Community-based elderly data management system: enhancing data recording and reporting by local stakeholders

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ABSTRACT

Introduction: Senior Integrated Health Care Post (POKSILA) is an elderly health monitoring activity at the community level. Kedungmundu Public Health Center has the largest number of elderly people and POKSILA in Semarang. Participant measurements are recorded manually through cadre notebooks and POKSILA forms owned by participants. Also, reporting is still limited, and the format is not uniform. This POKSILA data can be used to monitor the health condition of the elderly continuously.

Methods: To solve the problem, the stages of service activities are an overview of the characteristics of the elderly, need assessment, activity preparation, and handing over monitoring books to community health centers.

Results: Most participants in POKSILA were female (88%) and aged 60-74 (52%). Based on FGD, develop a recording book for cadres and a monitoring book for elderly participants. The book will be developed on cadre needs, Mentari Sehat Nusantara apps, and guidelines for elderly health. To develop the book, we consulted and brainstormed with the experts in Kedungmundu PHC about the design and content of the book. Within local data and cross-collaboration, the tools should be appropriate to local conditions and easily understood by the communities. This community-based service initiative has demonstrated the potential for improving health monitoring and service delivery for elderly populations in Kedungmundu, Semarang.

Conclusion: By addressing key challenges identified in the FGDs and implementing standardized tools for health data recording, the initiative has made important strides toward enhancing the quality of elderly care in the region.

INTRODUCTION

In recent years, the aging population has emerged as a pressing issue worldwide, driving the need for innovative approaches to healthcare management for senior citizens. According to WHO data, the projected increase in the global population aged 60 and over from 12% in 2015 to 22% in 2050 indicates that the number of people in this age group is expected to double by 2050.[1] Over the past five decades (1971-2020), the elderly population in Indonesia has doubled, reaching 9.92% (approximately 26 million people). The proportion of older women (10.43%) is higher than that of older men (9.42%).[2] As people age, they often experience a range of chronic conditions, functional limitations, and cognitive decline, all of which require continuous medical attention. The prevalence of diabetes mellitus and hypertension increases with age, with a 6.29% increase in the 55-64-year age group. Moreover, the most prevalent increase in heart disease occurs in people 45–54 years old, which is 2.4%. Stroke also increases in the 55-64 years age group.[3] Not only do they experience a higher prevalence of chronic diseases such as hypertension, diabetes, and cardiovascular conditions, but they are also more vulnerable to acute episodes of illness due to weakened immune systems and comorbidities. Additionally, age-related factors such as cognitive decline, reduced mobility, and social isolation further complicate their healthcare needs.[4] Effective management of these complex needs requires more than just reactive medical care; it calls for proactive, continuous monitoring, focusing on prevention, early intervention, and coordinated care.

Therefore, monitoring and maintaining the health of older adults becomes essential for ensuring their quality of life and reducing the burden on healthcare systems.[5] A study conducted

in the United States on the treatment of people with multiple chronic conditions (MCC) reported problems in managing patients' personal health information, such as incomplete data due to a lack of coordination and the complexity of workload between health care providers. Therefore, this study explains the need for structural technology systems, such as Health Information Exchange (HIE) and Personal Health Records (PHRs) to reduce the burden on service providers and improve the quality of information produced.[6,7] Another study in the exact location stated that implementing Personal Health Information Management (PHIM) in the elderly focuses on obtaining, organizing, and storing related medical, financial, and referral data.[7] According to a study conducted in Iran to increase older people's involvement in Primary Health Care (PHC), ineffective communication between service providers and the elderly was a problem. This can certainly affect the weak information about the elderly. Therefore, this study produces a framework that underscores the importance of training, coordination between members, and more inclusive service providers for older people.[8] To address the needs of the elderly, the government has established a Senior Integrated Health Care Post (POKSILA). POKSILA is a health monitoring activity for the pre-elderly (45–59 years) to the elderly (>60 years), carried out every month through promotional and preventive activities, including regular check-ups, physical exercise, social gatherings to promote community and mental well-being, and educational programs about managing chronic diseases common in older age.[5]

Previous research indicates that participants manually record their measurements using cadres and forms; hence, there is much miswriting, illegibility, and unsynchronized data.[9] Besides, there is no Standard Operating Procedure (SOP) for doing POKSILA in Indonesia. Therefore, each POKSILA has a different measurement and a different logbook or form.

