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The Relationship between Self-Efficacy and Adherence to Drug Therapy in Hypertension Patients at the Medan Freight Health Center

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A B S T R A C T

This study examines the relationship between self-efficacy and medication adherence among 83 hypertensive patients at the Sering Community Health Center in Medan. Using a cross-sectional design, self-efficacy was assessed using the General Self-Efficacy Scale, and adherence was measured through self-reported medication adherence. The findings reveal a significant positive correlation between self-efficacy and medication adherence, highlighting that patients with higher self-efficacy are more likely to adhere to prescribed treatment regimens. Duration of hypertension emerged as a significant predictor of adherence. These findings underscore the importance of psychological factors in chronic disease management and suggest that interventions aimed at enhancing self-efficacy could improve adherence and health outcomes among hypertensive patients. Future research should explore longitudinal designs to establish causal relationships and consider cultural factors in intervention strategies.

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INTRODUCTION

Hypertension is a condition in which there is an increase in systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg or both (Böhm et al., 2018). Hypertension is a condition where a person experiences an increase in blood pressure above normal which results in an increase in morbidity and mortality. Based on data obtained from the World Health Organization, 22% of the world's population is affected by hypertension, this even occurs in Southeast Asia with an incidence of hypertension of up to 36% (Organization & Group, 2003). According to data from the Ministry of Health of the Republic of Indonesia in 2019, the highest prevalence of hypertension was recorded in the African region at 27% (Indonesia, 2017). Southeast Asia was in the 3rd highest position with a prevalence of 25% of the total population. According to 2016 World Health Organization (WHO) data, the prevalence of hypertension in Indonesia is in 3rd place compared to other regions in Southeast Asia. Based on data from the Indonesian Ministry of Health in 2018, the prevalence of hypertension in Indonesia was recorded at 658,201 million people.

In 2018, the Indonesian Ministry of Health recorded that the prevalence of hypertension in North Sumatra was in 4th position compared to other provinces in Indonesia. The Ministry of Health of the Republic of Indonesia (Kemenkes RI) also noted that the prevalence of hypertension in Medan City reached the highest position at 7,174 people and in West Pakpak it reached the lowest position at 121 people (Indonesia, 2017). Non-compliance with hypertension treatment is a challenge for global health. Non-compliance is something that can make therapy potentially fail, this can result in complications and body organs can become damaged. Therefore, non-compliance with treatment in hypertensive patients is a major factor in the failure of therapy. This can be the main cause of coronary heart disease, stroke, congestive heart failure, and end-stage kidney disease, among others. Compliance with taking medication can occur if the sufferer has the belief to recover, this belief is called self-efficacy. Self-efficacy in general terms is also referred to as a person's self-confidence regarding their ability to carry out certain tasks and the ability to persuade situations or feel confident in the healthy behavior they undertake. A patient with high self-efficacy has twice the chance of showing compliance in taking medication compared to a patient with low self-efficacy. To increase life expectancy, hypertension sufferers need high self-efficacy. Therefore, self-efficacy needs to be increased in patients with hypertension in order to influence patients to change their lifestyle so that their blood pressure can be well controlled.

Hypertension, often referred to as high blood pressure, is a pervasive chronic medical condition that significantly escalates the risk of severe health complications such as cardiovascular disease, stroke, and kidney failure. The global prevalence of hypertension underscores the urgent need for effective management strategies to mitigate these risks and improve patient outcomes (Fisher & Curfman, 2018). In clinical practice, the management of hypertension generally entails a combination of lifestyle modifications—such as dietary changes, regular physical activity, and stress reduction—and strict adherence to prescribed pharmacological therapies.

Despite the availability of effective antihypertensive medications, achieving optimal blood pressure control remains a challenge, primarily due to poor medication adherence (Choudhry et al., 2022). Medication non-adherence among hypertensive patients can stem from various factors, including forgetfulness, side effects, complex medication regimens, and a lack of understanding about the importance of consistent medication intake. Consequently, enhancing adherence to antihypertensive therapy is a critical component of hypertension management.

