Jurnal Kesehatan
Manarang

Jurnal Kesehatan Manarang, 12 (2), August 2026, pp. 197 – 206
ISSN 2528-5602 (Online), ISSN 2443-3861 (Print)
doi: https://doi.org/10.33490/jkm.v12i2.2460

CHRONIC DISEASE MANAGEMENT PERFORMANCE UNDER PROLANIS: AN ANALYSIS OF THE CONTROLLED-PARTICIPANT RATIO FOR DIABETES AND HYPERTENSION ACROSS 25 PUSKESMAS IN SLEMAN

Firman[1]✉, **Muchamad Rifai**[2], **Kartika Lestari**[3]
[1,2]Department of Public Health, Faculty of Public Health, Universitas Ahmad Dahlan, Indonesia
[3]BPJS Kesehatan Branch Office Sleman Regency, DIY, Indonesia

ARTICLE INFO

Article history

Submitted: 2026-07-07
Revised: 2026-08-22
Accepted : 2026-08-28

Keywords:

Diabetes mellitus;
Hypertension;
Prolanis;
Community health centers

ABSTRACT

Background: Diabetes mellitus (DM) and hypertension (HT) control under the Chronic Disease Management Program (Prolanis) is an important indicator of primary care performance in Indonesia. **Objective**: This study analyzed the level, trend, and between-facility disparity of the Controlled-Participant Ratio (RPPT) for DM and HT among registered Prolanis participants across 25 community health centers (Puskesmas) in Sleman Regency during 2024–2025. **Methods**: Using facility-level panel data (2024–2025), a binomial generalized linear mixed model (GLMM; random intercept for Puskesmas) with cluster-robust standard errors estimated the adjusted Controlled-Participant Ratio (RPPT) and between-year risk differences, with a paired Wilcoxon signed-rank test serving only as a robustness check. **Results**: The adjusted DM control proportion (7.6%) was higher than that of HT (3.5%) (p<0.001). Both conditions showed only slight between-year changes that were not statistically significant after accounting for facility clustering and overdispersion (DM +0.09 pp, p=0.83; HT +0.54 pp, p=0.053), and the disease×year interaction was not significant (p=0.18); a paired nonparametric robustness check indicated a consistent tendency toward HT improvement (p=0.028). Between-facility disparity was substantial, with a 23.1-fold gap for DM and a 10.0-fold gap for HT, with the lowest-performing facility differing by disease (Kalasan for DM and Cangkringan for HT). **Conclusion**: DM and HT control varied substantially across facilities. HT control remained below the national KBK performance target, whereas DM control met the target. The observed tendency toward HT improvement was not statistically robust, highlighting the need for targeted Prolanis strengthening and routine facility-level monitoring, particularly at persistently low-performing Puskesmas..

Kata Kunci:

Diabetes melitus;
Hipertensi;
Prolanis;
Puskemas

ABSTRAK

Latar belakang: *Pengendalian diabetes melitus (DM) dan hipertensi (HT) dalam Program Pengelolaan Penyakit Kronis (Prolanis) merupakan salah satu indikator kinerja pelayanan primer di Indonesia. Namun, capaian pengendalian jarang dibandingkan antar-fasilitas dan dipantau secara longitudinal.* ***Tujuan:*** *Penelitian ini menganalisis tingkat, tren, dan disparitas antar-fasilitas Rasio Peserta Prolanis Terkendali (RPPT) untuk DM dan HT pada peserta terdaftar di 25 Puskesmas di Kabupaten Sleman selama 2024–2025.* ***Metode:*** *Menggunakan data panel tingkat fasilitas dari seluruh 25 Puskesmas (2024–2025). Model campuran binomial (generalized linear mixed model, GLMM; random intercept Puskesmas) dengan cluster-robust standard errors digunakan untuk mengestimasi RPPT dan risk difference antar-tahun; uji Wilcoxon berpasangan hanya digunakan sebagai robustness check.* ***Hasil:*** *Proporsi terkendali terestimasi untuk DM (7,6%) konsisten lebih tinggi daripada HT (3,5%) (p<0,001). Kedua penyakit hanya menunjukkan perubahan antar-tahun yang kecil dan tidak bermakna secara statistik setelah memperhitungkan klaster fasilitas dan overdispersion (DM +0,09 poin persen, p=0,83; HT +0,54 poin persen, p=0,053), dan interaksi penyakit×tahun tidak bermakna (p=0,18); uji non-parametrik berpasangan sebagai robustness check menunjukkan kecenderungan perbaikan HT yang konsisten (p=0,028). Disparitas antar-fasilitas cukup besar, dengan selisih 23,1 kali lipat untuk DM dan 10,0 kali lipat untuk HT, dengan fasilitas berkinerja terendah berbeda menurut penyakit (Kalasan untuk DM dan Cangkringan untuk HT).* ***Kesimpulan:*** *Pengendalian DM dan HT sangat bervariasi antar-fasilitas. Pengendalian HT masih di bawah target kinerja KBK, sedangkan DM telah memenuhi target. Kecenderungan perbaikan HT belum kokoh secara statistik, sehingga diperlukan penguatan Prolanis yang lebih terarah dan pemantauan rutin*

berbasis fasilitas, terutama pada Puskesmas dengan capaian rendah secara konsisten.