However, recently, the Semarang District Health Office created a *Mentari Sehat Nusantara* (MSN), which utilizes an application for recording patient data during the Senior Integrated Health Care Post (POKSILA). However, many POKSILA cadres lack the technological skills to enter the data into the system. Hence, the Public Health Center (PHC) Officer has to attend POKSILA and input the data into the MSN apps.

Supporting the program created by the government, we help the cadre and *Puskesmas* by creating a monitoring book that contains information like the information on MSN apps. Hopefully, the cadre can input the data manually and hand the book to *Puskesmas*, and the *Puskesmas* officer can input without having to attend every POKSILA. With the help of the monitoring book, there is uniformity of data, too, avoiding variance between POKSILA.

In addition, we create an individual health book for seniors as well. When applied to senior healthcare, personal health books provide an organized and centralized source of information that includes medical history, current medications, clinical observations, test results, and other relevant data. The primary objective of implementing a system of individualized health books monitored monthly is to enhance the continuity of care for elderly patients. For instance, fluctuations in blood pressure, blood sugar levels, or weight can be tracked over time, enabling healthcare providers to detect potential complications before they escalate into serious problems. Therefore, the significance of continuity of care for the senior population shows that long-term connections with healthcare providers result in better quality of life, better chronic disease management, lower healthcare utilization, and efficient care coordination.[10]

Moreover, monthly monitoring through personalized health books also empowers older adults to manage their health actively. Seniors engaged in their care tend to be more compliant with medical advice and more likely to adhere to prescribed treatments. The individualized report is a communication tool between the patient and the healthcare provider, helping the senior better understand their health condition and the importance of lifestyle modifications, medication, and follow-up care.[11] This increased patient engagement is significant given the cognitive and sensory challenges some elderly individuals may face, making it difficult to retain and act on the medical information provided during brief consultations.

This study aims to create and manage a health data system that can enhance data recording and reporting by local stakeholders.

METHOD

Study design

Community services were implemented in Kedungmundu PHC, Semarang, which has the highest number of elderly in Semarang. The activity was conducted from July - October 2024. We used quantitative and qualitative data to identify the problems and needs of the elderly. Descriptive quantitative methods use secondary data from five POKSILA in Kedungmundu PHC during 20 periods (January 2021-August 2022), which included 2,930 participants. We also use this data to identify the issue of non-communicable diseases (NCDs).

Study procedure

In this era, we need to monitor elderly well-being routinely in POKSILA. Then, we aimed to develop a practical system for recording and reporting elderly well-being by the cadres. The system is available and capable of being used by the cadre. We had five steps to develop the system in managing elderly community data: 1) Overview of the characteristics elderly; 2) Need assessment; 3) Activity preparation; 4) Handing books to community health centers.

The first step was to analyze the data in POKSILA, including 2,930 participants; we explored related demographic data such as age and sex. We are also concerned about three measurements conducted in POKSILA: blood pressure, body mass index (BMI), and waist circumference.

The second step was identifying the need assessment of the cadre and stakeholders through Forum Group Discussion (FGD). This activity discusses the problems experienced by program holders and cadres regarding managing, recording, and reporting elderly data. This FGD will invite cadres and PHC program

holders. We also coordinated with the head of Kedungmundu PHC and the stakeholders responsible for the elderly's well-being. We shared an overview of the characteristics of the elderly and showed several elderly problems in that area. We invite 52 participants, including cadre and PHC staff, to the FGD.

The third step was activity preparation, which involved developing a system for recording and reporting elderly health that was suitable and capable for the cadre. We created a book that can be easily used for cadres; they can input the data electronically routinely. Also, we built a book for the elderly to know their health status. We are arranged from the cover design to the data structure design included in this book. The book is designed based on the needs and is compatible with the *Mentari Sehat Nusantara* (MSN) application built by the Semarang District Health Office. We involve the coordinator of public health services, the medical practitioners in PHC, and the team that developed that book. It takes 6 weeks to establish those books.

We also consult and brainstorm with experts to check whether the book created meets the user's needs. The activity shows the book to the general practitioner on the

well-being of the elderly. If any content should be added, we will update it in this revision. We need 3 weeks to consult and edit the book for this step.

The fourth step is handing over books to community health centers. The book was delivered to the cadre and the elderly to be used in POKSILA.

Data analysis

Data analysis was divided into 2: quantitative and qualitative. First, in quantitative, the secondary data from five POKSILA in Kedungmundu PHC was analyzed using univariate analysis. The results of the univariate analysis show the distribution of respondent characteristics such as age, sex, and health parameters (blood pressure, body mass index, and waist circumference). Second, in the qualitative, the results of FGD were identified and categorized into some topics, and then the findings were summarized.