Self-efficacy, a psychological construct introduced by Albert Bandura, refers to an individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments (Bandura & Wessels, 1997). It influences how people think, feel, motivate themselves, and act. In the context of chronic disease management, self-efficacy is particularly relevant as it affects a patient's confidence in their ability to adhere to treatment regimens, manage symptoms, and navigate healthcare systems.

This study investigates the relationship between self-efficacy and medication adherence among hypertensive patients at the Sering Community Health Center in Medan. By examining this relationship, the research aims to identify whether patients with higher self-efficacy demonstrate better adherence to their prescribed antihypertensive medications. Understanding this correlation is pivotal for healthcare providers seeking to design interventions that bolster self-efficacy, thereby enhancing medication adherence and improving health outcomes for hypertensive patients.

Furthermore, this research seeks to provide empirical evidence that supports the integration of self-efficacy-enhancing strategies in hypertension management programs. This could include patient education, counseling, and behavioral interventions tailored to strengthen patients' confidence in their ability to manage their hypertension. By addressing the psychological and behavioral aspects of hypertension management, healthcare providers can foster a more holistic approach to patient care, ultimately reducing the burden of hypertension and its associated complications.

LITERATURE REVIEW

The management of hypertension has been a significant focus in medical research due to its widespread prevalence and the severe health risks associated with uncontrolled blood pressure. Effective management strategies often emphasize the importance of medication adherence, as non-adherence can lead to suboptimal treatment outcomes and increased healthcare costs. In recent years, the role of psychological factors, particularly self-efficacy, in influencing health behaviors has garnered considerable attention.

Self-efficacy, a concept rooted in Bandura's social cognitive theory, refers to an individual's belief in their ability to perform specific tasks and achieve desired outcomes. (Bullough et al., 2014) posited that self-efficacy influences the choices people make, their perseverance in the face of challenges, and their resilience to adversity. In the context of chronic disease management, higher self-efficacy has been linked to better health behaviors, including medication adherence (Daniali et al., 2017).

Research has demonstrated a positive relationship between self-efficacy and medication adherence in various chronic conditions. For instance, (Bomfim et al., 2022) found that higher self-efficacy was associated with better adherence to antiretroviral therapy among patients with HIV. Similarly, (Huang et al., 2018) reported that diabetic patients with greater self-efficacy were more likely to adhere to their insulin regimens. These findings suggest that enhancing self-efficacy could be a viable strategy for improving medication adherence across different chronic diseases.

In the realm of hypertension, several studies have explored the connection between self-efficacy and medication adherence. A study by (Ogedegbe et al., 2003) found that hypertensive patients with higher self-efficacy were more consistent in taking their medications as prescribed. This study highlighted the potential of self-efficacy as a target for interventions aimed at improving adherence. Additionally, (Bane et al., 2006) identified self-efficacy as a significant predictor of medication adherence among hypertensive patients, further reinforcing the importance of this psychological construct in hypertension management.

The mechanisms through which self-efficacy influences medication adherence are multifaceted. Self-efficacy affects patients' motivation to initiate and maintain health behaviors, their ability to set and achieve goals, and their capacity to handle obstacles and setbacks. Patients with high self-efficacy are more likely to engage in proactive health behaviors, such as following medication schedules, seeking information about their condition, and communicating effectively with healthcare providers (Curtin et al., 2008). Moreover, these patients are better equipped to cope with the side effects of medications and the demands of complex treatment regimens.

Interventions designed to enhance self-efficacy have shown promise in improving health outcomes in hypertensive patients. For example, (Damush et al., 2016) implemented a self-management program that included education, goal-setting, and skill-building activities, resulting in improved medication adherence and blood pressure control among participants. These findings underscore the potential benefits of incorporating self-efficacy-enhancing strategies into hypertension management programs.

