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Association Between Health Beliefs and Medication Adherence Among Hypertensive Clients in A Community Setting: A Cross-Sectional Study

Monica Artha Jelita[1], Dewi Hartinah[2], Muhamad Jauhar[3] ✉, Noor Eswanti[4]

[1, 2, 3, 4] Faculty of Health Sciences, Universitas Muhammadiyah Kudus, Jl. Ganesha Raya No. 1 Purwosari Kudus, Indonesia
✉ Correspondence Author : muhamadjauhar@umkudus.ac.id

ABSTRACT

Background.Non-adherence to hypertension treatment remains a major public health concern and is influenced by patients' health beliefs.
Objective.This study aimed to analyze the relationship between health beliefs and medication adherence among hypertension clients in the community.
Methods. A correlational study with a cross-sectional design was conducted in a hypertension locus village in Kudus Regency in April 2025. A total of 80 hypertension clients were recruited using total sampling. Health beliefs were measured using the Health Belief Model (HBM) questionnaire, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. Medication adherence was assessed using the Morisky Medication Adherence Scale (MMAS-8). Data were analyzed using the chi-square test.
Results. The results showed a significant relationship between health beliefs and medication adherence ($p < 0.001$).
Conclusions. Stronger health beliefs were associated with higher adherence to hypertension treatment. These findings highlight the importance of strengthening health beliefs to improve medication adherence and support effective hypertension management in the community.

KEYWORDS
Health Belief Model; hypertension; medication adherence; community nursing

INTRODUCTION

Hypertension, or high blood pressure, is one of the most pressing global health problems of the 21st century and a major risk factor for cardiovascular disease, stroke, and kidney failure. More than 1.28 billion adults worldwide are affected by hypertension, with the majority of cases occurring in low- and middle-income countries. Often referred to as the "silent killer," hypertension frequently presents without noticeable symptoms until serious complications occur (Adeke et al., 2024).

The World Health Organization (WHO) estimates that by 2023, approximately 33% of the global population will experience hypertension, with nearly two-thirds of cases occurring in developing countries (WHO, 2023). In Indonesia, the prevalence of hypertension among individuals aged over 18 years reached 30.8% based on the 2023 Indonesian Health Survey (Survei Kesehatan Indonesia, 2023). In Central Java, an estimated 8,554,672 people (38.2%) aged 15 years and over were affected by hypertension in 2023, with 78.51% having received medical treatment (Dinkes Jateng, 2023).

At the regional level, hypertension remains a significant public health problem in Kudus Regency. Data from the Kudus District Health Office reported that 232,914 individuals (26.8%) aged 15 years and over had hypertension in 2023, with 94.1% receiving medical treatment (Dinas Kesehatan Kabupaten Kudus, 2023). Furthermore, interviews conducted with non-communicable disease officers at the Undaan Community Health Center on December 16, 2024, revealed 11,188 hypertension cases in 2024, consisting of 5,282 men and 5,906 women, indicating

a high burden of hypertension at the community level.The high prevalence of hypertension is influenced by various factors, including genetic predisposition, obesity, excessive salt consumption, smoking, stress, alcohol intake, and poor sleep patterns, as well as limited public knowledge and awareness regarding hypertension (Kunanti et al., 2024). National data show that medication adherence remains suboptimal, with 32.3% of hypertensive clients taking medication irregularly and 13.3% not taking medication at all, emphasizing the need for improved hypertension management (Kunanti et al., 2024). Research conducted by the Ministry of Health in 2019 showed that 32.3% of hypertensive clients used medication irregularly, while 13.3% of them did not take it at all, indicating the need for increased education and awareness about hypertension management (Adira et al., 2024).

Hypertension not only affects individuals' health but also imposes a substantial burden on families, communities, and healthcare systems. Individuals with hypertension may experience reduced quality of life, long-term complications, and financial strain. At the societal level, hypertension contributes to increased morbidity and mortality, which can negatively impact workforce productivity (Kania Rahsa Puji et al., 2024). Governments and healthcare systems also face significant economic burdens related to healthcare services, medication provision, and prevention programs (Marbun et al., 2024).