Ethical clearance

Ethical approval for this study was obtained from the *Komite Etik Penelitian Kesehatan* (KEPK) Universitas Negeri Semarang, Indonesia No. 256/KEPK/FK/KLE/2024.

RESULT

Overview of characteristics elderly based on POKSILA Data

We analyzed data in POKSILA at 20 monthly periods from January 2022 to August 2023 at the Kedungmundu PHC. Most participants were female (88%) and aged 60-74 (52%). The period with the most participants was period 14 (February 2023) (Table 1).

Cadre in POKSILA regularly records monthly blood pressure, including systolic blood pressure (SBP) and diastolic blood pressure (DBP). SBP and DBP are higher in women, especially at 60-74 years (SBP= 141 mmHg, DBP= 83 mmHg). Tren SBP and DBP in 20 periods tend to decrease (Appendix 1).

The BMI boxplot showed that the females' BMI (26.04 kg/m2) is higher than males, especially those 45-59 years old. Participants who are >75 years old have the lowest BMI in the community. Based on waist circumference data, females (87.94 cm) have a higher waist circumference than males. The age group of 60–74 years old has the most elevated waist circumference level in the community (Appendix 2).

Table 1. Total participants in 20 periods by sex and age group

Period	Male				Female			
	45-59	60-74	>75	Total	45-59	60-74	>75	Total
1	2	10	5	17	25	34	2	61
2	1	8	3	12	47	39	3	89
3	1	4	1	6	52	51	4	107
4	0	0	0	0	0	0	0	0
5	3	10	1	14	71	76	4	151
6	5	3	1	9	62	64	8	134
7	2	10	2	14	55	77	9	141
8	2	12	3	17	66	68	5	139
9	6	10	2	18	83	86	8	177
10	6	17	2	25	76	77	7	160
11	7	15	4	26	80	90	6	176
12	4	13	2	19	63	69	7	139
13	6	11	2	19	68	77	6	151
14	10	15	4	29	90	104	10	204
15	4	18	3	25	64	86	10	160
16	3	13	2	18	34	41	2	77
17	5	14	2	21	49	64	2	115
18	5	22	2	29	77	96	9	182
19	5	14	3	22	62	85	11	158
20	0	1	1	2	30	33	4	67
Total	77	220	45	342	1,154	1,317	117	2,588

Figure 1. Need Assessment by FGD.

Need assessment by Forum Group Discussion (FGD)

Identification of needs was carried out through FGD activities by inviting all POKSILA cadres at the Kedungmundu PHC from 6 sub-districts (Sambiroto, Sendangmulyo, Tandang, Sendangguwo, Kedungmundu, Jangli). FGD activities held on Thursday, August 29, 2024, from 09.00-11.00. Forty-eight cadres attended this activity, and the PHC's staff (Puskesmas Head, elderly program holders, and nutritionists). This event began with remarks from the Head of the Kedungmundu PHC, a presentation of the overview characteristics of the elderly by the Community Service Team, the FGD, and direction from the PHC regarding the Primary Service Integration Program (Integrasi Layanan Primer/ILP).

Based on discussions with the Head of the PHC and elderly program stakeholders, in realizing the digital transformation of health services, Semarang District Health Office has developed a reporting and recording website called Mentari Sehat Nusantara (MSN). So, to support the government program and not give rise to duplicate reports, we brainstormed with the PHC to improve recording and reporting from the cadre side as the main agent in recording data at POKSILA. We conducted an FGD with all cadres present to understand cadre needs (Figure 1).

The discussion points in the FGD were:
1) Activities in each POKSILA

The activities in POKSILA included: 1) Registration of participants; 2) Measurement of blood pressure, body weight, height, blood sugar, and cholesterol checks (optional paid); 5) Supplementary Feeding (PMT).