Corresponding Author:

Firman
Telp. 088215732893
Email: firman@uad.ac.id

INTRODUCTION

Non-communicable diseases, particularly diabetes mellitus (DM) and hypertension (HT), constitute a growing public health burden in Indonesia and are leading causes of morbidity and mortality managed at the primary care level (Kementerian Kesehatan RI, 2019). Both conditions are chronic, frequently asymptomatic in early stages, and require continuous monitoring, so their management depends heavily on the quality of services at primary health facilities (Puskesmas) (World Health Organization, 2022)

Within the National Health Insurance (JKN) scheme, the Chronic Disease Management Program (Prolanis) organized by BPJS Kesehatan (Badan Penyelenggara Jaminan Sosial Kesehatan, the national health insurance administrator) is the principal instrument for controlling DM and HT at Puskesmas, delivered through routine health checks, education, medical consultation, health-status monitoring, and group activities such as Prolanis exercise (Badan Penyelenggara Jaminan Sosial Kesehatan, 2021; Krisnadewi et al., 2025; Nappoe et al., 2023). Achievement of DM and HT control also forms part of the Performance-Based Capitation (KBK) indicators, so Prolanis success carries both clinical and financing implications (Aryani et al., 2024; Barber et al., 2025).

Despite this, most reporting of Prolanis achievement stops at a single district or national figure and rarely examines how control proportions vary across facilities or move over time (Purnamasari et al., 2024). Yet between-facility variation and temporal trends are precisely the information most relevant for policymakers to identify low-performing facilities and to judge whether control efforts are improving (Musiega et al., 2023). The hypertension and diabetes care cascade in low- and middle-income settings consistently shows large gaps between diagnosis and control, with wide disparities across geography and health systems (Lamloum et al., 2023; Stojnić et al., 2024). Broader analyses of primary-care efficiency and financing in Indonesia point to persistent variation in resource use and service performance across facilities (World Health Organization, 2026; Liu et al., 2023), but DM and HT control achievement itself has rarely been analyzed as a distinct quality indicator across facilities over time.

This study aimed to analyze the level, trend, and disparity of DM and HT control proportions among Prolanis participants across 25 Puskesmas in Sleman Regency during 2024–2025, and to compare control patterns between the two diseases. By using monthly data over two years, the study aims to provide a more complete picture of chronic-disease control dynamics in primary care than a single-time snapshot.

Within the National Health Insurance scheme, DM and HT control among Prolanis participants serves as a key indicator of primary care service performance and is embedded in the Performance-Based Capitation (KBK) framework, within which the Ratio of Controlled Prolanis Participants (RPPT) is one of three capitation performance indicators, carrying a target of at least 5% (Badan Penyelenggara Jaminan Sosial Kesehatan, 2024). Rather than a purely clinical endpoint, the achievement of controlled status reflects how consistently facilities deliver routine monitoring, education, and follow-up under Prolanis. Analyzing this indicator across facilities and over time therefore provides insight into the functioning of chronic disease management at the primary care level, complementing, rather than duplicating, broader assessments of facility performance.

METHOD

Type of Research

This study used a retrospective longitudinal design based on facility-level panel data. The unit of observation was the Puskesmas-month one record per community health center (Puskesmas) per calendar month for each disease, comprising the number of participants reported as controlled (numerator) and the number of registered Prolanis participants diagnosed with that disease (denominator). The 25 Puskesmas served as the clustering units, each contributing up to 24 monthly records per disease, yielding 600 facility-month records per disease. The two conditions (DM and HT) were stacked into a single model with a disease indicator rather than analyzed separately, so that the between-year change could be compared directly between diseases. Because all 25 Puskesmas in Sleman Regency were included, the dataset represents a complete enumeration of the district's primary-care network rather than a random sample; the findings therefore characterize the Sleman Prolanis program directly and may inform interpretation in other settings by analogy. The target population comprised all Prolanis participants diagnosed with DM or HT registered at these facilities during January 2024–December 2025. The estimands of interest were the mean control proportion for each disease, the adjusted between-year change in control proportion (risk difference), the DM–HT contrast, and the magnitude of between-facility variation.

Place and Time of Research

The study covered all 25 Puskesmas in Sleman Regency, Special Region of Yogyakarta, over 24 consecutive months (January 2024 to December 2025). Data were sourced from BPJS Kesehatan Branch Office Sleman. No individual patient data were accessed.

Population and Sample

The study used total enumeration: all 25 Puskesmas in Sleman were included, each contributing up to 24 monthly records per disease, yielding 600 facility-month records per disease (25 Puskesmas × 24 months). Because repeated monthly records from the same facility are correlated, these 600 records do not represent 600 independent units; this clustering was addressed in the analysis described below.

