Original Article

Qualitative Policy Analysis of Hypertension Disease Control at Primary Health Centers in Surakarta, Indonesia

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ABSTRACT

Background: Hypertension is a leading global health issue and a primary risk factor for cardiovascular disease. Despite national strategies in Indonesia, evidence on hypertension control implementation at the district and community levels remains scarce. Surakarta reports hypertension as the most common non-communicable disease (NCD), yet little is known about how policies are translated into practice at primary health centers.
Methods: This qualitative descriptive study applied a policy analysis approach, guided by the COREQ reporting standard. Five purposively selected participants (three health workers, one patient, and one district health officer) were interviewed between June and September 2023. Data were collected through in-depth interviews (30–60 minutes) and document reviews, and were analyzed thematically using Creswell's framework.
Results: Three themes emerged: (1) hypertension control policies operationalized at the primary healthcare level and supported by innovations such as BU DESI (Buru Diabetes dan Hipertensi); (2) health promotion through Posbindu PTM and cadre empowerment; and (3) monitoring and evaluation via regular monthly reviews, though patient adherence and multisectoral collaboration remain limited.
Conclusion: While hypertension control in Surakarta aligns partially with national strategies, its novelty lies in integrating locally driven innovations such as BU DESI. The study highlights the need to strengthen community empowerment and multisectoral collaboration.

Keywords: Hypertension; Health Policy; Primary Health Care; Qualitative Research; Health Promotion.

Implications for Practice:

- Expand BU DESI innovation in low-income settings to cost-effectively enhance early detection and referral of hypertension.
- Strengthen cadre capacity and community empowerment to sustain programs where health workforce resources are limited.
- Improve patient adherence and multisectoral collaboration to optimize available resources in resource-

Implications for Practice:
constrained environments.

Introduction

Hypertension is a global health issue and is a major risk factor for cardiovascular disease. Referred to as a non-communicable disease, hypertension cannot be transmitted between individuals. Non-communicable diseases, including hypertension, are chronic health problems that cannot be transmitted to others. In Indonesia, non-communicable diseases continue to be a concern because the emergence of Non-Communicable Diseases (NCDs) is generally caused by the lifestyle of individuals who do not care about health (H. Arifin et al., 2022). Hypertension is the leading cause of premature death worldwide. An estimated 1.28 billion adults aged 30-79 worldwide suffer from hypertension, two-thirds of people with hypertension live in low- and middle-income countries. An estimated 46% of adults with hypertension are unaware that they have the disease. Less than half of adults (42%) with hypertension are diagnosed and treated. About 1 in 5 adults (21%) with hypertension can control it. One of the global targets for non-communicable diseases is to reduce the prevalence of hypertension by 33% between 2010 and 2030 (Mishra et al., 2025). Metabolic factors are risk factors for non-communicable diseases such as hypertension. Data shows an increase in the prevalence of hypertension from 25.8% in 2013 to 34.1% in 2018 (Putri et al., 2025). There is no specific hypertension prevention and control program yet. Non-communicable disease control programs are still limited to the provincial level, while at the district/city level it is still not a top priority. This causes medical services for NCDs, especially hypertension, to be passive both inside and outside the health service area (Christiani et al., 2017). Therefore, hypertension control is urgently needed, among others, by preventing and controlling the main risk factors, strengthening health security, increasing the scope of case discovery and treatment, and empowering the community in disease control (Sujarwoto & Maharani, 2020). Hypertension control efforts are carried out through the activities of the Integrated Development Post for Non-Communicable Diseases (Posbindu PTM). This Posbindu is a form of community participation in efforts to carry out early detection and monitoring of risk factors which is carried out in an integrated, routine and periodic manner (Widyaningsih et al., 2022).

Hypertension is a major global health burden and a significant risk factor for cardiovascular disease. An estimated 1.28 billion adults worldwide suffer from hypertension, yet only 21% achieve control (Mishra et al., 2025). In Indonesia, prevalence increased from 25.8% in 2013 to 34.1% in 2018 (Putri et al., 2025). In Surakarta, hypertension accounts for 82.25% of reported NCDs (Dinkes Kota Surakarta, 2021). Despite this, district and community level implementation of hypertension policies remains underexplored.

The Walt & Gilson Policy Triangle is applied to frame this analysis, focusing on context, content, process, and actors. This framework illuminates how national directives are operationalized locally, and how local actors innovate to bridge implementation gaps. Additionally, Kingdon's policy streams highlight the alignment of problems, policies, and politics in creating opportunities for innovation.

Previous studies report contradictory findings: some regions demonstrate success

in community-based interventions (Mashuri et al., 2024), while others face barriers in participation and collaboration (Sujarwoto & Maharani, 2020). This gap underscores the need for localized evidence. Despite existing national strategies, hypertension prevention and control programs remain limited at the district and community levels. Community health centers (puskesmas) play a critical role as primary healthcare providers, implementing promotive and preventive services. However, evidence on how policies are implemented and monitored at this level remains scarce. This study aims to analyze the implementation of hypertension disease control policies at primary health centers in Surakarta, Indonesia. Specifically, it addresses the following research question: How are hypertension control policies implemented, promoted, and evaluated at the primary healthcare level in Surakarta?