2) Obstacles in implementing POKSILA;
There is a statement from a cadre that have input the data digitally *"Laporannya saya buat pdf. Urutannya nomor, nama, jenis kelamin (laki-laki/Perempuan), NIK, setelah NIK baru umur, berat badan, tinggi badan, tekanan darah, denyut nadi, lingkar perut, gula darah, asam urat, kolesterol. Kemudian saya rekap, saya buat pdf. Jadi nanti saya print, saya kirim ke puskesmas"*
"I create the report into a PDF file. The order of columns is number, name, gender (male/female), identity number, after identity number, then age, weight, height, blood pressure, pulse rate, waist circumference, blood sugar, uric acid, and cholesterol. Then I summarize it and create a PDF file. I print it and send it to the public health center."
But, some cadre input data manually *"Kami mencatat manual, jadi kami belum memakai pdf. Setelah itu laporan kami titipkan ke ibu yang mewakili dari Puskesmas disampaikan ke pengelola Poksila Puskemas"*
"We record it manually, so we don't use PDFs yet. After that, we hand over the report to a representative from the public health center and then send it to the Poksila manager of public health center."
The cadre also faced the obstacle of inputting or reporting the data; a cadre said that there was no template for the report book, and the font was too small, so they had difficulty writing the data.
"Saya juga kebetulan diskusi dengan RW 05 dan RW 16 ini masing-masing formatnya beda."
"Buku bantu dari Puskesmas kecil tulisannya dan tidak bisa dibaca"
"I also had discussions with the cadre of RW 05 and RW 16, and each of them had a different format."
"The guidebook from the public health center, the font was small and illegible."
From those statements, we can conclude that the cadre will input the elderly data into their created monitoring book and then send the report to PHC using a WhatsApp message. The problems experienced by cadres are: 1. There is no template for recording elderly data in the community; 2) Not all cadres can input data into Excel or the system; 3) Not all POKSILA have a monitoring book for the participants; 4) The size of the cadre manual is too small, making it difficult for cadres to take notes.

3) What are your hopes for the POKSILA?
"Mohon dibuatkan buku bantu yang jelas dan lengkap, jadi bisa diseragamkan supaya nanti kalau diminta data oleh Dinas, oleh Puskesmas, bisa diserahkan"
"Jadi kalau sekarang mau dibuatkan untuk format laporan yang diseragamkan. Itu saya sangat menyambut baik untuk itu dan terima kasih. Dan kalau bisa nggih, ya memang harus bisa nggih tulisannya diperbesar."
"Please create a clear and comprehensive guidebook for standardization, so that when the Health Office or the Public Health Center requests data, it can be submitted."
"So, if you would like to create a standardized report format, I welcome it and thank you. And if possible, the text should be enlarged."
Based on the results of the FGD, we will develop a recording book for cadres and a monitoring book for elderly participants. The book will be created on cadre needs, MSN, and guidelines for elderly health. Developing and making a template for the books for cadres is hoped to help the tasks of cadres and community health center officers carry out digital transformation efforts through MSN.

Figure 2. Cover and list of questions in Buku Bantu Kader.

Buku ini nggak hanya untuk pasien ya, keluarga akan membaca, dan itu sangat bermanfaat untuk lansia"

"Adanya buku monitoring kesehatan lansia ini memudahkan kami untuk memonitor tentunya kesehatan lansia dan tindak lanjutnya seperti apa, terus untuk mungkin kami ke depan dibuatkan buku bantu itu sangat membantu kami dalam menganalisis sekiranya penyakit-penyakit apa yang sering diderita lansia"

"I welcome the launch of a health monitoring book for the elderly, or perhaps it could be shortened to something more appealing, like MONALISA or something similar. This book isn't just for patients; families will read it, and it's incredibly beneficial for the elderly."

"This health monitoring book makes it easier for us to monitor the health of the elderly and determine what action is needed. In the future, perhaps we could create a supplementary book like this, as it would be very helpful in analyzing common illnesses suffered by the elderly."

The elderly have a high risk of degenerative diseases. Health workers need to monitor the health status of the elderly regularly. Cadres are one of the front guards in recording and reporting the health of the elderly at the community level. In supporting digital transformation and the Semarang District Health Office, we assist cadres in developing recording books for cadres and elderly participant monitoring sheets. Cadre aid books and monitoring books for the elderly help facilitate data recording in POKSILA. This can also be seen in similar community services, namely the development of health care forms for the elderly implemented in health services. This can encourage the creation of orderly administration, namely, orderly documentation of health records and the results of measuring patient vital signs. Within local data and cross-collaboration, the tools should be appropriate to local conditions and easily understood by the communities. The last step was community service and education to increase the knowledge about the elderly programs and services.

Activity preparation

We prepared the guidelines for the reporting book for the cadre and the monitoring book for the elderly. The reporting book for cadre was adopted from the MSN application and included demographic data, vital measurements, and risk factors of communicable and non-communicable diseases.