Data Collection

The study used monthly aggregate RPPT data obtained from BPJS Kesehatan. The dataset contained the number of registered Prolanis participants diagnosed with diabetes mellitus (DM) and hypertension (HT), as well as the corresponding number classified as controlled for each disease at the Puskesmas level. The controlled status was based on the Prolanis performance indicator reported by BPJS Kesehatan, which is derived from routine clinical monitoring conducted by participating primary health care facilities. Because the study used aggregate secondary data, the underlying individual clinical measurements used to determine controlled status (e.g., individual blood pressure or glucose values), patient age, and examination-level records were not available to the researchers. Therefore, this study did not independently re-evaluate or redefine clinical control. Instead, the BPJS-reported controlled status was used as the outcome measure. The Controlled-Participant Ratio (RPPT) was calculated for each disease as the number of controlled participants divided by the number of registered Prolanis participants diagnosed with the respective disease. Thus, RPPT represents the proportion of registered Prolanis participants classified as controlled according to the BPJS Prolanis indicator and should be interpreted as a program-level performance indicator rather than an independently verified individual clinical measurement.

Ethical approval for this study was obtained from the Research Ethics Committee of Universitas Muhammadiyah Purwokerto (Komisi Etik Penelitian Kesehatan, KEPK-UMP) under approval number KEPK/UMP/196/IV/2026. Because the study used only aggregate, facility-level secondary data obtained from BPJS Kesehatan and did not involve any individual patient identifiers or direct contact with human subjects, the committee granted ethical clearance with a waiver of individual informed consent. All data were accessed and processed solely for research purposes and handled in accordance with applicableconfidentiality and data-protection principles.

Data Analysis and Processing

Descriptive statistics (mean, median, standard deviation, range, and quartiles) were first used to summarize the level of control proportions, and between-facility disparity was described using the range, the ratio of the highest to the lowest facility value, and the coefficient of variation. The primary analysis was a binomial generalized linear mixed model (GLMM) fitted to the stacked Puskesmas-month data, in which the number of controlled participants out of the number registered was modeled with a logit link. The model included a random intercept for Puskesmas to account for the clustering of repeated monthly observations within facilities, with fixed effects for disease (DM vs HT), year (2024 vs 2025), calendar month (to capture seasonality), and the disease×year interaction; the interaction provided a formal test of whether the between-year change differed between the two diseases. Because the facility-month data exhibited marked overdispersion (Pearson dispersion ≈ 35), inference for the fixed effects was based on cluster-robust standard errors with the Puskesmas as the clustering unit; a beta-binomial specification represents an alternative approach to the same overdispersion. Results were reported as adjusted predicted control proportions (averaged over the monthly seasonal profile) with 95% confidence intervals, between-year risk differences in percentage points, the DM–HT contrast, and the disease×year interaction. Between-facility heterogeneity was quantified using the variance of the Puskesmas random intercept and the corresponding intraclass correlation coefficient (ICC). As a secondary robustness check only, the paired Wilcoxon signed-rank test was applied to facility-level mean proportions to confirm the direction of the between-year change and was not used as the primary basis for statistical inference; this nonparametric test does not assume normality. Because the registered denominator in July was markedly higher than in adjacent months (approximately 45% higher), suggesting a possible administrative reporting or re-registration anomaly, a separate sensitivity analysis excluding July was conducted to assess whether this anomaly materially influenced the findings. All analyses were performed using R version 4.4 with the glmmTMB package, and statistical significance was set at $\alpha = 0.05$.

RESULT

During 2024–2025, the average number of diagnosed Prolanis participants per month across the 25 Puskesmas reached approximately 70,500 HT participants and 18,800 DM participants (Table 3). Table 1 summarizes the control proportions across all monthly observations. The DM control proportion (mean 7.75%; median 7.20%) was generally higher than HT (mean 3.76%; median 3.30%), and this difference was statistically significant (paired Wilcoxon test, $p<0.001$), with DM higher in 455 of 600 observations.

Table 1. Control Proportions of DM and HT among Prolanis Participants across 600 Facility-Month Observation per Disease

Indicator	Mean (%)	Median (%)	SD	Min–Max (%)	IQR (%)
DM controlled	7.75	7.20	4.02	0.00–26.14	5.1–9.8
HT controlled	3.76	3.30	2.52	0.20–13.02	1.4–5.3

SD = standard deviation; IQR = interquartile range.

In the facility-panel binomial model, the adjusted control proportion was substantially higher for DM than for HT ($p<0.001$; Table 2, Figure 1). Both conditions changed only slightly between 2024 and 2025, and after accounting for facility clustering and the marked overdispersion of the data (Pearson dispersion ≈ 35), neither between-year change was statistically significant: the adjusted risk difference was +0.09 percentage points for DM (95% CI −0.75 to +0.93; $p=0.83$) and +0.54 percentage points for HT (95% CI −0.01 to +1.08; $p=0.053$). The disease×year interaction was not significant ($p=0.18$), indicating no statistically distinguishable difference between the two diseases in their between-year change. A paired Wilcoxon signed-rank robustness check on facility means showed the same direction—improvement in 18 of 25 Puskesmas for HT ($p=0.028$) and in 14 of 25 for DM ($p=0.71$)—reflecting a consistent but modest tendency toward improvement that weakens once denominator size and overdispersion are taken into account. Calendar month was included to adjust for seasonality and was jointly significant ($p<0.001$), confirming month-to-month variation in control proportions; as it

served only as an adjustment, individual monthly coefficients are not reported. The July effect specifically was not significant (p=0.19), consistent with the July sensitivity analysis.