Methods

Study Design

This study employed a qualitative descriptive design with a policy analysis approach to capture the perspectives of multiple stakeholders and contextual realities of hypertension control implementation in Surakarta. A qualitative descriptive method was selected over phenomenology or case study because the aim was to obtain straightforward, practice-oriented insights into policy implementation rather than deep exploration of lived experiences or single bounded cases. The study adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) to enhance methodological transparency and ensure rigor. The chosen design aimed to capture stakeholders' perspectives and contextual dynamics in the implementation of hypertension control. This investigation constitutes policy research, conceptualized as a systematic process of examining or analyzing fundamental social problems to provide policymakers with practical, evidence-based, and action-oriented recommendations. Policy research is distinct in its orientation toward actionable solutions, emphasizing applied outcomes that directly address societal challenges. (Tahir et al., 2023). The study employed a qualitative descriptive design. Within the broader qualitative paradigm, this approach emphasizes the construction of social realities and cultural meanings, with a focus on interactive processes, contextual events, authenticity, and value-laden inquiry. It integrates situationally grounded theories and empirical data, while acknowledging the active involvement of the researcher throughout the research process (Makoelle & Somerton, 2021). This study explored to find answers to research questions on hypertension disease control policy in Surakarta.

This table summarizes the six sequential stages of the research process, from preparation to reporting, illustrating how methodological rigor was maintained throughout the study. The following elements are clarified and expanded to strengthen reporting per the COREQ (Consolidated Criteria for Reporting Qualitative Research) guideline.

Research Team and Reflexivity

The research team consisted of lecturers and practitioners from nursing, pharmacy, orthotics-prosthetics, and general medicine, all experienced in qualitative research. None had prior relationships with participants. Reflexivity was maintained through positionality statements, acknowledging researchers' backgrounds as healthcare professionals, peer debriefings, and reflective journaling to minimize assumptions and power imbalances. The team regularly discussed how their roles and disciplinary

perspectives might shape data interpretation.

Participants

This study included two groups of participants to capture both qualitative perspectives and quantitative demographic data:

Key Informants (Qualitative Interviews)

Five informants were purposively recruited to provide in-depth insights into Surakarta's hypertension control policies and practices. These consisted of three health workers (head of a puskesmas, hypertension program officer, and health promotion staff), one patient with hypertension, and one district health officer. Ten potential informants were initially approached; two declined due to scheduling conflicts, and three did not respond. Recruitment concluded at five informants, as no new codes or themes emerged, indicating data saturation. Characteristics of informants, including sex, age, and professional experience, are presented in **Table 2**.

Survey Respondents (Quantitative Descriptive Data)

In addition to key informants, data from 100 respondents were analyzed to describe the broader demographic and program-related characteristics of the population served by puskesmas in Surakarta. These respondents provided complementary quantitative information to contextualize the qualitative findings. Demographic variables included gender, age, educational attainment, marital status, and occupation, as summarized in **Table 3.**

Data Collection

Data were collected between June and September 2023 through in-depth, face-to-face interviews lasting 30–60 minutes at health facilities, supported by a semi-structured interview guide. Interviews were guided by a semi-structured interview protocol focusing on three domains: (1) policy implementation of hypertension control, (2) health promotion practices, and (3) monitoring and evaluation mechanisms. Example guiding questions included: "How are hypertension control policies implemented in your health center?" and "What barriers exist in monitoring and evaluating hypertension control programs?" Interviews were audio-recorded using a digital voice recorder with participants' consent. Document triangulation included reviewing local health office reports, hypertension program guidelines, and national regulations relevant to NCD control. Data saturation was achieved when no new codes or themes emerged (**Table 1**).

Table 1. shows workflow of data collection and analysis.

Stage	Description
1. Preparation	Obtained ethical approval from Poltekkes Kemenkes Surakarta Ethics Committee; developed semi-structured interview guide; purposive recruitment of informants (health workers, patient, district health officer).
2. Data Collection	Conducted in-depth interviews (30–60 minutes, audio recorded) and reviewed relevant documents (health reports, guidelines, regulations).
3. Transcription & Member Checking	Verbatim transcription of interviews; transcripts verified by participants to ensure accuracy.

Stage	Description
4. Thematic Analysis	Applied Creswell's framework: open and axial coding, categorization, and theme generation.
5. Triangulation & Peer Debriefing	Compared interview data with document reviews; held team discussions to resolve discrepancies and enhance rigor.
6. Reporting	Presented results in narrative form; supplemented with matrices (policy, health promotion, monitoring) and conceptual diagrams.

Data Analysis

Data were analyzed thematically using Creswell's framework. The process involved open and axial coding, categorization, and theme development. Two researchers independently coded the transcripts, and disagreements were resolved through discussion until consensus was reached. Coding was managed manually without qualitative software, but coding matrices were constructed to track emerging patterns. Themes were refined iteratively to ensure alignment with research questions. Open and axial coding were applied, followed by categorization and theme generation. Coding was performed manually using matrices; no qualitative analysis software (e.g., NVivo or Atlas.ti) was applied. Two researchers coded independently, and discrepancies were resolved through team discussions.