Despite the implementation of the National Health Insurance system (BPJS Kesehatan), households continue to bear considerable financial burdens related to hypertension care. Health insurance has been reported to reduce only 12.97% of catastrophic health expenditures, with more than 50% of non-food household spending allocated to inpatient care. In Pamekasan Regency, 65% of hypertensive clients registered as BPJS PBI participants still incurred out-of-pocket expenses, with average direct and indirect costs reported. Additionally, outpatient and monthly medical costs for hypertensive clients remain substantial (Solida et al., 2022).

Medication non-adherence significantly worsens hypertension outcomes by increasing the risk of uncontrolled blood pressure, heart failure, stroke, and kidney failure. It may also lead to unnecessary additional therapy, increased emergency department visits, and higher hospitalization rates, thereby increasing healthcare costs (Rosaline & Rahmah, 2023). Data from Riskesdas indicate that factors contributing to non-adherence include clients' perceptions of being healthy, forgetfulness, preference for traditional medicine, irregular healthcare visits, financial constraints, medication side effects, and limited drug availability (Adira et al., 2024).

Clients' beliefs and perceptions regarding their illness and treatment play an important role in shaping medication adherence behavior. This perspective aligns with the Health Belief Model (HBM), which emphasizes individual beliefs and perceptions as key determinants of health behavior(Wahyuni & Iqbal, 2023). The HBM consists of several constructs, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action, which together provide a comprehensive framework for understanding

adherence behavior in chronic conditions such as hypertension.

Previous studies have demonstrated a positive relationship between the Health Belief Model and medication adherence. Research by (Bibi & Purwanti, 2024) found a strong correlation between HBM and medication adherence among clients with Diabetes Mellitus, while a study by (Laili et al., 2023) eported a significant relationship between HBM and medication adherence among hypertensive clients in a community setting. However, existing studies have primarily focused on clinical or limited community contexts, with insufficient evidence from community-based nursing research applying the HBM framework among hypertensive clients in rural or semi-rural areas in Indonesia.

Nurses play an essential role as caregivers, educators, and researchers in hypertension management. Through health education, counseling, and community-based interventions, nurses can influence patients' health beliefs and adherence behaviors. Therefore, community-based nursing research using the Health Belief Model is needed to strengthen evidence-based interventions targeting medication adherence.

Based on these considerations, this study aims to analyze the relationship between health beliefs, as conceptualized by the Health Belief Model, and medication adherence among hypertensive clients in the community.

METHODS

The study design used correlation analysis with a cross-sectional approach. The independent variable was health belief, and the dependent variable was medication adherence. This study was conducted in a village in Kudus Regency, a hotspot for hypertension, in April 2025. A sample of 80 hypertensive clients was selected using a total sampling technique. Where this sample represents the entire hypertensive population in Medini village. Inclusion criteria included clients diagnosed with hypertension by medical personnel, blood pressure >140/90, age >18 years, undergoing hypertension medication, and being able to read and write. Exclusion criteria included clients with mental or cognitive disorders and not participating in the complete research process.

The research instruments used included three questionnaires. First, the MMAS-8 questionnaire (*Morisky Medication Adherence Scale*) measures medication compliance in hypertensive clients, which is a standard questionnaire developed by *Donald E. Morisky and* colleagues in the 2008 (Imanda et al., 2021). The MMAS-8 consists of 8 questions with different scoring systems for each item (Hardani et al., 2025), categorized into compliant (score 6–8) and non-compliant (<6). The validity and reliability tests of this questionnaire have been conducted by (Zhang et al., 2021) with high validity results ($r=0.845$; $p<0.001$) and reliability ($r=0.845$; $p<0.001$). *Cronbach's Alpha*=0.625. However, the Cronbach's Alpha value of 0.625 indicates moderate internal consistency, which may reflect the heterogeneity of adherence behaviors assessed by the questionnaire. Second, the HBM questionnaire (*Health Belief Model*) consisting of 37 questions (Rusmadi et al., 2021) with a 4-point Likert scale, categorized into high (score ≥64) and low (<64) perception levels. The cut-off value of ≥64 was determined based on the median score of the total

HBM scale, which has been commonly used to classify respondents' perception levels in community-based studies. Validity testing using Pearson correlations shows a value of r≥0.361 at α=0.05 and very good reliability with Cronbach's *Alpha* overall at 0.927, including every dimension above 0.7. Although odds ratios were not calculated in this study, previous studies have reported that individuals with higher health beliefs have greater odds of adhering to hypertension treatment, indicating a stronger likelihood of medication adherence among those with positive health beliefs.