Table 2. Adjusted control proportions and between-year changes from the facility-panel binomial model (cluster-robust SE)

Indicator	Adjusted 2024 % (95% CI)	Adjusted 2025 % (95% CI)	Risk difference, pp (95% CI)	p	Improved (of 25)
DM controlled	7.60 (6.09–9.11)	7.69 (6.40–8.99)	+0.09 (−0.75, +0.93)	0.83	14
HT controlled	3.52 (2.58–4.46)	4.06 (3.11–5.00)	+0.54 (−0.01, +1.08)	0.053	18

Estimates from a binomial generalized linear mixed model (GLMM; logit link) with a random intercept for Puskesmas; fixed effects for disease, year, month, and disease×year; inference by cluster-robust standard errors (cluster = Puskesmas). DM vs HT: p<0.001. disease×year interaction: p=0.18. Between-facility ICC = 0.07. Pearson dispersion = 34.9. pp = percentage points; CI = confidence interval. Direction confirmed by a Wilcoxon robustness check (HT p=0.028; DM p=0.71).

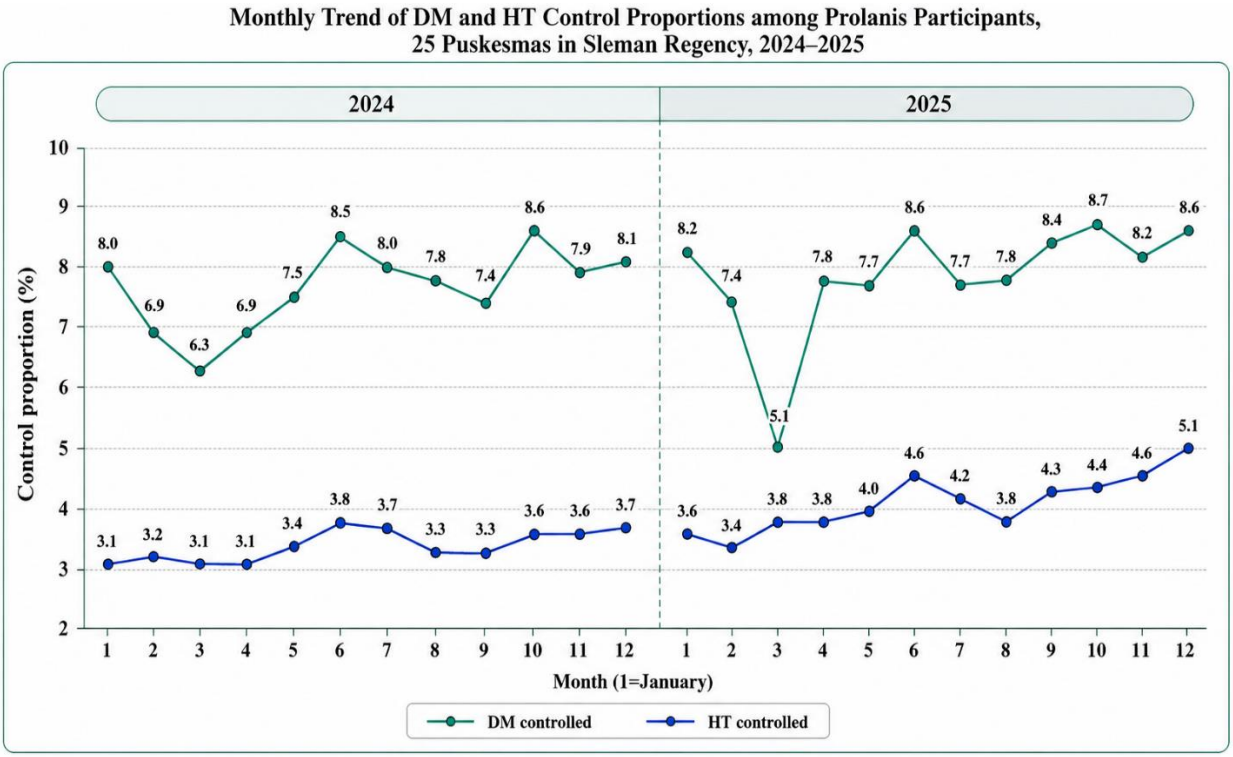

Figure 1. Monthly trend of DM and HT control proportions among Prolanis participants, 25 Puskesmas in Sleman Regency, 2024–2025.

Between-facility disparity in control proportions was wide (Figure 2). For DM, the highest control proportion was at Minggir (18.98%) and the lowest at Kalasan (0.82%), a 23.1-fold range. For HT, the highest was also at Minggir (7.77%) and the lowest at Cangkringan (0.78%), a 10.0-fold range. The lowest-performing facility differed by disease: Kalasan for DM and Cangkringan for HT, with Kalasan also among the lowest for HT. The coefficient of variation across facilities reached 45% for DM and 58% for HT, underscoring the magnitude of the gap. These facility-level extremes are based on each facility's mean control proportion over 2024–2025 and therefore differ from the facility-month minimum and maximum reported in Table 1.