The data analysis process involved coding, categorizing, and synthesizing transcripts into thematic patterns. Triangulation across data sources and peer review were employed to enhance the trustworthiness of findings. The analytical framework followed Creswell (2013), emphasizing systematic organization, classification, and interpretation of qualitative data to generate insights aligned with the research focus. This iterative process simplified dispersed and complex information into comprehensible forms. Data analysis entailed continuously tracking and structuring interview transcripts, field notes, and supplementary materials to identify emerging patterns, highlight salient issues, and determine reportable findings. Analysis was conducted concurrently with and after data collection, reflecting qualitative inquiry's dynamic and recursive nature. Operational examples were presented using matrices and logical schemes to illustrate the analytical flow. The procedures comprised: (1) sorting and classifying data, (2) editing and refining for analytical coherence, (3) validating and deepening through verification, and (4) synthesizing results to construct the study's discussion. Data presentation took the form of narrative descriptions derived from field notes and visual representations including grids, graphs, networks, and charts. Conclusion drawing was carried out in an ongoing manner throughout fieldwork, with early attention given to the meanings of words and sentences, regularities in patterns, theoretical explanations, possible configurations, causal relationships, and propositions.

Trustworthiness and Rigor

Credibility was supported through member checking and triangulation of sources (interviews and documents). Dependability was enhanced by maintaining an audit trail of coding decisions, interview notes, and reflexive journals. Confirmability was achieved by peer review and consensus-building during analysis. Transferability was ensured through thick description of the study setting, participant roles, and context.

Ethical Consideration

Ethical approval was obtained from the Poltekkes Kemenkes Surakarta Research

Ethics Committee (Approval No. DP.04.04/1/2733/2023, issued 26 June 2023). Written informed consent was obtained from all participants. Confidentiality was preserved by using pseudonyms in transcripts and reports, and data were stored securely in encrypted digital files accessible only to the research team.

Results

Participant Characteristics

Five informants participated in the qualitative interviews: three health workers (puskesmas head, hypertension program officer, and health promotion staff), one patient, and one district health officer. Ages ranged from 35 to 60 years, with professional experience between 5 and 20 years. Details are presented in **Table 2**.

Table 2. Demographic Characteristics of Key Informants

Participant Code	Role	Sex	Age (years)	Experience (years)
HK	Head of Puskesmas	Male	55	20
JC	Hypertension Program Officer	Female	42	10
AF	Health Promotion Staff	Female	38	8
YA	Patient with Hypertension	Female	60	-
FM	District Health Officer	Male	50	15

Demographic Characteristics of Respondents

A total of 100 respondents contributed to the quantitative descriptive data. The majority were female (60%) and aged between 26 and 55 (70%). Educational attainment was diverse, with the largest proportion having senior high school education (30%), followed by bachelor's degree holders (20%). Most respondents were married (65%), and the majority were employed as government/private employees (30%), housewives (25%), or entrepreneurs (20%). Full demographic distributions are presented in **Table 3.**

Table 3. Demographic Characteristics of Respondents (n = 100)

Characteristic	Category	n (%)
Gender	Male	40 (40%)
	Female	60 (60%)
Age (years)	18–25	15 (15%)
	26–35	25 (25%)
	36–45	20 (20%)
	46–55	25 (25%)
	>55	15 (15%)
Educational Level	Primary school	10 (10%)
	Junior high school	15 (15%)
	Senior high school	30 (30%)
	Diploma	15 (15%)
	Bachelor's degree	20 (20%)
	Master's/Doctoral degree	10 (10%)
Marital Status	Single	20 (20%)
	Married	65 (65%)
	Widowed/Divorced	15 (15%)
Occupation	Unemployed	15 (15%)
	Housewife	25 (25%)
	Government/private employee	30 (30%)
	Entrepreneur	20 (20%)
	Others	10 (10%)

Achievements of Hypertension Control in Surakarta

From the Surakarta city health profile, Hypertension ranks first among all reported non-communicable diseases (NCDs), which is 82.25%. Promotion of Clean and Healthy Living Behavior through CERDIK behavior, namely regular health checks, Eliminating cigarette smoke, Diligent physical activity,

Balanced healthy diet, Adequate rest, and Managing stress. Efforts to control NCDs will not succeed if they are only carried out by the health sector without the support of all levels across sectors, both the government, the private sector, professional organizations, community organizations, and even all levels of society (Dinkes Kota Surakarta, 2021).

Hypertension Disease Control Policy

The Regulation of the Minister of Health of the Republic of Indonesia No. 43/2019 stipulates that Community Health Centers (Puskesmas) serve as primary healthcare facilities responsible for both public health and first-level individual care, with a stronger orientation toward promotive and preventive services within their catchment areas. In fulfilling this mandate, Puskesmas are tasked with implementing health policies aimed at achieving national health development goals through program integration and a family-centered approach. This aligns with the findings from in-depth interviews with three informants regarding hypertension control policies, which are summarized in the matrix presented in **Table 4.**

Table 4 Informant Answer Matrix on Hypertension Control Policy in Surakarta

Hypertension Control Policy in Surakarta	
Informantt	**Interview Results**
HK (Informant 1)	*"Regarding the policy of controlling hypertension in the health center already exists because the health center is the first level health facility that has the task of implementing health policies, one of the manifestations of the policy that is our innovation is the existence of the BU DESI Program, before implementing the program, usually from the program coordinator to form a team whose members are already experts and we give a decree to carry out the program"*
JC (Informant 2)	*"The hypertension control policy is included in the Non-Communicable Diseases program and as the person in charge of the Non-Communicable Diseases program, we have implemented the policy, especially regarding hypertension control"*
AF (Informant 3)	*"As the implementer of health services at the health center, we already know that there are policies related to non-communicable diseases, now hypertension itself is included in non-communicable diseases, one of the efforts we make is to detect hypertension with high blood pressure and provide education to patients if there are patients who have a history of hypertension or at the time of the examination they find high tension"*
HK (Informant 1)	*"Regarding the policy of controlling hypertension in the health center already exists because the health center is the first level health facility that has the task of implementing health policies, one of the manifestations of the policy that is our innovation is the existence of the BU DESI Program, before implementing the program, usually from the program coordinator to form a team whose members are already experts and we give a decree to carry out the program"*

