



THE ANALYSIS OF THE RELATIONSHIP BETWEEN PROLANIS ACTIVITIES AND REFERRAL DIAGNOSES OF DIABETES AND HYPERTENSION

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ABSTRACT

Hypertension and Diabetes Mellitus (DM) are leading causes of global mortality with continually rising incidences, impacting individuals' quality of life and imposing a significant burden on the healthcare system due to the high frequency of referrals to Advanced Level Health Facilities. The Chronic Disease Management Program (Prolanis) was initiated to address this issue by increasing awareness, adherence, and preventive activities through education and routine monitoring, which is expected to reduce referrals. This cross-sectional study aimed to analyze the relationship between participation in Prolanis activities and the referral of DM and Hypertension patients to Toto Kabila Regional General Hospital. The study sample involved 99 respondents who were DM and Hypertension patients registered as Prolanis participants and had been referred to the hospital, selected using an accidental sampling technique. Data were collected through a Prolanis participation questionnaire and secondary data from medical records for referrals. All instruments demonstrated acceptable psychometric properties, with significance values below 0.05 and Cronbach's alpha coefficients exceeding 0.70. The analysis utilized the Chi-Square test and logistic regression. The statistical results indicate a highly significant relationship between patient referrals and participation in various Prolanis activities, including medical consultation ($p = 0.002$), reminders ($p = 0.000$), health status monitoring ($p = 0.004$), patient visits ($p = 0.012$), and Prolanis exercise ($p = 0.000$). The variable of Prolanis exercise had the greatest influence in reducing referrals, with an Odds Ratio of 5.37. Conclusion: Active participation in Prolanis activities, particularly physical activity, is strongly associated with a reduction in DM and Hypertension patient referrals. Health facilities are advised to prioritize and strengthen routine physical activities such as Prolanis exercise as the core of the program, while also improving the intensity and quality of reminder and monitoring activities to maximize patient adherence and the effectiveness of referral prevention.

Keywords: diabetes mellitus; hypertension; prolanis; referral

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INTRODUCTION

Diabetes Mellitus (DM) and Hypertension (HPT) are two chronic conditions often co-occurring and are primary causes of microvascular and macrovascular complications, requiring serious attention within the healthcare service system. To address these chronic diseases, BPJS Kesehatan (Indonesia's Social Security Administering Body for Health) developed the Chronic Disease Management Program (Prolanis). This program aims to facilitate the routine monitoring and health management of patients with DM and HPT through a proactive and integrated approach at the primary care level (Febriany, 2023).

Globally, the number of people with hypertension is estimated to be 1 billion, with two-thirds residing in developing countries. The incidence rate is increasingly concerning; globally, approximately 927 million (26%) of the adult population suffer from hypertension, and this trend is expected to continue rising. It is predicted that 29% of adults will be affected by hypertension by 2025 (Nisa, 2024). Meanwhile, complications of diabetes mellitus are caused by abnormalities in insulin secretion, leading to elevated blood sugar levels above the normal limit, which necessitates proper and serious management (Pratita, 2022). Globally, the incidence of diabetes in the 20–79 age

group was predicted to be 10.5% (536.6 million) in 2021, potentially increasing to 12.2% (783.2 million) by 2045. Based on the 2018 regional health research data, the prevalence of Diabetes Mellitus based on physician diagnosis across all ages by province was highest in East Java and West Java, with 151,878 and 186,809 cases, respectively. According to the Gorontalo Provincial Central Statistics Agency, the population of Gorontalo is 1,227,794 people. The number of DM patients in Gorontalo is 4,547 cases, resulting in a prevalence of 0.37%. Furthermore, the prevalence of Hypertension, based on physician diagnosis or consumption of antihypertensive medication, in the population aged over 18 years in Gorontalo Province was 2,896 cases, a prevalence of 0.23%, placing it 30th out of 34 provinces. These diseases not only affect individuals' quality of life but also increase overall healthcare costs, particularly with the frequent referral of patients to general hospitals. Prolanis aims to reduce the frequency of referrals to Advanced Level Health Facilities (FKTL) by enhancing awareness, adherence, and preventive activities through educational sessions and routine monitoring. In Bone Bolango Regency, especially at Toto Kabila Regional General Hospital (RSUD Toto Kabila), the rising number of DM and HPT cases requiring referral has become a phenomenon that needs scrutiny, particularly concerning the effectiveness of Prolanis activities in mitigating the need for these referrals.