RESULT AND DISCUSSION

Characteristics of Hypertensive Clients

Table 1. Characteristics of Hypertensive Clients Based on Age and Length of Hypertension History (n=80)

Variables	Mean	Median	Min	Max	SD
Age	53.28	52	25	85	11.3
Long History of Hypertension	2.91	2	1	25	3.516

Based on table 1, it shows that the average age of hypertensive clients is 53.28 years, the median is 52 years with a standard deviation of 11.3, the highest age is 85 years, and the lowest age is 25 years. Meanwhile, the average length of hypertension history is 2.91 years, the median is 2 years with a standard deviation of 3.516, the longest history of hypertension is 25 years, and the shortest is 1 year.

Based on the results of research conducted on hypertension clients, the data obtained showed that the average age of respondents was 53.28 years. This is in line with research by (Nanda, M., Prawati, S. A., Harahap, W. A., & Imanta, 2023) that clients aged 44-53 years experienced hypertension as much as 47.50%, which is the earliest age of elderly. This phenomenon can be explained by the tendency of blood pressure to increase with age. Physiological changes that affect organ function and the body's decreased ability to adapt to disease development also increase the risk of hypertension related to age factors.

This research also aligns with research conducted by (Hastami et al., 2025), which found that clients aged >40 years had a 3.4 times higher risk of developing hypertension compared to clients aged ≤40 years. Hypertension in the elderly is related to the aging process that occurs in the body. As we age, blood pressure tends to increase. Aging causes arteries to become stiffer and lose their elasticity, making them less flexible. This forces the heart to work harder to pump blood, ultimately triggering an increase in blood pressure (Nora et al., 2023).

Based on the results of the research that has been conducted, the results obtained show that the majority of clients have experienced hypertension for 2.91 years. This is in line with research by (Rosaline & Rahmah, 2023) where the majority of clients with hypertension have experienced hypertension for <5 years, totaling 76 clients (70.4%). This research is also in line with research conducted by (Merlis & Alfiah, 2022) where the majority of hypertension sufferers have experienced hypertension for <5 years, totaling 30 clients (61.2%). Duration of hypertension is the length of time since a person was diagnosed with hypertension. This duration is influenced by how quickly the disease appears, which is closely related to the factors causing hypertension. The more risk factors

a person has, the greater the likelihood of hypertension occurring earlier compared to individuals with few or no risk factors. (Merlis & Alfiah, 2022).

Table 2. Characteristics of Hypertension Clients Based on Gender, Education, Occupation, and Income. (n=80)

Variables	Characteristics	f	%
Gender	Man	11	13.8
	Woman	69	86.3
Education	Elementary School/Equivalent	59	73.8
	Junior High School/Equivalent	9	11.3
	High School/Equivalent	10	12.5
	Masters	2	2.5
Work	Doesn't work	13	16.3
	Housewife	31	38.8
	Private officer	2	2.5
	Self-employed	6	7.5
	Laborer	23	28.8
	Teacher/Lecturer	1	1.3
	Others	4	5
Income	Have no income	44	55
	<UMR (IDR 2.680.485,-)	32	40
	≥UMR (IDR 2.680.485,-)	4	5
Total		**80**	**100**

Based on table 2 above, of the 80 hypertensive clients, it is known that the majority of hypertensive clients are female, namely 69 clients (86.3%). Based on education level, the majority of hypertensive clients have the latest education at the elementary school/equivalent level, namely 59 clients (73.8%). Based on occupation, it is known that the majority of hypertensive clients are housewives, namely 31 clients (38.8%). Followed by income level, it is known that the majority of hypertensive clients do not have an income, namely 44 clients (55%).

Based on research, the majority of clients with hypertension are women. This is in line with research by (Ramadani et al., 2025), which shows that female clients are more susceptible to hypertension than male clients. Women are at higher risk of developing hypertension due to menopause. This condition is related to the hormone estrogen, where production of this hormone decreases during menopause, which can trigger increased blood pressure. (Muchtar et al., 2025). This research also aligns with research (Muchtar et al., 2025), which shows that the majority of clients with hypertension are women.