All informants confirmed the existence of hypertension control policies at the levels of the Health Office, hospitals, and community health centers. These policies are consistent with the National Hypertension Action Plan, which outlines 13 strategic measures aimed at expanding the availability of standardized health facilities, enhancing the competence of trained personnel, improving the quality and safety of healthcare delivery, and strengthening technological as well as resource support in hypertension management. This finding is further reinforced by a triangulation informant, who likewise emphasized the presence of established hypertension control policies, as summarized in **Table 5.**

Table 5. Triangulation Informant Answer Matrix on Hypertension Control Policy in Surakarta

Hypertension Control Policy in Surakarta	
Informant	**Interview Results**
FM (Informant Triangulasi 5)	*"Hypertension is often referred to as a silent killer, so policies and follow-ups are needed to overcome hypertension. The policy of controlling hypertension already exists and has been conveyed to the Puskesmas, usually in implementing the policy the Puskesmas invite the community as a form of community empowerment efforts to control hypertension for example Posbindu, now each Puskesmas in the Surakarta Health Office area already has a Posbindu and this is very good because in implementing the policy it does require the support of all levels of the sector and is carried out in a manner that is carried out comprehensive which includes efforts to support screening and early diagnosis as well as effective and quality governance. Policies at the Health Center have been given, human resources already exist in each health center, for infrastructure facilities already exist from the Health Office, procurement from the health office and free examination fees"*

Health Promotion Hypertension Disease Control

Hypertension is a non-communicable disease that must be handled properly because it can cause a high rate of illness and death. Controlling hypertension involves a series of measures to prevent, detect early, and manage high blood pressure disease, so a more effective prevention strategy is needed. This is in accordance with the results of in-depth interviews conducted with four informants about health promotion efforts in the control of hypertension which are presented in the form of a matrix in the **Table 6**.

Table 6. Informant's Answer Matrix on Health Promotion Efforts in Controlling Hypertension in Surakarta

Health Promotion of Hypertension Disease Control in Surakarta	
Informant	**Interview Results**
HK (Informant 1)	*"Health promotion efforts carried out by health centers are usually carried out by us in collaboration with cadres by forming POSBINDU, if in the health center here there are 19 POSBINDU spread across our health center area, this is a form of community empowerment that we carry out to control hypertension, besides that in our health center there is also a program to check diabetes and hypertension, we call it BU DESI (hunt for diabetes and hypertension) the goal is so that patients with Hypertension can be detected and referred to the health center, now for psien who come to the health center, it is usually a patient who already suffers from hypertension and is curative or provides treatment"*
JC (Informant 2)	*"Cases of hypertension are obtained not only from patients who come to the Puskesmas but also from services carried out in the community such as Posbindu, the existence of BUDESI activities (Diabetes and Hypertension Hunting), we who are at the Puskesmas are greatly helped by the existence of BU DESI so that achievements to control non-communicable diseases, especially hypertension can be achieved, Technical implementation of BUDESI every month from the cadre reports to the health center"*
AF (Informant 3)	*"Especially in the Puskesmas we have BUDESI innovations, so each Puskesmas has its own innovations, BUDESI focuses on DM and hypertension and the services are also blood pressure checks and blood tests, lounching from December and until now it has been running, We who are at the Puskesmas are very helped by the existence of BUDESI so that achievements for non-communicable disease control are achieved, the success rate of BUDESI is quite running the target of DKK can be pursued in accordance with the SPM from DKK"*

Health Promotion of Hypertension Disease Control in Surakarta	
Informant	**Interview Results**
YA (Informant 4)	*"Yes, I took part in POSBINDU which was held every month and everything was free, at POSBINDU I was checked for blood and blood was taken from my fingertips, after that I was also given what foods to avoid, take medicine and come to the health center to check further, so ma'am"*

From the results of the interview with the Informant above, it can be concluded that there are Health Promotion Efforts in Hypertension Disease Control in Surakarta at the health center as a first-level health service facility that has carried out health promotion efforts, be it promotive, preventive, curative, rehabilitative, and palliative efforts. This expression is supported by a triangulation informant who states matters related to Health Promotion Efforts in Hypertension Disease Control in Surakarta as shown in **table 7.**

Table 7. Triangulation Informant Answer Matrix on Health Promotion Efforts in Hypertension Disease Control in Surakarta

Health Promotion Efforts in Hypertension Disease Control in Surakarta	
Informant	**Interview Results**
FM (Informant Triangulasi 5)	*"Hypertension control does require a comprehensive approach and we at the Health Office have made efforts to carry out health promotion in Hypertension control, for example, what we carry out is to hold counseling about hypertension and its impact, usually we collaborate with health centers, hold seminars to increase public understanding of healthy lifestyles, use mass media to convey information about hypertension and how to prevent it, encourage regular physical activities such as light exercise or walking, now if this puskesmas has also carried out, for example, at the Sibela health center there is a sports health program that is carried out once a week, then each health center is also required to have POSBINDU and each health center also has its own innovations to control infectious diseases including hypertension, With the existence of POSBINDU, we invite the community to carry out hypertension control, besides that in the community there is also an elderly posyandu where there is also blood pressure checks, and blood tests"*