A monitoring book for the elderly was adopted from *Buku Kesehatan Lanjut Usia* (Kemenkes). The book included the characteristics of the participants, the history of risk factors and diseases, and some vital measurements conducted in health facilities (Appendix 3). We also consult and brainstorm with the experts in Kedungmundu PHC about the design and content of the book (Appendix 4).

Handing over books to community health centers

The head of PHC, as well as the head of the service program, appreciates this book.

"Saya menyambut baik ada buku monitoring kesehatan lansia, atau mungkin nanti disingkat biar menarik ya, MONALISA atau apa gitu ya.

DISCUSSION

This community-based service study aimed to assess the needs of elderly individuals at the Kedungmundu PHC through a longitudinal observation spanning 20 months. A vital part of public health, especially in managing chronic diseases in elderly populations, is the systematic use of surveillance data to inform health interventions. The study by Dewi et al. (2020) demonstrates the value of a surveillance-based approach through the Sleman Health and Demographic Surveillance System (HDSS), which collects longitudinal health data to monitor non-communicable diseases (NCDs) and other health-related conditions. This approach resonates with the POKSILA program's goal of managing elderly health by recording and tracking key health indicators such as blood pressure and waist circumference. Both programs emphasize the importance of continuous data collection and community involvement in improving health outcomes. As surveillance continuously collects data on the general population, it may provide solid, reliable evidence on public health problems, the need for health intervention, and measures for the results of interventions.[12] These findings are also consistent with a study on elderly care physicians that was carried out in the Netherlands. The study found that it is crucial to standardize and structure personal health records for the elderly to document daily patient care, guarantee continuity of care, and fulfill the obligation of elderly care physicians to record data. Furthermore, in the event of a complaint, this information is used to support possible courses of action.[13]

The data collection at the Kedungmundu PHC, which included regular measurements of vital signs such as blood pressure, BMI, and waist circumference, revealed several insights into the health status of the elderly population and provided a basis for evaluating the efficiency of community health interventions. The results showed that most participants were female (88%) and predominantly aged 60-74 (52%). This gender disparity is consistent with global trends, as life expectancy for women generally exceeds that of men.

In Indonesia, as of 2022, the average life expectancy for females was 74.1 years, while it was 70.2 years for males. Such demographic data are critical for planning tailored health interventions, as elderly women tend to face specific health risks, including a higher prevalence of hypertension and obesity.

The analysis of systolic and diastolic blood pressure (SBP and DBP) across 20 periods revealed higher blood pressure in women, particularly those aged 60-74. The decrease in estrogen levels during menopause causes a loss of the protective effects of estrogen on vascular health, which include promoting vasodilation, enhancing nitric oxide production, and helping to regulate blood pressure. According to other literature, these protective mechanisms are disrupted when estrogen levels fall, leading to endothelial dysfunction, arterial stiffness, and an overall rise in blood pressure.[14] Studies have also highlighted how hypertension is a common condition among elderly populations, making regular health monitoring essential.[15] The observed reduction in blood pressure over time could indicate that the health interventions implemented through POKSILA have successfully managed hypertension. However, this would require further investigation to confirm.

Body mass index (BMI) and waist circumference data showed that women had higher values than men, particularly in the 45-59 age group, with females having an average BMI of 26.04 kg/m² and a waist circumference of 87.94 cm. This suggests that many of the female participants were overweight or obese, which is a significant concern as central obesity is a known risk factor for cardiovascular diseases, type 2 diabetes, and other metabolic conditions.[16] Similar findings were observed in Sleman HDSS's data collection, where the prevalence of non-communicable diseases (NCDs) such as hypertension and diabetes were high among elderly populations.[12] In both programs, data-driven approaches enable the identification of priority health issues, such as hypertension and diabetes, ensuring that resources are directed toward the most pressing health concerns. These data highlight the need for targeted nutritional and lifestyle interventions to

address obesity, particularly among elderly women.