Based on the research conducted, the majority of education levels were elementary school or equivalent. This result aligns with research by (Ramadani et al., 2025) which stated that the majority of hypertensive clients had an elementary school education. This study also aligns with research by (Muthahharah, 2023) which stated that the highest level of education for hypertensive clients was elementary school. Higher education facilitates a person's ability to receive, understand, and analyze information, thus gaining broader knowledge. Conversely, low education can be a barrier to forming attitudes toward receiving information, knowledge, and values that drive behavioral change (Ramadani et al., 2025).

Based on research that has been conducted, the majority of clients with hypertension are housewives. This is in line with research by (Ramadani et al., 2025) which states that the majority of clients with hypertension are housewives. This research is also in line with research by (Muthahharah, 2023) which states that the majority of clients with hypertension are housewives. The busyness and heavy burden of taking care of the household can trigger stress, which ultimately can increase blood pressure. This feeling of stress contributes to increased blood pressure. Furthermore, housewives often do not have time to exercise, so body fat accumulates and impedes blood flow. The

accumulation of fat that presses on blood vessels causes blood pressure to increase, thus becoming a contributing factor to hypertension. (Muthahharah, 2023).

Based on research conducted, the majority of hypertensive clients have no income. This is in line with research by 2025), which found that the majority of hypertensive clients have no income. This research is also in line with (Susanti et al., 2024) which found that the majority of hypertensive clients' income characteristics are unearned. Families with precarious or low-income jobs tend to have difficulty supporting individuals' efforts to achieve optimal health. Conversely, when a family's economic condition improves, their ability to maintain and improve the health of family members also increases. (Tambunan, L. N., & Baringbing, 2022).

Health Beliefs of Hypertension Clients

Table 3. Health Beliefs of Hypertensive Clients (n=80)

Health Belief	f	%
High	40	50
Low	40	50
Total	**80**	**100**

Based on table 3, it shows that the health belief of hypertensive clients is in the low category for 40 clients (50%). Based on the research results, health beliefs among hypertensive clients were found to be low. The distribution of health beliefs among respondents showed an equal proportion of high and low levels (50% each), indicating a balanced pattern within the study population. This is in line with research by (Hamzah et al., 2024) which found that the majority of hypertensive clients had low health beliefs. This study also aligns with research by (Bibi & Purwanti, 2024) which found that the majority of diabetes mellitus clients had low health beliefs.

Health beliefs significantly influence hypertensive clients' adherence to their treatment. Hypertensive clients with positive health beliefs have positive perceptions of vulnerability and severity, which can encourage adherence to treatment. Research (Narsih & Hikmawati, 2020) shows that clients who feel vulnerable to health conditions tend to improve their health by taking action to reduce and prevent disease risks. Conversely, clients who do not feel vulnerable to disease risks tend to engage in unhealthy behaviors and be less adherent to their treatment.

The Health Belief Model is based on value theory, which explains individual motivation to adopt a healthy lifestyle. This model assumes that individuals need to be aware of the negative consequences of unhealthy behaviors (perceived susceptibility) and the severity of those consequences (perceived severity). Furthermore, they must understand effective strategies to prevent these consequences (perceived benefits) and recognize that there are few downsides to choosing healthy behaviors (perceived barriers). Environmental cues that encourage healthy behaviors (cues to action) are also important, as is the individual's belief in their ability to live a healthy lifestyle (self-efficacy). By understanding all these aspects, individuals are expected to be more motivated to adopt healthy behaviors (Rosaline & Rahmah, 2023).

The existence of health-related beliefs (Health Belief Model) in hypertensive clients is a crucial factor that individuals can leverage to improve treatment success. The Health Belief Model (HBM) is a conceptual framework used to identify modifying factors, such as demographics and knowledge, as well as an individual's perception of acceptance of their

health condition. This perception is measured by an individual's willingness to prevent or reduce pain caused by their illness (Ismayadi et al., 2021).

The Health Belief Model is one of the factors that plays a role in shaping an individual's adherence to their health condition. This factor is influenced by how an individual views a disease, which can encourage them to take preventive measures. Individuals with high levels of health beliefs have the ability to motivate themselves to behave according to goals based on their cognitive activities, such as perceptions, images, and expectations. These cognitive activities shape an individual's ability to understand the various factors that influence their health and guide them toward actions that support health efforts. (Laili et al., 2023).