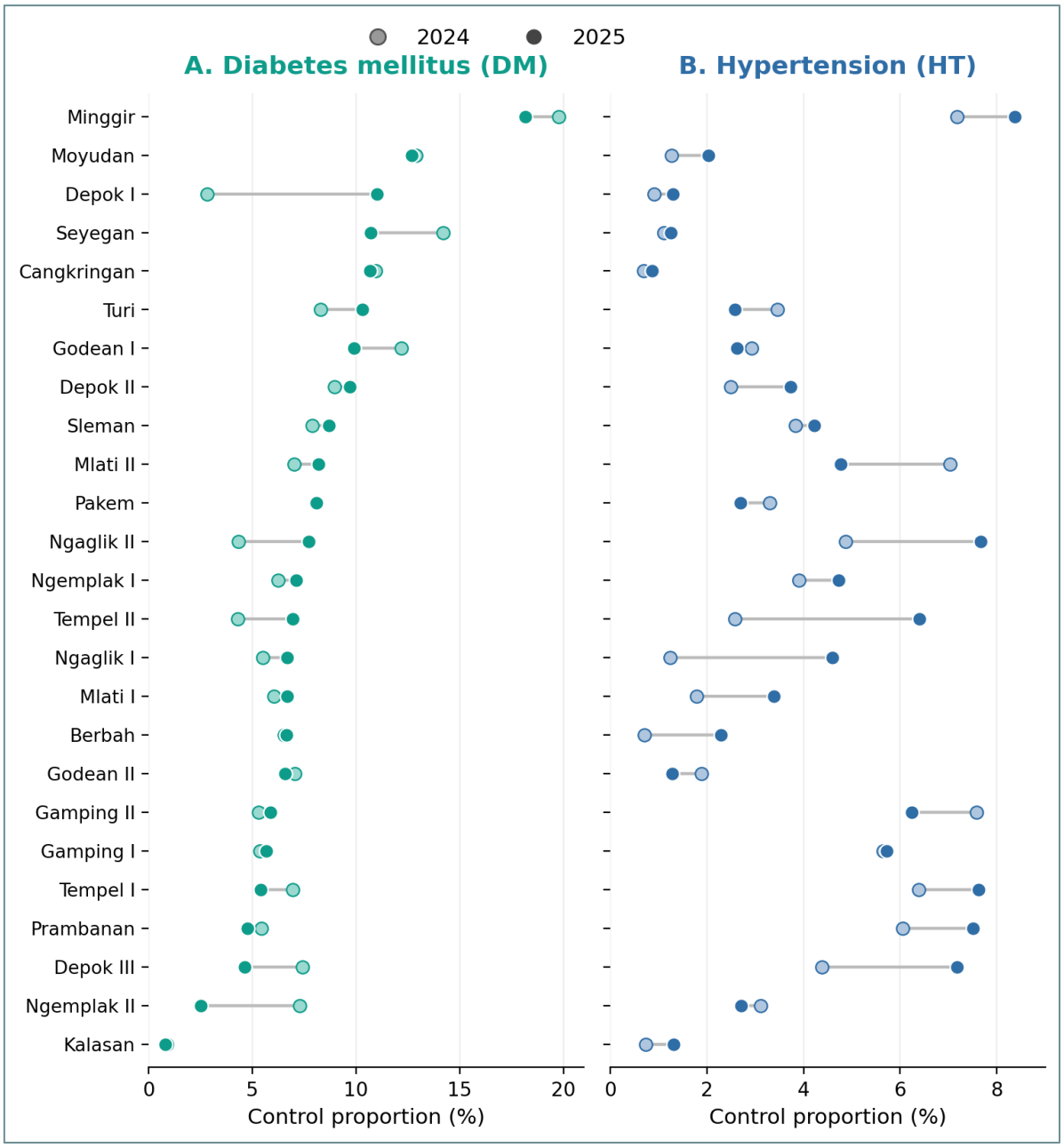

Figure 2. Two-year change in diabetes mellitus (DM, panel A) and hypertension (HT, panel B) control proportions by Puskesmas, 2024 (light) versus 2025 (dark). Facilities are ordered by 2025 DM control; adjusted overall values are reported in Table 2.

Table 3. Registered Prolanis participants (denominator) per year

Disease	Registered 2024 (mean/month)	Registered 2025 (mean/month)	Range (facility-month)
DM	751	777	321–2,242
HT	2,819	2,878	1,161–10,064

Values are the mean number of registered Prolanis participants per facility per month; the range spans all facility-month observations (2024–2025).