Despite the growing body of evidence supporting the role of self-efficacy in medication adherence, there remains a need for further research to elucidate the specific components of self-efficacy that are most influential in this context. Additionally, culturally tailored interventions are necessary to address the diverse needs of hypertensive patients in different settings. In the context of the Sering Community Health Center in Medan, understanding the cultural and socio-economic factors that influence self-efficacy and medication adherence can inform the development of more effective and relevant interventions.

In conclusion, the literature indicates a strong positive relationship between self-efficacy and medication adherence in hypertensive patients. By focusing on strategies to enhance self-efficacy, healthcare providers can improve adherence rates and, consequently, the health outcomes of patients with hypertension. This literature review provides a foundation for the current study,

which aims to investigate this relationship further in the specific context of hypertensive patients at the Sering Community Health Center in Medan.

METHODOLOGY

This study aims to investigate the relationship between self-efficacy and medication adherence among hypertensive patients at the Sering Community Health Center in Medan. The methodology section provides a comprehensive overview of the study design, population and sample, inclusion and exclusion criteria, data collection instruments, data collection procedure, and data analysis techniques employed in this research.

Study Design and Setting

A cross-sectional study will be conducted at the Sering Community Health Center in Medan. This setting is chosen due to its accessibility and the availability of a large number of hypertensive patients who receive regular treatment and follow-up care (Pandis, 2014).

Population and Sample

The study population will consist of all hypertensive patients receiving treatment at the Sering Community Health Center. A sample of 83 patients will be selected using a simple random sampling technique to ensure the representativeness of the sample. The sample size is determined based on previous studies and the need to achieve sufficient statistical power.

Inclusion and Exclusion Criteria

Inclusion Criteria:

1. Patients diagnosed with hypertension and receiving treatment at the Sering Community Health Center.
2. Patients aged 18 years and older.
3. Patients who have been on antihypertensive medication for at least six months.
4. Patients who consent to participate in the study.

Exclusion Criteria:

1. Patients with cognitive impairments that prevent them from completing the questionnaire.
2. Patients with co-morbid conditions that may affect medication adherence (e.g., severe mental illness).

Data Collection Instruments

Data will be collected using two primary instruments:

1. General Self-Efficacy Scale (GSES): This standardized questionnaire will be used to measure patients' self-efficacy. The GSES consists of 10 items rated on a 4-point Likert scale ranging from 1 (not at all true) to 4 (exactly true). The total score ranges from 10 to 40, with higher scores indicating higher self-efficacy (Schwarzer et al., 2009).

2. Medication Adherence Report Scale (MARS): This scale will assess patients' adherence to their antihypertensive medication. The MARS consists of 5 items rated on a 5-point Likert scale ranging from 1 (always) to 5 (never). The total score ranges from 5 to 25, with higher scores indicating better adherence (Mahler et al., 2010).

Data Collection Procedure

Data will be collected over a period of three months. Patients who meet the inclusion criteria will be approached during their routine visits to the health center. After obtaining informed consent, the researcher will administer the GSES and MARS questionnaires. Assistance will be provided to patients who have difficulty reading or understanding the questions**.**

Data Analysis

Data will be analyzed using the Statistical Package for the Social Sciences (SPSS) version 25 (Imam Ghozali, 2018). Descriptive statistics will be used to summarize the demographic characteristics of the sample, self-efficacy scores, and medication adherence scores.

Descriptive Statistics:

1. Mean, standard deviation, frequency, and percentage will be used to describe the sample characteristics, self-efficacy scores, and medication adherence scores.

Inferential Statistics:

1. Pearson's correlation coefficient will be used to examine the relationship between self-efficacy and medication adherence.
2. Multiple linear regression analysis will be performed to identify predictors of medication adherence, including self-efficacy, age, gender, duration of hypertension, and number of medications.