The Health Belief Model is influenced by various factors, one of which is the experience of relapse. This experience serves as the basis for evaluating whether the relapse was the result of non-compliance with medication. This awareness leads hypertensive clients to believe that following treatment as recommended by medical professionals can prevent relapse and worsen the condition. This belief ultimately encourages individuals to be more compliant with their hypertension medication (Kendu et al., 2021).

Treatment Compliance in Hypertensive Clients

Table 4. Treatment Compliance in Hypertensive Clients (n=80)

Treatment Compliance	f	%
Comply	53	66.3
Not Compliant	27	33.8
Total	**80**	**100**

Table 4 shows that 53 (66.3%) clients with hypertension were in the compliant category and 27 (33.8%) were in the non-compliant category. The majority of clients with hypertension were in the compliant category. Based on the results of a study on hypertensive clients, the majority of hypertensive clients had high medication adherence, categorized as compliant. This is in line with research by (Laili et al., 2023), which found that hypertensive clients have high medication adherence. This is also in line with research by (Rosaline & Rahmah, 2023), which found that the majority of hypertensive clients have high medication adherence.

Compliance with treatment for hypertensive clients is crucial, as hypertension is an incurable condition and requires continuous monitoring to prevent complications that can lead to death. In long-term conditions requiring long-term therapy, such as hypertension, non-compliance with treatment is common. Therefore, consistent use of antihypertensive medications can help hypertensive clients control their blood pressure. This minimizes the risk of long-term damage to vital organs such as the brain, heart, and kidneys (Frana, 2022).

Medication adherence is defined as the extent to which a client's medication use aligns with the agreed-upon recommendations of healthcare professionals, including the type of medication, dosage, timing, and frequency of use. For hypertensive clients, it is important to understand that prescribed medication plays a crucial role in maintaining controlled blood pressure. Medication adherence in hypertension treatment systems is considered a form of dependency-based compliance behavior, requiring clients to carry and take their medication regularly. The level of adherence in hypertensive clients is influenced by various factors that can be grouped into five main

categories: socioeconomic factors, healthcare factors, disease factors, medication factors, and patient factors. (Rusita & Isnaeni, 2025). Meanwhile, Green's theory, cited in (Megawatie et al., 2021), explains that adherence is a form of behavior influenced by reinforcing factors, such as support from family, healthcare professionals, friends, community leaders, and decision-makers, which can reinforce the behavior.

The Relationship Between Health Belief and Hypertension Treatment Compliance

Table 5. Relationship between Health Belief and Hypertension Treatment Compliance

Health Belief	Treatment Compliance				N	p-value
	Comply		Not Compliant			
	f	%	f	%		
High	34	42.5	6	3.75	40	
Low	19	23.7	21	26.25	40	0.000
Total	**53**	**66.2**	**27**	**30**	**80**	

Based on Table 5, this study demonstrates a statistically significant relationship between health beliefs and adherence to hypertension treatment ($p = 0.000$; $p < 0.05$). This finding indicates that health beliefs play an essential role in shaping medication adherence behavior among hypertensive clients in the community. The result is consistent with the study by (Laili et al., 2023), which reported a significant association between health beliefs and antihypertensive medication adherence ($p = 0.000$; $r = 0.719$).

Health beliefs influence adherence primarily through individuals' perceptions of disease susceptibility and severity. Hypertensive clients who perceive themselves as vulnerable to the disease and understand its seriousness are more likely to engage in preventive and control behaviors, including regular medication use. Conversely, individuals who do not perceive themselves at risk tend to exhibit unhealthy behaviors and lower adherence to treatment (Narsih & Hikmawati, 2020). In the community context, this perception-based behavior is closely related to personal experiences, health knowledge, and awareness of hypertension-related complications.

These findings are supported by (Icca, 2024), who found a significant relationship between health beliefs and medication adherence among elderly hypertensive patients ($p = 0.032$; $p < 0.05$). Similarly (Aradista et al., 2020) emphasized that health beliefs strongly influence health behavior, particularly among older adults. Elderly individuals with stronger beliefs regarding disease susceptibility and severity tend to be more compliant with prescribed treatments.