Monitoring and Evaluation of Programs in Efforts to Control Hypertension in the Surakarta City Health Office Regional Health Center

Monitoring and evaluation represent essential management functions aimed at facilitating corrective measures, assessing the effectiveness and benefits of interventions, and ensuring the proper implementation of program activities. In the context of hypertension control, these processes encompass a range of policies and initiatives undertaken by government bodies and health institutions. This perspective is consistent with the findings of in-depth interviews with five informants regarding program monitoring and evaluation in hypertension management, which are summarized in the matrix presented in **Table 8.**

Table 8. Informant's Answer Matrix on Program Monitoring and Evaluation in Efforts to Control Hypertension in the Surakarta City Health Office Regional Health Center

Monitoring and Evaluation of Programs in Efforts to Control Hypertension in the Surakarta City Health Office Regional Health Center	
Informant	**Interview Results**
HK (Informant 1)	*"We continue to monitor and evaluate the hypertension control program once a month, and it is my obligation as a leader here so that the officers do their job well. For Hypertension service activities that are responsible for the PTM program holder. In terms of monitoring I do not always participate in it but always monitor whether the activity has run according to the procedure or not, for example, I have not given input to the officers to carry out their duties properly, but so far I think it has been good in running programs, especially the Hypertension control program, whether it is Posbindu or Mrs. DESI, if in the hypertension service itself the obstacle is that many people do not want to come regularly to check the pressure blood and seems lazy to seek treatment regularly, with the hypertension control program, it is hoped that hypertension sufferers will decrease, for example, they have hypertension, yes the sufferer remains healthy always"*
JC (Informant 2)	*"For the implementation of the Mrs. Desi program, there is a decree from the head of the health center where in the decree there is already a composition of the BU DESI TEAM and also a description of the duties of the BU DESI TEAM at the time of the implementation of the BU DESI here in collaboration with cadres, usually in each region there is a group of elderly posyandu and before the implementation of the elderly posyandu, usually woro-woro cadres to the community, if anyone wants to check tension and blood tests, the BU DESI TEAM comes to the elderly posyandu, we hold regular meetings to carry out cadre training for the BU DESI program in accordance with the description of duties in the Decree, regular meetings with cadres are held once a quarter, for the equipment used in the program are all from the health center"*
AF (Informant 3)	*"The implementation of evaluation monitoring for BU DESI activities is usually carried out every month, indeed not always the head of the health center follows the monitoring of the evaluation of BU DESI activities, but we still report the results to the head of the health center, for the activities in addition to being carried out at the posbindu or elderly posyandu, BU DESI also collaborates with sports health which is carried out every Tuesday because if you only rely on the Posbindu you can't, The area of the health center is very large, there are 39 areas while the posbindu in our Puskesmas is only 14, for example, at the time of the implementation of the BUDESI was found, and with the existence of this BU DESI the SPM target from the health office can be achieved"*
YA (Informant 4)	*"Indeed, my blood pressure dropped after checking and taking medicine, but sometimes I am lazy to go to the health center and lazy to take medicine, I come to the health center if I start to feel dizzy, because if I take medicine and the blood continues to drop, usually I come to the Posyandu more often there to check the blood pressure, if it's high but not dizzy, I don't take medicine, sometimes there are health workers who come to the posbindu, sometimes they don't, I have an MB card, what is the name of the person, if I'm not mistaken, Mrs. Desi's card, if I am not mistaken, at the health center I also bring a hypertensive monitoring card"*

From the results of the interview with the Informant above, it can be concluded that the health center has carried out monitoring and evaluation related to the implementation of hypertension control programs, in hypertension services hypertension patients are given hypertension monitoring cards and in

implementing the BU DESI program, patients also have BU DESI cards. The availability of facilities and infrastructure to carry out the program has been prepared from the Health Center, and with this program the target given by the Health Office can be met. This expression is supported by triangulation informants who state matters related to Program Monitoring and Evaluation in an effort to control hypertension as shown in **table 9**.

Table 9. Triangulation informant answer matrix on program monitoring and evaluation in an effort to control hypertension in the Surakarta City Health Office

Monitoring and Evaluation of Programs in Efforts to Control Hypertension in the Surakarta City Health Office Regional Health Center	
Informant	**Interview Results**
FM (Informant Triangulasi 5)	*"Indeed, each health center in our region has its own innovation to control hypertension. The results of these innovations are always reported to us every month, and we also provide SPM figures that must be achieved by the health center, we at the Health Office monitor the results of the health center's monitoring report. For hypertension control officers, they are usually officers who have participated in NCD training. For funding in the implementation of hypertension disease control, there is no special fund, but following the PTM program, funding from BOK and JKN, facilities and infrastructure are adequate."*

Policies for hypertension control exist at national and local levels, implemented through puskesmas. Innovations such as BU DESI (Buru Diabetes dan Hipertensi) were developed to improve detection and management. However, stronger multisectoral involvement is needed. Community empowerment through Posbindu PTM and Posyandu Lansia facilitates early detection, health education, and lifestyle modification. Cadres and local leaders support these programs, though coverage is not yet optimal. Routine monitoring and evaluation are conducted monthly by puskesmas and reported to the District Health Office. Patient compliance and coordination across sectors remain challenges to achieving optimal outcomes.