DISCUSSION

This study identified three main findings regarding chronic disease management among Prolanis participants in primary health care facilities in Sleman Regency during 2024–2025. First, the overall proportion of controlled diabetes mellitus (DM) and hypertension (HT) remained heterogeneous across facilities. When benchmarked against the KBK target for the Ratio of Controlled Prolanis Participants (RPPT ≥ 5%), the average observed DM RPPT (7.7%) exceeded the 5% KBK threshold, whereas HT (3.8%) remained below it. Second, HT showed a modest tendency toward improvement, whereas DM changed little over time. However, the disease-by-year interaction was not statistically significant (p=0.18), indicating no evidence that temporal trends differed between the two diseases. Third, there was a very wide disparity in control achievement across public health centers. These findings collectively illustrate that chronic disease control in primary care is highly heterogeneous and cannot be adequately captured through aggregate cross-sectional indicators. The pronounced overdispersion of the facility-month data (Pearson dispersion ≈ 35) reflects substantial variability beyond that expected under a simple binomial model. Accordingly, statistical inference was based on cluster-robust standard errors to obtain valid confidence intervals and significance tests despite the observed overdispersion. The GLMM estimates therefore constitute the primary inferential results of this study, whereas the Wilcoxon analysis serves only as a robustness check confirming the consistency of the observed direction of change.

The observed proportion of controlled DM and HT should be interpreted within the context of an expanding registry of Prolanis participants. The strengthening of early detection and screening activities in Indonesia, including integration through SATUSEHAT and the implementation of the Free Health Screening (Cek Kesehatan Gratis/CKG) program, may have contributed to a growing number of identified chronic disease patients (Kementerian Kesehatan RI, 2025). To the extent that individuals with newly detected conditions are enrolled into Prolanis, the registered denominator would be expected to grow; in the present data, however, the registered denominator increased only modestly between 2024 and 2025 (Table 3). Any consequent dilution of the control proportion whereby newly identified patients require time to achieve controlled status was not directly tested in this study and is therefore offered as a hypothesis rather than an established mechanism. Therefore, the control proportion in this study should be interpreted as a relative performance indicator of chronic disease management, rather than an absolute measure of clinical quality. Similar preliminary evaluations of Prolanis outcomes in Indonesia have likewise emphasized the influence of consistent program implementation on chronic disease control (Salamah et al., 2023).

Although hypertension demonstrated a modest tendency toward improvement, the disease-by-year interaction was not statistically significant (p = 0.18), indicating that temporal changes were statistically comparable between hypertension and diabetes. Nevertheless, the observed direction of change is consistent with previous studies suggesting that hypertension may respond more readily to primary care interventions because of simpler monitoring requirements and more standardized treatment protocols, whereas diabetes management requires more complex behavioral, dietary, and metabolic control (Krisnadewi et al., 2025; Ipa et al., 2023). Even in high-performing health systems, achieving optimal diabetes control remains challenging due to its multifactorial nature. Global evidence also shows persistent gaps in hypertension control achievement despite structured primary care interventions, highlighting the complexity of chronic disease management in real-world settings (Lamloum et al., 2023). Taken together, these findings suggest that strengthening diabetes control within Prolanis may require more intensive and multidimensional implementation strategies, including sustained patient education, improved adherence monitoring, and consistent metabolic surveillance. Pharmacist-led counseling has been shown to improve health-related quality of life among people with type 2 diabetes, underscoring the value of structured educational support in diabetes care (Fajriansyah et al., 2020). Moreover, performance-based capitation alone may be insufficient to substantially improve diabetes outcomes without parallel strengthening of service delivery (Pratama & Dartanto, 2026).

The substantial disparity in DM and HT control across facilities indicates marked variation in facility-level performance. In some cases, differences exceeded twenty-fold across Puskesmas, suggesting substantial variation in implementation fidelity, recording practices, human resource

capacity, and intensity of Prolanis monitoring activities. Similar findings have been reported in previous studies, where primary care performance variation is strongly associated with organizational capacity and local implementation context (Rocha et al., 2023; Ipa et al., 2023; Wake et al., 2025). In addition, variability in reporting practices and participation structures within Prolanis may also contribute to observed differences across facilities (Widyahening et al., 2023). Facilities that consistently showed lower observed RPPT for both DM and HT, such as Kalasan, may warrant further assessment of facility-level implementation and reporting processes. This supports the need for facility-level performance improvement strategies rather than interventions focused solely on disease-specific outcomes.

From a health system perspective, these findings support the need for targeted performance improvement strategies rather than uniform interventions across all facilities. Primary health care facilities with consistently low performance should be prioritized for structured mentoring, data quality audits, and reinforcement of Prolanis implementation cycles. This is consistent with the regulatory framework established under BPJS Kesehatan Regulation Number 3 of 2024 (Badan Penyelenggara Jaminan Sosial Kesehatan, 2024), which mandates monthly monitoring of Prolanis participants through consultation, examination, diagnostic support, evaluation, and treatment adjustment. This regulation positions chronic disease control as a continuous process embedded within routine primary care services.

Conversely, high-performing facilities may serve as learning sites for inter-facility knowledge transfer and best practice dissemination, an approach increasingly emphasized in primary care efficiency literature (Liu et al., 2023; Zubir et al., 2025). Evidence from other low- and middle-income countries also suggests that standardized, protocol-based chronic disease management can significantly improve control outcomes when implemented consistently at the primary care level (Chavan et al., 2024; Kaur et al., 2023). Therefore, strengthening implementation fidelity of Prolanis, rather than redesigning the program structure, may be a more effective strategy for improving overall performance.

