OPEN ACCESS
Jurnal Ilmiah Ilmu Terapan Universitas Jambi
Vol. 10 No. 1. Ferbruary 2026, pp. 17-28 DOI. 10.22437/jiituj.v10i1.32537

Research Article

ENCOUNTERING BARRIERS: INSIGHTS ON HEALTH PROMOTION IMPLEMENTATION IN COMMUNITY HEALTH CENTERS

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Article Info
Received: Apr 16, 2024
Revised: Jan 09, 2025
Accepted: Jan 12, 2026
OnlineVersion: Feb 02, 2026

Abstract
Community Health Centers (*Puskesmas*) are crucial in promoting health and empowering communities to maintain their health independently. Despite their importance, health promotion programs have faced significant challenges, leading to suboptimal implementation. This study aims to analyze the implementation of health promotion programs at Puskesmas and identify the barriers faced by implementers. Qualitative research with a case study design was conducted at four Community Health Centers in Serdang Bedagai Regency from December 2021 to March 2022. In-depth interviews involved the heads of the Community Health Centers, the responsible individuals for health promotion programs at the centers, and community health cadres. A total of 12 participants underwent in-depth interviews to deeply explore information regarding policy aspects, funding, facilities, and human resources. Additionally, data were collected through observation and documentation. Data analysis followed the protocol developed by Miles and Huberman. The study results indicate that implementing health promotion at Community Health Centers has not been optimal due to barriers such as program funding availability, inadequate supporting facilities, and a shortage of competent human resources. This research contributes to the existing literature by providing a detailed examination of the specific challenges faced by Puskesmas in implementing health promotion programs. It emphasizes the need for targeted interventions to strengthen these centers' operational capabilities. To ensure optimal outcomes, stakeholders must focus on adequate budget allocation, the provision of supporting facilities, and training for program implementers.

Keywords: Barrier, Health Promotion, Implementation.

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INTRODUCTION

Health promotion has become a crucial strategy in the current complex health landscape. The “triple burden” of infectious diseases, emerging threats, and chronic illnesses necessitates a proactive

approach beyond merely treating diseases (Ladusingh et al., 2018; Castillo-Carandang et al., 2020). Health promotion is also a priority in primary health care as it fulfils the health needs of all patients at the community level by integrating care, prevention, promotion, and education (van Weel & Kidd, 2018). Primary care physicians and other health professionals are well-positioned to promote health and educate patients, given their accessibility and continuity of care (Abdullah et al., 2022).

One of the primary healthcare facilities in Indonesia is the Community Health Center (*Puskesmas*). *Puskesmas*, serving as the primary access point to health services for the community should be able to shift the existing illness paradigm by prioritizing a health paradigm. Therefore, the primary function of Puskesmas is as the driving force for promotive and preventive services (Werdhani, 2019; Kavanagh et al., 2022). According to the Ministry of Health report, the number of Puskesmas in Indonesia reached 10,292 units in 2021 (Kementerian Kesehatan, 2022). The shift towards a health paradigm that emphasizes a promotive approach has long been advocated, but it still faces obstacles from the service providers and the community (McFarlane et al., 2016). *Puskesmas* is considered suboptimal in promotive and preventive efforts. In fact, the community perceives *Puskesmas* more as a curative facility rather than a health consultation facility (Artha et al., 2017; Khotimah et al., 2022).

Health promotion at *Puskesmas* is integral to healthcare services to enhance community knowledge, attitudes, and behaviors in maintaining and improving health. The target of health promotion at *Puskesmas* is the entire community within its jurisdiction, and various stakeholders should be involved, including cross-sector collaboration. The scope of health promotion services at *Puskesmas* broadly encompasses household, school, workplace, public, and healthcare institution settings (Nadya et al., 2016; Mahendradhata et al., 2017). A recent systematic review reported findings that make health promotion programs sustainable in the long term. These include collaboration with other organizations, careful planning, stable financial support, suitability of the program to community conditions, the ability of the community to run the program, and support from community leaders (Bodkin & Hakimi, 2020). Sustainable health promotion programs are more likely to produce long-term effects, as they address appropriate levels of social organization and maintain strategic support over time. This ensures that the health benefits achieved are sustained even after the initial intervention period has ended.