Pearson's Correlation Coefficient Formula:

$$\mathbf{r} = \frac{\boldsymbol{n}\,(\sum \boldsymbol{xy}) - (\sum \boldsymbol{x})\,(\sum \boldsymbol{y})}{\sqrt{[\boldsymbol{n}\sum \boldsymbol{x^2} - (\sum \boldsymbol{x})^2]\,[\boldsymbol{n}\sum \boldsymbol{y^2} - (\sum \boldsymbol{y})^2]}}$$

Multiple Linear Regression Equation:

$Y=\beta 0+\beta 1X1+\beta 2X2+\ldots+\beta kXk+\epsilon$

where Y is the dependent variable (medication adherence), $\beta 0$ is the intercept, $\beta 1,\beta 2,\ldots,\beta k$ are the coefficients for each independent variable $X1,X2,\ldots,Xk$, and ϵ is the error term.

Ethical Considerations

Ethical approval for the study will be obtained from the Ethics Committee of the Sering Community Health Center. All participants will be provided with information about the study and informed consent will be obtained prior to participation. Confidentiality and anonymity of participants will be maintained throughout the study.

RESEARCH RESULT

The study aimed to investigate the relationship between self-efficacy and medication adherence among hypertensive patients at the Sering Community Health Center in Medan. Data were collected from 83 participants who met the inclusion criteria. The following sections present the descriptive statistics, correlation analysis, and multiple linear regression analysis results.

Descriptive Statistics

The demographic characteristics of the participants are summarized in Table 1. The mean age of the participants was 55.4 years (SD = 10.2), with a range of 34 to 78 years. The majority of the participants were female (75.9%, n = 63), while 24.1% (n = 20) were male. The average duration of hypertension among the participants was 7.3 years (SD = 4.5), and the mean number of antihypertensive medications taken was 2.1 (SD = 1.0).

Table 1: Descriptive Statistics

Variable	**Mean ± SD**	**Frequency (%)**
Age (years)	55.4 ± 10.2	-
Gender	-	Male: 20 (24.1%)
		Female: 63 (75.9%)
Duration of Hypertension (years)	7.3 ± 4.5	-
Number of Medications	2.1 ± 1.0	-
Self-Efficacy Score	30.5 ± 5.8	-
Medication Adherence Score	20.4 ± 3.1	-

The self-efficacy scores ranged from 18 to 40, with a mean score of 30.5 (SD = 5.8). The medication adherence scores ranged from 12 to 25, with a mean score of 20.4 (SD = 3.1).

Correlation Analysis

Pearson's correlation coefficient was used to examine the relationship between self-efficacy and medication adherence. The analysis revealed a moderate positive correlation between self-efficacy and medication adherence ($r = 0.45$, $p < 0.05$), indicating that higher self-efficacy is associated with better medication adherence.

Table 2: Pearson's Correlation Coefficient

Variable	**Self-Efficacy**	**Medication Adherence**
Self-Efficacy	1	0.45*
Medication Adherence	0.45*	1

Significant at p < 0.05

Multiple Linear Regression Analysis

Multiple linear regression analysis was conducted to identify predictors of medication adherence, including self-efficacy, age, gender, duration of hypertension, and number of medications. The regression model was significant ($F(5, 77) = 9.65$, $p < 0.001$) and explained 38% of the variance in medication adherence ($R^2 = 0.38$).

Table 3: Multiple Linear Regression Analysis

Variable	Coefficient (β)	Standard Error	t-value	p-value
Intercept	10.5	2.1	5.0	<0.001
Self-Efficacy	0.35	0.08	4.4	<0.001
Age	-0.02	0.03	-0.7	0.482
Gender (Male)	-0.75	0.65	-1.2	0.230
Duration of Hypertension	0.10	0.05	2.0	0.046
Number of Medications	-0.20	0.15	-1.3	0.195

The analysis revealed that self-efficacy ($\beta = 0.35$, $p < 0.001$) and duration of hypertension ($\beta = 0.10$, $p = 0.046$) were significant predictors of medication adherence. This suggests that higher self-efficacy and longer duration of hypertension are associated with better adherence to antihypertensive medication. Age, gender, and the number of medications were not significant predictors of medication adherence in this sample.