In a study in Canada, the implementation of community-based PHC has a strong role in the treatment of chronic diseases of older parents, especially for those with chronic diseases who are at high risk of polypharmacy, death, and other adverse outcomes because it can help in system reform efforts, such as improving the health system and recognizing diverse needs to be integrated. This method can involve community resources, healthcare organizations, self-management support, delivery system design, decision support, and clinical information systems to manage chronic diseases.[17]

The POKSILA program's approach to elderly health management, focusing on recording and reporting key health indicators, can be further supported by the Sleman HDSS model of using surveillance data for evidence-based public health interventions. Dewi et al. stress the importance of integrating quantitative and qualitative data to develop comprehensive health interventions. This mirrors POKSILA's effort to tailor its health monitoring tools to local needs, ensuring that interventions are contextually appropriate and relevant.[12]

The needs assessment conducted via FGD provided valuable insights into the operational challenges faced by health cadres at POKSILA. A key issue raised by the cadres was the lack of standardized templates for recording elderly health data. This finding resonates with previous studies that have identified poor documentation practices as a barrier to effective community health service delivery.[18] The absence of a structured template not only hampers the collection of consistent health data but also complicates integrating these records into broader public health databases, such as the Mentari Sehat Nusantara (MSN) system.

Furthermore, the FGDs revealed that not all cadres were proficient in using digital tools such as Excel for data entry, which is a significant limitation in the era of digital health transformation. This echoes findings from a study conducted in rural Bangladesh, where community health workers faced similar challenges

adapting to digital health platforms, thus necessitating additional training and support.[19] Providing capacity-building initiatives for cadres, focusing on digital literacy and data management, would be essential to improve the accuracy and efficiency of health data reporting in this context.

In response to the challenges identified in the FGD, developing monitoring books for cadres and elderly participants was an essential step toward improving the quality of health services at POKSILA. Integrating demographic data, vital signs, and risk factors for both communicable and non-communicable diseases aligns with national guidelines outlined in the *Buku Kesehatan Lanjut Usia*.[20] These tools were also aligned with the MSN system, ensuring that local data collection would be compatible with district-level reporting requirements.

Similar interventions in other countries support the development of standardized tools for health monitoring in elderly populations. For example, a study in India demonstrated that implementing a standardized health screening tool for elderly patients in rural health centers significantly improved the detection and management of chronic conditions.[21] By adopting a similar approach, the POKSILA initiative is likely to enhance the accuracy and completeness of elderly health records, which could, in turn, facilitate better health planning and resource allocation at both the community and district levels.

The role of community health workers or cadres in supporting digital health initiatives, such as the MSN, cannot be overstated. In many low- and middle-income countries, including Indonesia, cadres are the backbone of community health services, particularly in rural and underserved areas.[22] Moreover, Dewi et al. highlight the role of community health workers in data collection and reporting, which mirrors the POKSILA program's use of local cadres. In both cases, community health workers are the critical link between data collection and health service provision. However, for cadres to fulfill this role effectively, they must be equipped with the necessary skills and tools to collect, manage, and report health data accurately.[12]

This study's finding that cadres faced difficulties in recording and reporting data, particularly due to the small size of existing manuals and the absence of standardized templates, underscores the importance of developing user-friendly tools. Research has shown that simplifying health data.[23] A similar study during the COVID-19 pandemic emphasized how empowering community health workers with digital tools and platforms, such as WhatsApp consultations and online health monitoring, can significantly improve elderly care.[15] Introducing a cadre-friendly recording book, developed in consultation with local health experts and aligned with national digital health systems, is a promising step toward achieving this goal.

The success of the POKSILA initiative, particularly in improving health monitoring and reporting among elderly populations, suggests that similar approaches could be scaled up across other regions in Indonesia. However, sustainability will depend on several factors, including ongoing training and support for cadres, the availability of resources such as monitoring books and digital devices, and the integration of local health data into national systems like MSN.

This study has several strengths, including the large amount of data in POKSILA with several variables, and it was conducted periodically. However, certain limitations should be considered. Many variables need to be included in the monitoring book template, so many pages need to be filled. Despite these limitations, the study provides valuable insights into enhancing data recording and reporting by local stakeholders

CONCLUSION

In conclusion, this community-based service initiative has demonstrated the potential for improving health monitoring and service delivery for elderly populations in Kedungmundu, Semarang. By addressing key challenges identified in the FGDs and implementing standardized tools for health data recording, the initiative has made significant strides toward enhancing the quality of elderly care in the region. However, further efforts are needed to ensure this approach's sustainability and scalability, particularly in cadre training and digital health integration.

AUTHOR CONTRIBUTIONS

PTR, SO, and NSN conceptualized and designed the research. PTR, SO, NSN, FAG defined the intellectual content. All authors contributed to the literature search, data acquisition, analysis, and manuscript preparation. PTR and SO did the statistical analysis. Manuscript editing was edited by PTR, SO, NSN, FAG, IMH, and EIA, while PTR, SO, and NSN contributed manuscript review. Guarantors for the work are PTR and SO.

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