One of the promotional and preventive programs for hypertension and diabetes mellitus from BPJS Kesehatan is the Chronic Disease Management Program (PROLANIS). The target of this program is all BPJS Kesehatan participants who have or are at risk of Type 2 Diabetes Mellitus and Hypertension, aiming to encourage chronic disease sufferers to achieve an optimal quality of life (BPJS, 2020). The Prolanis program is a healthcare service system with a proactive approach that simultaneously involves participants, health facilities, and BPJS. The goal of this program is to achieve an optimal quality of life for BPJS Kesehatan participants through more efficient financing. Prolanis activities are expected to increase the self-efficacy of Diabetes Mellitus sufferers regarding adherence to their disease management. Self-efficacy is an individual's belief in their ability to complete the necessary tasks to achieve a certain outcome (Widiangtyas et al., 2020). A flagship program to improve the quality of healthcare services for BPJS Kesehatan participants and facilitate access to healthcare for chronic disease patients is the optimization of the Return Referral Program (Program Rujuk Balik) (BPJS Kesehatan, 2020).

Chronic disease management programs offer several significant advantages for improving health indicators. The reduction in costs due to decreased emergency room visits and hospitalizations is a key outcome with important practical and policy implications. There is an increase in self-efficacy and physical activity among chronic disease patients who participate in chronic disease management programs compared to those who do not (Handoyo, 2023). Chronic disease management activities can save on treatment costs, improve health, and are highly strategic for addressing the chronic disease epidemic. Furthermore, many hypertensive patients are unaware of their condition and thus do not receive treatment, highlighting the importance of regularly visiting health facilities for periodic check-ups. This can be achieved through participation in Prolanis, which is a BPJS program for hypertensive patients aimed at achieving optimal quality of life and preventing the onset of disease complications (BPJS, 2020).

Previous research by Aswar (2023) showed a relationship between education level, knowledge level, occupation, accessibility, and perception with the utilization of Prolanis, where Accessibility and Knowledge had the strongest relationship among several variables in Prolanis utilization. Meanwhile, Handoyo's (2023) study found that the proportion of Prolanis participants who routinely visited Primary Care Facilities (FKTP) for check-ups was higher among those receiving indirect contact services (29.35%) compared to those who did not (17.04%). The percentage of Prolanis participants receiving indirect contact services who had controlled blood pressure was 12.7%, while for those not receiving indirect contact services, it was 14.30%. The results of Febriany's (2023) research indicated that most Prolanis participants with Type 2 Diabetes Mellitus

had a moderate quality of life, influenced by factors such as the activeness of the Prolanis club, environmental support, and medication adherence. Several studies suggest that increased participation in Prolanis is associated with a decrease in the referral of DM and HPT patients to hospitals. For instance, the study by Febriawati et al. (2023) demonstrated that increased adherence to healthy lifestyle patterns through Prolanis reduced the frequency of referrals to FKTL. Additionally, research at BPJS Kesehatan Palangka Raya also found a relationship between self-care activities and normal blood pressure in DM patients (Sulistyowati et al., 2023).

Although Hypertension and Diabetes Mellitus (DM) continue to be a global focus in efforts to achieve the Sustainable Development Goals (SDGs), and despite the proactive implementation of BPJS Kesehatan's Prolanis program to suppress morbidity rates, the reality on the ground presents serious challenges. Data from RSUD Toto Kabila, the main referral center for Prolanis patients in Bone Bolango Regency, recorded an increase in the number of DM and Hypertension patient referrals from 2023 to 2024 (The number of Prolanis patients referred to Toto Kabila Hospital in November 2024 was 54 patients). This increase in referral frequency raises critical questions regarding the actual effectiveness of the various components of Prolanis activities. Therefore, this research is urgently needed. Its purpose is to empirically measure and analyze the relationship between patient participation in specific Prolanis activities and the incidence of referrals to Toto Kabila Regional General Hospital.

METHOD

This study employed a quantitative approach with a cross-sectional design, aiming to analyze the relationship between participation in Prolanis Activities (the independent variable, including medical consultation, reminders, health status monitoring, patient visits, and Prolanis exercise) and the Referral of DM and Hypertension Patients (the dependent variable). The study population consisted of all DM and Hypertension patients who were Prolanis participants and had been referred to Toto Kabila Regional General Hospital (RSUD Toto Kabila) between April and May 2025. A sample of 99 respondents was selected using an accidental sampling technique. Data collection took place during the April–May 2025 period, utilizing a questionnaire to measure patient participation in Prolanis and secondary data from medical records to determine referral status. The quality of the instruments was ensured through validity testing (Sign. (2-tailed) < 0.05) and high reliability testing (Cronbach's Alpha > 0.7). The entire research procedure received Ethical Approval (Number: 011B/UN47.B7/KE/2025). The collected data were analyzed sequentially, beginning with univariate analysis (frequency distribution), followed by bivariate analysis using the Chi-square test to examine the relationship, and finally multivariate analysis using logistic regression to identify the most dominant Prolanis activity variable influencing patient referral.