A literature review by (Adira et al., 2024) also identified a significant positive correlation between hypertensive clients' health beliefs—especially perceived susceptibility and perceived severity—and treatment adherence. The reviewed studies consistently showed that core Health Belief Model (HBM) constructs, including perceived severity, perceived susceptibility, perceived benefits, perceived barriers, self-efficacy, and cues to action, are significantly associated with adherence to antihypertensive therapy. This indicates that adherence is not merely a matter of access to

medication, but is strongly influenced by cognitive and psychological factors.

Further evidence is provided by (Bibi & Purwanti, 2024), who reported a strong correlation between the Health Belief Model and medication adherence among diabetes mellitus patients ($p = 0.01$; $r = 0.864$). Their findings showed that 73% of respondents with poor HBM had low adherence, while 58.8% of those with good HBM demonstrated high adherence. These results reinforce the importance of health beliefs in shaping adherence behavior and align with (Maulidah & Yunita, 2023), who stated that beliefs about disease susceptibility encourage individuals to adhere to treatment because they believe certain actions can reduce health risks.

(Aradista et al., 2020) which state that health beliefs are related to a person's health behaviors. A person is more likely to engage in health behaviors if they have a strong belief in the importance of health, accompanied by an understanding and awareness of the vulnerability and severity of the disease, and are aware of the benefits of health behaviors recommended by medical personnel.

In this study, clients with positive health beliefs had a positive perception of the risks and severity of the disease and were motivated to adopt compliant behaviors in taking medication (Icca, 2024). In this study, hypertensive clients with high levels of health beliefs had positive perceptions of vulnerability and severity, which motivated them to adhere to their medication. This finding aligns with research by (Narsih & Hikmawati, 2020) showing that individuals who believe they are vulnerable to a health problem are more likely to take steps to reduce, prevent, and control disease risks to improve their health. Conversely, individuals who do not perceive themselves as vulnerable to disease risks generally engage in less healthy behaviors and preventative measures, including non-adherence to treatment.

Research Limitations

This study had several limitations, including the number of respondents initially obtained through the Community Health Center not meeting the target of 80, so researchers recruited more respondents door-to-door. Although the number of respondents was relatively small, a total sampling method was used to ensure that all populations meeting the inclusion criteria were included. Other challenges included respondents who refused to participate, which was addressed through an initial approach involving blood pressure measurement and persuasion. Some respondents also lacked understanding of the questionnaire, which was addressed with additional explanations without directing responses. Furthermore, the cross-sectional design limits the ability to establish causal relationships between health beliefs and medication adherence. Data collection relied on self-reported questionnaires, which may introduce response bias. Lastly, as the study was conducted in a single village, the findings may have limited generalizability to other communities or settings.

CONCLUSION AND RECOMMENDATION

The results of this study indicate a significant relationship between health beliefs and medication adherence among hypertensive clients. Higher levels of health beliefs are associated with better adherence

to antihypertensive treatment, indicating the importance of strengthening health beliefs to support effective hypertension management.

The recommendations in this study cover four aspects. Clients with hypertension are expected to increase self-awareness and confidence in the benefits of treatment by regularly checking their blood pressure, taking medication as recommended, adopting a healthy lifestyle, and actively seeking information related to hypertension.

Healthcare workers are expected to consistently provide education through coaching and counseling, both individually and in groups, during Posbindu activities or home visits, and develop educational media such as booklets, videos, and posters.

For educational institutions, the results of this study can serve as additional references for courses related to family, community, and geriatric nursing, as well as health education and promotion.

Meanwhile, further research is recommended to examine other variables that influence medication adherence, using intervention designs such as education or counseling, and involving a wider number of respondents and a wider area to strengthen the research results.

Ethics Approval and Consent To Participate

The research phase began with obtaining research permits and ethical clearance. The researcher recruited respondents according to the predetermined inclusion and exclusion criteria. Respondents received an explanation of the research from the researcher and completed a research consent form. Respondents completed a questionnaire, and the researcher then checked the completeness of the questionnaire. Finally, the researcher analyzed the data and compiled a research report. Data analysis used the chi-square test. This research has passed the ethical review of the Health Research Ethics Committee of the Muhammadiyah University of Kudus with the number 274/Z-7/KEPK/UMKU/III/2025 on March 25, 2025.

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