DISCUSSION

The findings of this study offer valuable insights into the relationship between self-efficacy and medication adherence among hypertensive patients at the Sering Community Health Center. The results demonstrate a significant positive correlation between self-efficacy and medication adherence, reinforcing the importance of psychological factors in chronic disease management. This section discusses the implications of these findings, compares them with existing literature, explores potential mechanisms, and suggests directions for future research and practice.

Comparison with Existing Literature

The positive correlation between self-efficacy and medication adherence observed in this study is consistent with a growing body of literature that underscores the importance of psychological factors in chronic disease management. Previous research across various chronic conditions, including hypertension, diabetes, and asthma, has consistently demonstrated that higher levels of self-efficacy are associated with better adherence to treatment regimens and improved health outcomes. Several studies focusing specifically on hypertensive patients have reported similar findings. (Shen et al., 2020)

conducted a study in a Chinese population and found that patients with higher self-efficacy were more likely to adhere to their antihypertensive medication. Similarly, (Nemer & Malak, 2022) reported that self-efficacy was a significant predictor of medication adherence among hypertensive patients in Jordan. These studies support the notion that self-efficacy plays a crucial role in medication adherence behaviors, regardless of cultural or regional differences.

The relationship between self-efficacy and medication adherence extends beyond hypertension. In a study of patients with type 2 diabetes, (Walker et al., 2014) found that self-efficacy was significantly associated with medication adherence and glycemic control. Similarly, (Lavoie et al., 2008) reported that higher self-efficacy was linked to better adherence to inhaled corticosteroids and improved asthma control in patients with asthma. These findings suggest that self-efficacy is a generalizable predictor of adherence across various chronic conditions. The mechanisms through which self-efficacy influences medication adherence have been explored in the literature. (Bandura, 1997) social cognitive theory provides a framework for understanding these mechanisms. According to Bandura, self-efficacy affects individuals' beliefs in their ability to perform specific behaviors, such as taking medication as prescribed. Higher self-efficacy is associated with greater motivation, persistence, and resilience in the face of challenges, all of which are critical for maintaining adherence to long-term treatment regimens.

Interventions aimed at enhancing self-efficacy have shown promising results in improving medication adherence. A meta-analysis by (Bertera, 2014) reviewed various interventions designed to boost self-efficacy among hypertensive patients. The analysis found that interventions incorporating educational components, skill-building activities, and personalized feedback were effective in increasing self-efficacy and improving adherence rates. This highlights the potential for self-efficacy-enhancing interventions to be integrated into standard care practices. While the positive relationship between self-efficacy and medication adherence is well-documented, it is important to consider cultural and contextual factors that may influence this relationship. For instance, in a study conducted in a multi-ethnic sample in the United States, (Ogedegbe et al., 2003) found that cultural beliefs and social support played significant roles in shaping self-efficacy and adherence behaviors.

Mechanisms Linking Self-Efficacy and Medication Adherence

Understanding the mechanisms through which self-efficacy influences medication adherence is crucial for designing effective interventions aimed at improving health outcomes. Self-efficacy, a concept rooted in Bandura's social cognitive theory, refers to an individual's belief in their ability to perform specific tasks or behaviors successfully. This belief plays a critical role in determining whether individuals initiate and persist in behaviors necessary for managing chronic conditions like hypertension (Bandura, 1997).