RESULT

Table 1.
Frequency Distribution of Respondents Based on Prolanis Activities and Patient Referral

Variable		f	%
Medical Consultation	Good	85	85.9
	Fair	14	14.1
Reminders	Good	89	89.9
	Fair	10	10.1
Health Status Monitoring	Good	84	84.8
	Fair	15	15.2
Patient Visits	Active	89	89.9
	Inactive	10	10.1
Prolanis Exercise	Active	89	89.9
	Inactive	10	10.1
Patient Referral	No Referral	9	9.1
	Referral Occurred	90	90.9

Table 1 shows that the majority of respondents participated in Prolanis activities categorized as good for medical consultation (85.9%), good for reminders (89.9%), good for health status monitoring (84.8%), active for patient visits (89.9%), and active for Prolanis exercise (89.9%). However, a high proportion of respondents (90.9%) still experienced a referral.

Table 2.

Analysis of the Relationship between Medical Consultation, Reminders, Health Status Monitoring, Patient Visits, and Prolanis Exercise with Patient Referral

Variable		Patient Referral				Total		P-Value
		No Referral		Referral Occurred		f	%	
		f	%	f	%			
Medical Consultation	Good	9	10.6	76	89.4	85	85.9	0.002
	Fair	0	0	14	100	14	14,1	
	Total	9	9.1	90	90.9	99	100	
Reminders	Good	3	3.4	86	96.6	89	89.9	0.000
	Fair	6	60	4	40	10	10,1	
	Total	9	9.1	90	90.9	99	100	
Health Status Monitoring	Good	9	10.7	75	89.3	84	84.9	0.004
	Fair	0	0	15	100	15	15,1	
	Total	9	9.1	90	90.9	99	100	
Patient Visits	Active	9	10.1	80	89.9	89	89.9	0.012
	Inactive	0	0	10	100	10	10,1	
	Total	9	9.1	90	90.9	99	100	
Prolanis Exercise	Active	0	0	89	100	89	89.9	0.000
	Inactive	9	90	1	10	10	10,1	
	Total	9	9.1	90	90.9	99	100	

Table 2 presents the results of the Chi-square analysis, which found a significant relationship between patient referral and all investigated Prolanis activities: medical consultation ($p = 0.002$), reminders ($p = 0.000$), health status monitoring ($p = 0.004$), patient visits ($p = 0.012$), and Prolanis exercise ($p = 0.000$).

Table 3.

Analysis of the Most Influential Prolanis Activity on the Incidence of Referral for Diabetes Mellitus and Hypertension Diagnoses

Research Variable	Sign (p)	Exp (B)
Medical Consultation	0.002	1.20
Reminder	0.000	2.08
Health Status Monitoring	0.004	4.01
Patient Visits	0.012	3.57
Prolanis Exercise	0.000	5.37

Table 3 shows that all independent variables are influential factors regarding patient referral. Among the five variables, the variable Prolanis Exercise has the greatest influence on patient referral, with an Exp(B) (Odds Ratio) value of 5.37

DISCUSSION

Relationship between Medical Consultation and Patient Referral for Diabetes Mellitus and Hypertension Diagnoses

The Chi-square test yielded a p-value of 0.002, which is less than the significance level alpha (0.05). This leads to the conclusion that there is a significant relationship between patient consultation activities within Prolanis and the referral of Diabetes Mellitus (DM) and Hypertension patients to RSUD Toto Kabila in 2025. This finding is reinforced by the fact that many respondents

reported only sometimes routinely participating in Prolanis activities, despite consistently attending the scheduled medical consultations and still being referred to the hospital.

This result aligns with the research conducted by Putra (2024), which showed a significant relationship between JKN (National Health Insurance) participation ($p = 0.001$), origin of the health facility ($p = 0.001$), HbA1c ($p = 0.001$), medical consultation ($p = 0.001$), and education-exercise for Prolanis participants ($p = 0.009$) collectively influencing the repeated visits of Prolanis participants to Class C Hospitals in Palembang in 2023. Furthermore, this finding is consistent with the theory proposed by Yuziani and Sofia (2023), which highlights that medical consultation, reminders for continuous treatment, activity, and health status monitoring are essential components of Prolanis. The purpose of this education is to encourage patients to take a more active role in independently managing their health condition.