Emergent Themes

Three overarching themes were identified, supported by participant narratives and triangulated with documents:

Hypertension Control Policies

National and local regulations were operationalized through primary health centers. Innovations such as the *BU DESI (Buru Diabetes dan Hipertensi)* program were developed to improve early detection and management. Informants emphasized the importance of aligning local practices with national strategies.

Health Promotion Efforts

Health promotion was implemented through community empowerment activities, including *Posbindu PTM* and *Posyandu Lansia*. Cadres played a central role in mobilizing communities, supported by health center initiatives like BU DESI. Patients confirmed participation in these programs and appreciated lifestyle counseling.

Monitoring and Evaluation

Regular monthly monitoring was conducted by health centers and reported to the District Health Office. Tools such as hypertension monitoring cards and BU DESI cards were used. However, challenges

included patient non-adherence to follow-up visits and limited cross-sectoral collaboration.

Conceptual Representation

Findings can be understood through an integrated framework (Figure 1), where national policy directives are adapted into local innovations (BU DESI), supported by community empowerment (Posbindu/PTM), and reinforced by monitoring mechanisms. Barriers, including patient compliance and limited multisectoral involvement, moderate the effectiveness of these strategies.

Figure 1. Conceptual framework of hypertension control in Surakarta (policy–promotion–monitoring integration)

Policy implementation provides the foundation by establishing the regulatory framework and enabling local adaptation through innovations such as BU DESI. Health promotion serves as the community-based mechanism, driven by cadres and Posbindu PTM, to support these policies and generate data that feed into monitoring processes. Monitoring and evaluation function as the feedback loop, identifying adherence challenges and resource gaps that inform policy adjustments. All three components—policy implementation, health promotion, and monitoring and evaluation—interact within the Walt and Gilson Policy Triangle dimensions of context, content, process, and actors. Together, these interconnected elements demonstrate how local innovation and multisectoral collaboration sustain effective hypertension control at the primary healthcare level (**Figure 1**).

Discussion

In this study, the analysis of hypertension disease control policies in Surakarta was carried out by analyzing hypertension disease control policies, health promotion efforts in hypertension control and monitoring the evaluation of program implementation in hypertension control

Hypertension Disease Control Policy

The findings of this study indicate that all informants acknowledged the existence of hypertension control policies implemented at the levels of health offices, hospitals, and community health centers. These policies are consistent with the Regulation of the Minister of Health of the Republic of Indonesia No. 21 of 2020 concerning the Strategic Plan of the Ministry of Health 2020–2024, which emphasizes the prevention and control of non-communicable diseases, including hypertension, as part of the government's public health agenda (Kemenkes RI, 2022). Such phenomena are commonly observed in many developing countries, where shifts in socio-economic conditions contribute to lifestyle changes that increase the prevalence of hypertension. Within the broader scope of public policy, health policy encompasses all decisions and regulations

related to the health sector. Its primary aim is to improve population health and welfare by establishing principles, regulations, and behavioral guidelines directed toward public health advancement (Saputra et al., 2023). In addition, the Regulation of the Minister of Health No. 71 of 2015 on the Non-Communicable Disease Control Program highlights health efforts that prioritize promotive and preventive measures while integrating curative, rehabilitative, and palliative components. The program is designed to reduce morbidity, disability, and mortality rates through a comprehensive, effective, efficient, and sustainable approach (Kemenkes RI, 2015).

In addition, based on the Regulation of the Minister of Health of the Republic of Indonesia Number 43 of 2019 concerning Public Health Centers (Puskesmas) is a health service facility that organizes public health efforts and first-level individual health efforts, with more emphasis on promotive and preventive efforts in their work areas. Puskesmas have the task of implementing health policies to achieve health development goals in their work areas by integrating programs they implement with family approaches (Kementrian Kesehatan Republik Indonesia, 2019b).

Health Promotion of Hypertension Disease Control.

From the results of interviews with informants, it can be concluded that the health center as a first-level health service facility has carried out health promotion efforts, both promotive, preventive, curative, rehabilitative and palliative, in addition to that the health center has also carried out approaches to the community by carrying out community empowerment, including POSBINDU, Posyandu Lansia and innovations from health centers in collaboration with cadres. This is in accordance with the study on health promotion strategies for hypertension in the work area of the North Minahasa Regency Health Office Empowerment of Individuals, families and communities about Hypertension Disease in the work area of the North Minahas Regency Health Office, especially the Airmadidi Health Center and the Batu Health Center, has been carried out even though it has not been able to reach all communities, especially people who suffer from it. Hypertension or those at risk (Mashuri et al., 2024). This is in accordance with the research carried out by Erika, C in carrying out the Effect of Health Promotion with Leaflet Media on Increasing Knowledge of Hypertension Prevention in the Elderly in Kampung Sawah, North Jakarta, it was found that one of the efforts to control hypertension in the elderly is by increasing knowledge about hypertension in the elderly (Manullang & Rosalina, 2021).

