services increases. Perceived severity alone is insufficient to motivate health service utilization; rather, perceived severity can enhance the use of health care facilities through perceived benefits by shaping the belief that medical actions or health services constitute a valuable solution for preventing or managing health risks that are perceived as serious.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in this study.

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