The use of monthly administrative data in this study provides additional value for monitoring chronic disease control trends over time and enabling early detection of performance changes at the facility level. However, several limitations should be acknowledged. First, the use of aggregated facility-level data limits interpretation to organizational performance and does not allow individual-level inference. In addition, the outcome is the Controlled-Participant Ratio (RPPT), a composite program indicator whose denominator is registered Prolanis participants rather than all diagnosed patients in each facility's catchment population; enrolment (recruitment) coverage, which varies across facilities and may differ between diseases, could not be quantified because catchment and eligible-population data were unavailable, and the aggregate data did not permit decomposition of the RPPT into its recruitment, examination, and clinical-control components. The observed DM–HT gap and between-facility disparities should therefore be interpreted as differences in program performance among enrolled participants rather than as clinical-control rates in the underlying patient population. Second, the absence of individual patient characteristics such as age, comorbidities, and medication adherence may influence variation in control outcomes (Apsari & Sartika, 2024). Third, differences in timing between registered and controlled status may affect proportional estimates; therefore, interpretation in this study is focused on relative comparisons across facilities and time rather than absolute clinical levels. Finally, although sensitivity analysis was conducted, further studies using individual-level longitudinal data are needed to strengthen evidence and improve causal inference.

Overall, the interpretation of findings in this study is limited to descriptive and associational patterns of chronic disease control across primary health care facilities. Therefore, variations in DM and HT control, as well as changes in service utilization and referral patterns, should be understood as observed performance differences rather than causal effects of specific interventions or policies.

CONCLUSION AND SUGGESTION

DM and HT control proportions among Prolanis participants across 25 Puskesmas in Sleman Regency during 2024–2025 remained variable across facilities and, for hypertension, below the KBK performance target (RPPT ≥ 5%), which diabetes met at the aggregate level. HT control showed only a

modest, statistically non-significant tendency toward improvement, whereas DM control remained relatively stable over the study period. Between-facility disparities exceeding tenfold underscore the importance of examining facility-level factors that may contribute to differences in achievement. It is recommended that Prolanis strengthening be directed specifically at low-performing facilities through mentoring, record reinforcement, and intensified activities, particularly for conditions and facilities with persistently low performance. Monitoring based on monthly data is recommended as an early-detection instrument for declining achievement. Future research should use individual-level data to confirm the determinants of control achievement.

REFERENCES

Apsari, N., & Sartika, R. A. D. (2024). Hubungan persepsi hambatan dengan kepatuhan minum obat pada pasien diabetes melitus di Puskesmas Pasar Minggu Jakarta Selatan. Media Publikasi Promosi Kesehatan Indonesia, 7(5), 1281–1293. https://doi.org/10.56338/mppki.v7i5.5114

Aryani, A. D., Bachtiar, A., & Candi, C. (2024). The structural equation modelling of first level health facilities' performance-based capitation payment in National Health Service. Kesmas: Jurnal Kesehatan Masyarakat Nasional, 19(1), 35–41. https://doi.org/10.21109/kesmas.v19i1.7340

Badan Penyelenggara Jaminan Sosial Kesehatan. (2021). Panduan praktis Prolanis (Program Pengelolaan Penyakit Kronis). BPJS Kesehatan.

Badan Penyelenggara Jaminan Sosial Kesehatan. (2024). Peraturan Badan Penyelenggara Jaminan Sosial Kesehatan Nomor 3 Tahun 2024 tentang pelayanan skrining riwayat kesehatan, pelayanan penapisan atau skrining kesehatan tertentu, dan peningkatan kesehatan bagi peserta penderita penyakit. BPJS Kesehatan.

Barber, S. L., Mathauer, I., Rosenberg, M., Larrain, N., Liu, Y., Long, Q., Smith, A., Nappoe, S. A., & Lorenzoni, L. (2025). Purchasing primary care services for quality chronic care: Capitation with performance payments in four countries. International Journal of Health Planning and Management, 40(4), 1007–1012. https://doi.org/10.1002/hpm.3929

Chavan, T. A., Kaviprawin, M., Sakthivel, M., Kishore, N., Jogewar, P., Kaur, P. (2024). India Hypertension Control Initiative: Decentralization of hypertension care to health and wellness centres in Punjab and Maharashtra, India, 2018–2022. BMC Health Services Research, 24(1), 884. https://doi.org/10.1186/s12913-024-11354-9

Fajriansyah, Iskandarsyah, A., Puspitasari, I. M., & Lestari, K. (2020). Impact of pharmacist counseling on health-related quality of life of patients with type 2 diabetes mellitus: A cluster randomized controlled study. Journal of Diabetes & Metabolic Disorders, 19(2), 675–682. https://doi.org/10.1007/s40200-020-00528-x

Ipa, M., Dhewantara, P. W., & Prasetyo, D. B. (2023). Perceived barriers to management of patients with diabetes mellitus and hypertension in primary care centers in Indonesia. PLOS ONE, 18(6), e0287345. https://doi.org/10.1371/journal.pone.0287345

Kaur, P., Kunwar, A., Sharma, M., Durgad, K., Gupta, S., Bhargava, B. (2023). The India Hypertension Control Initiative–early outcomes in 26 districts across five states of India, 2018–2020. Journal of Human Hypertension, 37(7), 560–567. https://doi.org/10.1038/s41371-022-00742-5

Kementerian Kesehatan Republik Indonesia. (2019). Laporan Nasional Riskesdas 2018. Badan Penelitian dan Pengembangan Kesehatan.