It is further strengthened by the Regulation of the Minister of Health of the Republic of Indonesia Number 39 of 2016 concerning Guidelines for the Implementation of the Healthy Indonesia Program with a Family Approach which was implemented to strengthen the function of Puskesmas in the implementation of Public Health Efforts (SMEs) and Individual Health Efforts (UKP) at the first level in their work areas. One of the activities of the Puskesmas in this case is to collect health data on all family members; carry out home visits in promotive, preventive, curative, and rehabilitative efforts; Implementing health services (inside and outside the building) through a lifecycle approach. A healthy paradigm is implemented with a strategy of mainstreaming health in development, strengthening promotive and preventive efforts, and empowering the community. Non-Communicable Disease Control (NCD) is carried out, among others, through the implementation of the Integrated Development Post for Non-Communicable

Disease Control (Posbindu-PTM) which is an effort to monitor and early detect risk factors for non-communicable diseases in the community (Kementrian Kesehatan Republik Indonesia, 2016)

Monitoring and Evaluation of Programs in Efforts to Control Hypertension

From the results of the interview with the informant above, it can be concluded that the health center has carried out monitoring and evaluation related to the implementation of the hypertension control program, in hypertension services the hypertensive patients are given a hypertension monitoring card and in carrying out the BU DESI program, patients also have a BU DESI card. The availability of facilities and infrastructure to carry out the program has been prepared from the Health Center, and with this program the target given by the Health Office can be met.

Based on Government Regulation Number 39 of 2006, it is explained that monitoring is an action that is carried out carefully in observing a certain situation, behavior or certain activities that aim to ensure that all information and data that are collected can be used as a reference in taking further policies if necessary. In the health center, monitoring is one of the management functions that aims to make corrections to the leaders of the health center and other stakeholders as well as the employees of the health center. This is done so that the control function can be carried out properly. The monitoring and control results aim to be a source of information that can be managed by the management of the health center for future improvements. Evaluation in this case can be interpreted as a form of activity to collect information related to certain performance. In addition, evaluation is an activity that aims to analyze and measure the activities that have been carried out, systematically and objectively. Without evaluation, it is certain that a policy will not be able to run effectively (Kementrian Kesehatan Republik Indonesia, 2016)

Based on the Regulation of the Minister of Health of the Republic of Indonesia number 4 of 2019 concerning Technical Standards for the Fulfillment of Basic Service Quality at the Minimum Service Standards (SPM) in the health sector, that health services for people with Hypertension are included in the type of basic service in the SPM (Minimum Service Standard) of Regency/City health. Non-communicable diseases (NCDs) have become a major public health problem in Indonesia (Kementrian Kesehatan Republik Indonesia, 2019a).

This is in accordance with the research entitled Evaluation of the Implementation of the Hypertension Disease Program at the North Bogor Health Center, Bogor City, West Java Province, the results were obtained that the implementation of the hypertension program at the North Bogor Health Center, Bogor City was quite good even though there were still obstacles such as difficulties in connecting cross-programs with cross-sectoral. It can be seen that in terms of input components, such as the availability of health workers, budgets, medical devices, and antihypertensive drugs (OAH), have been available and fulfilled in accordance with the standards in the regulation of the Minister of Health on minimum service standards in 2016 (Evrilianisa Utami et al., 2021). And in accordance with the research by Nurul Azmi entitled Analysis of the Implementation of Monitoring and Evaluation of Hypertension Services at the Tanjung Beringin Serdang Bedagai Health Center, it was found that the input in monitoring and evaluating hypertension services at the Tanjung Beringin Health Center has looked quite good. However, the communication and information conveyed by the officers are still erroneous so that hypertension

sufferers do not understand how the process of preventing and controlling hypertension risk. The monitoring and evaluation process of hypertension services at the Tanjung Beringin Health Center has been carried out well following the guidelines for hypertension services, but it is still not carried out optimally due to several certain things. The results of monitoring and evaluation of hypertension services at the Tanjung Beringin Health Center, hypertensive patients have received hypertension services well, but they are not in accordance with standards. Where there is still a lack of promotional efforts from officers related to the risk and prevention of hypertension. The impact resulting from the monitoring and evaluation of hypertension services at the Tanjung Beringin Health Center is the lack of achievement of the hypertension index target, where the expected index is 100%, but the Tanjung Beringin Health Center only gets 70%. This is known based on the number of patients who do not routinely do blood pressure checks (Azmi, 2021).

This study confirms that hypertension control in Surakarta's primary care level aligns with national health strategies, emphasizing promotive and preventive approaches (Kemenkes RI, 2022). Consistent with prior studies (Azmi, 2021; Evrilianisa Utami et al., 2021) local innovations such as BU DESI strengthen case detection and patient engagement. However, barriers such as low patient adherence and limited intersectoral collaboration mirror challenges reported in other developing contexts. Our findings suggest that integrating community-based strategies with formal health policies can improve sustainability. Furthermore, active involvement of universities in research and program development can enhance community empowerment and capacity building. In this study, hypertension disease control policies in Surakarta was analyzed by examining hypertension disease control policies, health promotion efforts, and monitoring of program implementation. The findings indicate that hypertension remains a critical public health concern, requiring comprehensive approaches aligned with both national and international guidelines.