According to the authors, although medical consultations are available, their effectiveness in preventing referrals may be hindered by inconsistent patient participation. This significant relationship not only affirms the importance of consultation as a Prolanis component but also highlights the need for an in-depth evaluation of the quality of interaction and the level of patient understanding during consultation sessions. If patients frequently consult but are still referred, it indicates that consultation activities must be strengthened, both in terms of frequency and depth of material, and strategies to ensure patient adherence outside of the health facility.

Relationship between Reminders and Patient Referral for Diabetes Mellitus and Hypertension Diagnoses

The Chi-square test resulted in a p-value of 0.000, which is less than the significance level alpha (0.05). Therefore, it can be concluded that there is a significant relationship between Prolanis reminder activities and the referral of DM and Hypertension patients to RSUD Toto Kabila in 2025. This is supported by respondents who reported always receiving reminder messages (SMS) from staff for Prolanis activities and consistently acting on these reminders, yet were still referred to the hospital.

Additionally, marital status emerged as a factor, indicating a relationship between patient reminders and the referral of DM patients. Since the majority of respondents were married, it is possible they were always reminded by their partners to seek treatment at the Hospital, thereby enabling optimal health status attainment. This finding aligns with the theory proposed by Hamzah (2022) and the study by Kurniawati (2020), which showed a significant relationship between participation in Prolanis reminders and health monitoring ($p = 0.000$) with patient referrals.

According to the authors, while reminders may be effective in increasing adherence to treatment attendance, they may not be sufficiently effective in changing lifestyle behavior or ensuring the patient's disease condition is controlled. Moreover, the finding regarding the role of marital status suggests that personalized reminders and social support (from a partner) may be stronger motivators for health action than merely formal messages from staff. Therefore, reminders should be enriched with more substantive educational content and strategies that involve the patient's closest social support, going beyond just appointment scheduling.

Relationship between Health Status Monitoring and Patient Referral for Diabetes Mellitus and Hypertension Diagnoses

The Chi-square test yielded a p-value of 0.004, which is less than the significance level alpha (0.05). This concludes that there is a significant relationship between health status monitoring activities within Prolanis and the referral of DM patients to RSUD Toto Kabila in 2025. This is based on respondents reporting that they always undergo routine blood pressure checks during

Prolanis attendance and regularly participate in activities like Prolanis exercise and health counseling/monitoring, yet were still referred to the hospital.

Furthermore, education level was found to be a factor, suggesting a relationship between health status monitoring and patient referral. Since the majority of respondents' education level was high school (SMA), this might enable respondents to acquire knowledge and consequently perform health status monitoring regularly. This finding aligns with the theory proposed by Nisa (2024), which states that education affects an individual's ability to think, act, and view life. It is also consistent with Kurniawati's (2020) research, which showed that participation in Prolanis reminders and health monitoring ($p = 0.000$), duration of joining PROLANIS ($p = 0.000$), activity of the club ($p = 0.003$), and activeness were closely related to the incidence of patient referrals. The implementation of information technology is also an integral part of Prolanis. BPJS Kesehatan has developed a mobile application allowing participants to monitor their health, receive reminders for check-up schedules, and access relevant health information. This technology facilitates coordination between patients, FKTP (Primary Care Facilities), and BPJS Kesehatan (Yuziani and Sofia, 2023). Prolanis also serves as an example of a community-based chronic disease management model, where community groups actively support their members suffering from chronic diseases. In several regions, activities such as group exercise and mass health screenings are routinely held to support the success of this program (Febriawati et al., 2023). According to the authors, this indicates that the quality or follow-up of the monitoring results may not be optimal. Patients may be routinely examined, but abnormal measurements (blood pressure or blood sugar levels) are not immediately followed up aggressively or integrated before reaching a crisis point that necessitates referral to RSUD Toto Kabila. Additionally, the finding regarding high school education as a supporting factor for monitoring adherence reinforces the need for more visual and practical educational strategies within Prolanis, utilizing information technology (the BPJS Kesehatan mobile application), to ensure that routine monitoring genuinely translates into effective preventive action.