Self-efficacy directly impacts an individual's motivation to adhere to prescribed treatment regimens (Martos-Méndez, 2015). Patients with high self-efficacy are more likely to set realistic and achievable goals for their medication

adherence. They believe in their capacity to follow through with their treatment plan, which enhances their motivation to take medications as prescribed. This is particularly important in managing chronic conditions, where adherence to long-term medication regimens is essential for effective disease control. High self-efficacy is associated with better problem-solving skills and greater resilience in the face of challenges. Patients with high self-efficacy are more likely to identify potential barriers to medication adherence and develop effective strategies to overcome them. For example, they might create reminder systems, seek support from family members, or discuss concerns with healthcare providers. Their resilience helps them persist in their adherence behaviors despite encountering difficulties such as side effects or complex medication schedules.

Patients with high self-efficacy are more proactive in seeking information about their condition and treatment. They are likely to educate themselves about hypertension, understand the importance of medication adherence, and stay informed about new developments in treatment options. Additionally, these patients are more comfortable communicating with healthcare providers, asking questions, and discussing any issues related to their medications. Effective communication can lead to better-informed decisions and adjustments in treatment plans that enhance adherence. Self-efficacy influences an individual's ability to self-regulate and monitor their behavior. Patients with high self-efficacy are more diligent in tracking their medication intake, recognizing early signs of potential adherence lapses, and taking corrective actions. Self-monitoring can involve keeping a medication diary, using pill organizers, or leveraging digital health tools such as mobile apps that provide reminders and track adherence patterns. Consistent self-regulation and monitoring contribute to sustained adherence over time.

Stress and anxiety can negatively impact medication adherence. Patients with high self-efficacy are better equipped to manage stress and employ effective coping strategies. They are less likely to be overwhelmed by the demands of managing their condition and more capable of maintaining adherence behaviors even during stressful periods. Techniques such as relaxation exercises, mindfulness, and cognitive-behavioral strategies can be particularly beneficial in enhancing stress management and adherence. Self-efficacy influences patients' perceptions of the benefits of adherence and their expectations of treatment outcomes. Patients who believe in their ability to adhere to their medication regimen are more likely to perceive the benefits of adherence, such as improved blood pressure control and reduced risk of complications. These positive outcome expectations reinforce their adherence behaviors, creating a positive feedback loop where successful adherence enhances self-efficacy, which in turn promotes continued adherence (Williams & Bond, 2002).

High self-efficacy can enhance the utilization of social support networks. Patients who believe in their ability to manage their condition are more likely to seek and receive support from family, friends, and peers. Social support can provide practical assistance, emotional encouragement, and shared experiences that bolster adherence. Interpersonal relationships also play a role in maintaining

accountability, as patients with supportive networks are more likely to adhere to their treatment plans.

CONCLUSIONS AND RECOMMENDATIONS

This study underscores the critical role of self-efficacy in promoting medication adherence among hypertensive patients at the Sering Community Health Center in Medan. The findings reveal a significant positive correlation between self-efficacy and medication adherence, indicating that patients who have a stronger belief in their ability to manage their hypertension are more likely to adhere to their prescribed treatment regimens. This correlation aligns with previous research across various chronic conditions, reinforcing the importance of psychological factors in chronic disease management. The results also demonstrate that the duration of hypertension is a significant predictor of medication adherence, suggesting that patients with longer experience in managing their condition tend to adhere better to their medication regimens. However, factors such as age, gender, and the number of medications were not significant predictors in this study, highlighting the complexity of adherence behaviors and the need for a multifaceted approach in intervention design.

ADVANCED RESEARCH

While this study provides valuable insights, it has several limitations. The cross-sectional design does not allow for causal inferences, and the reliance on self-reported measures may introduce recall bias or social desirability bias. Additionally, the study was conducted at a single health center, which may limit the generalizability of the findings. Future research should consider longitudinal designs to examine the causal relationship between self-efficacy and medication adherence over time. Investigating the effectiveness of self-efficacy-enhancing interventions through randomized controlled trials could provide more robust evidence for their impact on adherence and health outcomes. Moreover, exploring the role of other psychological factors, such as health literacy, motivation, and perceived social support, could offer a more comprehensive understanding of the determinants of medication adherence.

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