Hypertension disease control policy in Surakarta aligns with national strategies such as the Regulation of the Minister of Health Number 21 of 2020 concerning the Strategic Plan of the Ministry of Health for 2020–2024 (Kemenkes RI, 2022). This corresponds with recent global evidence underscoring that effective hypertension prevention requires systemic interventions involving multiple stakeholders, especially in low- and middle-income countries (Sujarwoto & Maharani, 2020). Our results highlight that policies for hypertension control exist and are operationalized through puskesmas and innovative programs like BU DESI. This reflects similar findings in other Indonesian regions where local innovations and community-based health interventions have significantly contributed to case detection and management (Mashuri et al., 2024). “However, sustaining hypertension control efforts requires stronger multisectoral collaboration and integration into broader health systems. This need aligns with global evidence: multisectoral model implemented in urban settings, significantly improved hypertension control outcomes (Boch et al., 2022). Similarly, reviews on the global epidemiology of hypertension emphasize the necessity of systemic integration within health systems (Mills et al., 2020), while the JACC health promotion series underscores comprehensive promotive and preventive strategies as fundamental to long-term success (Carey et al., 2018).

Health promotion in Surakarta utilizes Posbindu PTM and community empowerment strategies, consistent with

best practices worldwide. For instance, studies have shown that community-based interventions combined with targeted education can improve awareness, treatment adherence, and control rates (Andini & Siregar, 2024; Edwards et al., 2023; K. W. Lee et al., 2020). Lifestyle interventions such as dietary changes, stress management, and physical activity remain central to effective prevention and management (Appel et al., 1997; E. K. P. Lee et al., 2020; Sacks et al., 2001).

The monitoring and evaluation of programs such as BU DESI occur monthly to ensure progress toward targets. This approach aligns well with international guidelines emphasizing regular monitoring and patient engagement, for instance, the 2024 ESC Guidelines underscore the need for structured follow-up systems (McEvoy et al., 2024), and the 2023 ESH Guidelines emphasize consistent integration into broader health systems (McEvoy et al., 2024). Additionally, remote monitoring technologies have proven effective in improving treatment outcomes, as evidenced in a randomized trial of remote patient monitoring interventions (Naito et al., 2015). However, patient adherence remains a challenge. Studies have indicated that socioeconomic disparities and behavioral factors significantly influence treatment adherence and outcomes (Hall et al., 2021; Plante et al., 2024).

Genetic predisposition and metabolic risk factors further complicate hypertension control. Large-scale genome-wide studies have identified multiple loci associated with blood pressure regulation, highlighting the multifactorial nature of hypertension (Evangelou et al., 2018). These findings reinforce the importance of combining population-wide strategies with personalized interventions to improve long-term outcomes. Overall, this study confirms that hypertension control in Surakarta's primary care level is consistent with international standards. To enhance sustainability, it is recommended that policy-makers strengthen multi-actor engagement, integrate evidence-based lifestyle interventions, and leverage digital and academic collaborations (B. Arifin et al., 2024; Pamungkasari et al., 2024). The experiences from Surakarta provide a model for other urban centers in Indonesia and comparable low- and middle-income settings.

Findings demonstrate partial alignment with national strategies (Kemenkes RI, 2022) while also revealing local challenges. The novelty of this study lies in documenting BU DESI as a community-driven innovation within national hypertension control frameworks. This contrasts with studies in other regions where national policies were implemented without significant local adaptation (Evrilianisa Utami et al., 2021). The findings also diverge from global reports emphasizing strong multisectoral integration (Boch et al., 2022), as Surakarta demonstrates weaker cross-sector collaboration.

This study's contribution is twofold: theoretically, it applies the Policy Triangle to contextualize local implementation; practically, it demonstrates how grassroots innovations extend national policy. However, overclaiming consistency with "international standards" is unwarranted given the small sample size; instead, findings should be seen as *illustrative* of local practices.

Implications and limitations

This study contributes to understanding how primary healthcare facilities operationalize hypertension control policies in low- and middle-income settings, emphasizing the importance of multi-actor engagement and community empowerment in public health policy implementation. Scaling up BU DESI,

strengthening cadre training, addressing adherence barriers, and promoting multisectoral collaboration are necessary to enhance program effectiveness. However, the study was limited by its small sample size and focus on a single city, which may restrict generalizability; therefore, further research with broader geographic coverage and mixed-methods approaches is recommended

Relevance to for Practice

This study provides actionable insights for stakeholders. Local policymakers can use these findings to justify scaling up BU DESI across other districts, ensuring early detection and referral for hypertension. Puskesmas can prioritize cadre training and community empowerment to sustain health promotion efforts. Universities can play a strategic role in capacity building by engaging in research, training, and program evaluation. Together, these strategies enhance the sustainability and effectiveness of hypertension control initiatives.

Conclusion

Hypertension control in Surakarta illustrates how national policies are translated into local practice through innovations such as BU DESI and community empowerment initiatives. However, persistent adherence and multisectoral collaboration challenges highlight the need for broader systemic integration. Documenting local innovations provides valuable lessons for strengthening hypertension control strategies in other urban centers across Indonesia

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CrediT Authorship Contributions

Statement

Rini Tri Hastuti: Conceptualization, Methodology, Supervision, Writing - Original Draft

Indri Kusuma Dewi : Software, Validation, Formal Analysis, Writing - Review & Editing

Yuyun Setyorini,Haryanti Katrini Mulyaningrum, Didik Subagiyo": Investigation, Resources, Data Curation, Project Administration

Nur Rachmat: Writing - Original Draft, Review & Editing, Visualization, Funding Acquisition

Conflicts of Interest

There is no conflict of interest.

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