Kementerian Kesehatan Republik Indonesia. (2025). Program Cek Kesehatan Gratis: Pedoman pelaksanaan. Kementerian Kesehatan.

Krisnadewi, K. I., Kristina, S. A., Andayani, T. M., & Endarti, D. (2025). Implementation preventive program for diabetic mellitus (PROLANIS) at community health center in Indonesia: A qualitative study. Journal of Applied Pharmaceutical Science, 15(1), 153–161. https://doi.org/10.7324/JAPS.2024.194416

Lamloum, D., Fassio, F., Osetinsky, B., & Tediosi, F. (2023). Care cascades for hypertension in low-income settings: A systematic review and meta-analysis. International Journal of Public Health, 68, 1606428. https://doi.org/10.3389/ijph.2023.1606428

Liu, H., Liu, J., & Gao, Y. (2023). Evaluating the efficiency of primary health care institutions in China: An improved three-stage data envelopment analysis approach. BMC Health Services Research, 23, 985. https://doi.org/10.1186/s12913-023-09995-x

Musiega, A., Nyawira, L., Tsofa, B., Njuguna, R. G., Munywoki, J., Hanson, K., Mulwa, A., Molyneux, S., Maina, I., Normand, C., Jemutai, J., & Barasa, E. (2023). Budget monitoring, accountability practices and their influence on the efficiency of county health systems in Kenya. PLOS Global Public Health, 3(11), e0001908. https://doi.org/10.1371/journal.pgph.0001908

Nappoe, S. A., Djasri, H., & Kurniawan, M. F. (2023). Chronic disease management programme (PROLANIS) in Indonesia: Case study. World Health Organization & Organisation for Economic Co-operation and Development. https://p4h.world/en/documents/chronic-disease-management-programme-prolanis-in-indonesia/

Pratama, F. B., & Dartanto, T. (2026). The impact of performance-based capitation on diabetes care: Evidence from Indonesia's national health insurance program. International Journal of Health Economics and Management, 26(1), 2. https://doi.org/10.1007/s10754-025-09407-5

Purnamasari, A. T., Ningrum, H. D., Ardhiasti, A., Rahmi, N., & Candi, C. (2024). Capitation management through performance-based capitation mechanism of primary health care in Malang, Indonesia. Kesmas: Jurnal Kesehatan Masyarakat Nasional, 19(Suppl.1), 46–55. https://doi.org/10.21109/kesmas.v19isp1.1070

Rocha, J., Santinha, G., & Mateus, C. (2023). Portuguese primary healthcare and prevention quality indicators for diabetes mellitus: A data envelopment analysis. International Journal of Environmental Research and Public Health, 20(1), 792. https://doi.org/10.3390/ijerph20010792

Salamah, S., Khafiyya, A. N., Ramadhani, R., Arfiana, M. R., Syamsuri, I., Faizah, N. N., Nugraha, D., Arifin, B., & Alkaff, F. F. (2023). Outcomes of the Indonesian Chronic Disease Management Program (PROLANIS) in patients with hypertension during the COVID-19 pandemic in rural areas: A preliminary evaluation study. Medical Science Monitor, 29, e939797. https://doi.org/10.12659/MSM.939797

Stojnić, N., Klemenc-Ketiš, Z., Poplas Susič, A., Danhieux, K., & Wens, J. (2024). Evaluation of the implementation of integrated primary care for patients with type 2 diabetes and hypertension. International Journal of Integrated Care, 24(2), 27. https://doi.org/10.5334/ijic.7664

Wake, J. L., Littik, S. K. A., & Sirait, R. W. (2025). Tinjauan pelaksanaan Program Pengelolaan Penyakit Kronis (Prolanis) pada kejadian hipertensi di wilayah kerja Puskesmas Oesapa tahun 2024. SEHATMAS: Jurnal Ilmiah Kesehatan Masyarakat, 4(3), 774–795. https://doi.org/10.55123/sehatmas.v4i3.5634

Widyahening, I. S., Vidiawati, D., Pusparini, & Ahsan, A. (2023). The state of diabetes care and obstacles to better care in Aceh, Indonesia: A mixed-methods study. BMC Health Services Research, 23, 271. https://doi.org/10.1186/s12913-023-09288-9

World Health Organization. (2022). Noncommunicable diseases: Progress monitor 2022. World Health Organization.

World Health Organization. (2026). Strengthening primary health care financing through public financial management reform in Indonesia. WHO Indonesia. https://www.who.int/indonesia/news/detail/26-01-2026

Zubir, M. Z., Aizuddin, A. N., Manaf, M. R. A., Harith, A. A., Abas, M. I., Kayat, M. I., Radi, M. F. M., Merican, M. N., Fitra, N., Ali, A. M., & Syed Rusli, S. A. S. (2025). Three decades in healthcare service efficiency evaluation: A bootstrapping data envelopment analysis (DEA) of Ministry of Health Malaysia. Health Economics Review, 15, 34. https://doi.org/10.1186/s13561-025-00624-9