Relationship between Patient Visits and Patient Referral for Diabetes Mellitus and Hypertension Diagnoses

The Chi-square test yielded a p -value of 0.012, which is less than the significance level α (0.05). Thus, it can be concluded that there is a significant relationship between Prolanis patient visit activities and the referral of DM patients to RSUD Toto Kabila in 2025. This finding is consistent with the research by Kurniawati (2020), which indicated that Prolanis patient visits ($p = 0.000$) are related to patient referrals. As previously stated, essential components of Prolanis include medical consultation, reminders for continuous treatment, and activity and health status monitoring. The goal of this education is to encourage patients to play a more active role in independently managing their health condition (Yuziani and Sofia, 2023). Participant adherence to Prolanis is demonstrated by their routine monthly attendance at the Community Health Center (Puskesmas). DM and Hypertension patients who attend Prolanis visits are expected to monitor their blood sugar and blood pressure so that these levels can be controlled. The adherence of DM and Hypertension patients to blood sugar and blood pressure control influences the success of Prolanis (Cahyaningsih, 2022). According to the authors, it is crucial to ensure that Prolanis visits are not merely about attendance but must focus on clinical outcomes, namely strictly monitoring blood sugar and blood pressure (as suggested by Cahyaningsih, 2022) and providing appropriate individual interventions during the visit. If patients attend routinely but are still referred, the quality of clinical care during these visits needs to become a major area for improvement.

Relationship between Prolanis Exercise and Patient Referral for Diabetes Mellitus and Hypertension Diagnoses

The Chi-square test yielded a p -value of 0.000, which is less than the significance level α (0.05). Thus, it can be concluded that there is a significant relationship between Prolanis exercise activities and the referral of DM patients to RSUD Toto Kabila in 2025. This is supported by

respondents reporting that they participate in Prolanis exercise less than 4 times a month. This finding is consistent with the research by Kurniawati (2020), which showed that gender ($p = 0.001$), type of participation ($p = 0.000$), medical diagnosis ($p = 0.000$), participation in PROLANIS ($p = 0.000$), Prolanis patient visits ($p = 0.000$), Prolanis exercise ($p = 0.003$), activity of educational events ($p = 0.015$), type of primary healthcare facility ($p = 0.000$), availability of human resources ($p = 0.000$), availability of infrastructure ($p = 0.005$), availability of medical equipment and drugs ($p = 0.000$), scope of services ($p = 0.000$), and scope of Prolanis activities ($p = 0.000$) were all related to referral. According to the authors, although exercise is proven effective theoretically and statistically (as supported by Kurniawati, 2020), its full benefit as a referral prevention tool will only be realized if the frequency of the activity is increased and patient adherence is maximized to meet recommended physical activity standards. Therefore, Prolanis Exercise must be positioned as a flagship program that must be routinely followed, not merely an additional activity.

The Most Influential Prolanis Activity on Patient Referral for Diabetes Mellitus and Hypertension Diagnoses

The research results from the multivariate analysis showed that all five variables tested were significant: medical consultation (p-value 0.002), reminders (p-value 0.000), health status monitoring (p-value 0.004), patient visits (p-value 0.012), and Prolanis exercise (p-value 0.000). Among these five variables, the variable Prolanis Exercise was the most strongly associated with patient referral to RSUD Toto Kabila in 2025, with an Odds Ratio (OR) of 5.37\$. This means that Prolanis exercise has the strongest relationship compared to other variables (medical consultation, reminders, health status monitoring, patient visits) with patient referral for DM and HPT diagnoses at RSUD Toto Kabila in 2025. Patient adherence to Prolanis is shown by participants attending routine monthly activities at the Community Health Center. DM and Hypertension patients who attend Prolanis visits are expected to monitor their blood sugar and blood pressure so that these levels can be controlled. Adherence by DM and Hypertension patients to blood sugar and blood pressure control affects the success of Prolanis (Cahyaningsih, 2022). Research by Risnawati and Misparsih (2021) showed an influence of Prolanis exercise on the reduction of blood sugar levels and the decrease of systolic and diastolic blood pressure after respondents performed Prolanis exercise for 4 consecutive weeks. According to the authors, this finding confirms that physical activity is the strongest pillar, surpassing administrative and educational adherence, in the management of DM and Hypertension at RSUD Toto Kabila. Therefore, policy recommendations must firmly position Prolanis Exercise as the main intervention activity that should be prioritized and maintained in frequency consistently to achieve optimal clinical control and reduce referral rates.

CONCLUSION

The findings of this study conclude that there is a relationship between active participation in Prolanis activities—including medical consultation, reminders, health status monitoring, patient visits, and Prolanis exercise—and the reduction of patient referrals. Notably, Prolanis exercise was identified as the activity with the greatest influence on reducing the referral rate of Diabetes Mellitus and Hypertension patients. Therefore, health facilities are advised to prioritize and strengthen routine physical activities such as Prolanis Exercise as the core component of the program, while simultaneously increasing the intensity and quality of reminder and monitoring activities to maximize patient adherence and ensure the effectiveness of referral prevention efforts.

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