Initial observations and interviews with the Head of Health Promotion Division at the Serdang Bedagai District Health Office revealed a lack of coordination and understanding with Puskesmas regarding what should be done or which policies should be adopted. Puskesmas only conducts routine health promotion activities such as counseling at integrated health posts (*posyandu*) and schools. Additionally, the community shows limited enthusiasm for participating in health promotion activities conducted by healthcare workers. Implementing health promotion programs needs evaluation as it can provide valuable insights into the effectiveness of health promotion programs, help identify areas for improvement, and inform the development of future programs (Lobo et al., 2014). Evaluation results can be shared with stakeholders to aid in identifying strategies for future program planning and implementation. This study aims to analyze and identify barriers emerging in implementing health promotion programs at *Puskesmas*.

RESEARCH METHOD

This study is qualitative and utilizes a case study design. This study was conducted in the Serdang Bedagai Regency, which is part of North Sumatra Province. There are 20 community health centers (puskesmas) in the Serdang Bedagai District. The results of the initial study show that there are four puskesmas that have not achieved the program targets, namely Puskesmas Desa Pon, Puskesmas Melati, Puskesmas Sei Rampah, and Puskesmas Pegajahan. The study was conducted from December 2021 to March 2022. The purposive sampling technique was employed to select the samples involved in the study. A total of 14 (fourteen) individuals were recruited as research informants and provided consent to participate in the study. Key informants in this study consisted of four heads of Puskesmas and four individuals responsible for health promotion programs. Meanwhile, four community health cadres served as triangulation informants.

Table 1. Characteristics of Research Informants

Code	Age	Position	Education	Description
IF01	58 years	Head of Pon Village Puskesmas	Master	Key Informant
IF02	54 years	Person Responsible for Health Promotion Program, Pon Village Puskesmass	Bachelor	Key Informant
IF03	54 years	Head of Sei Rampah Village Puskesmas	Bachelor	Key Informant
IF04	40 years	Person Responsible for Health Promotion Program, Sei Rampah Village Puskesmass	Bachelor	Key Informant
IF05	52 years	Head of Pejagahan Village Puskesmas	Bachelor	Key Informant
IF06	43 years	Person Responsible for Health Promotion Program, Pejagahan Village Puskesmass	Bachelor	Key Informant
IF07	49 years	Head of Melati Village Puskesmas	Bachelor	Key Informant
IF08	34 years	Person Responsible for Health Promotion Program, Melati Village Puskesmass	Bachelor	Key Informant
IT01	45 years	Community Health Cadre	Senior High School	Triangulation Informant
IT02	51 years	Community Health Cadre	Senior High School	Triangulation Informant
IT03	37 years	Community Health Cadre	Bachelor	Triangulation Informant
IT04	40 years	Community Health Cadre	Senior High School	Triangulation Informant

The researcher used a guideline for in-depth interviews, observations, and documentation to gather data. The guideline for in-depth interviews contained crucial points related to program implementation, covering policies, funding, facilities, and human resources. The following are the questions asked to the informants.

Table 2. In-depth interview guidelines

No	Questions
1	Can you describe the policies related to the implementation of the health promotion program in puskesmas? (e.g., formal policies or guidelines within the health center that support this program, clarity of guidelines in health program design)
2	How does the puskesmas leadership support the health promotion program? (e.g., policy changes, resource allocation)
3	Do you feel the current policies adequately support and encourage health promotion initiatives?
4	Are there any policy changes you would suggest to streamline program implementation?
5	How are health promotion programs funded at your puskesmas? (Government allocation, donor funds, etc.)
6	Have you encountered any difficulties in securing adequate funding for these programs?
7	How do funding limitations affect the type and scope of health promotion programs offered?
8	Are there opportunities to explore alternative funding sources (e.g., partnerships, community fundraising)?
9	Does the puskesmas have adequate facilities (e.g., space, equipment) to effectively conduct health promotion programs? Examples: Educational materials, activity areas, transportation for outreach programs.
10	Have you faced any limitations due to lack of facilities or resources?
11	Are there any resources you would need to enhance the effectiveness of your health promotion programs?
12	Who is responsible for planning, implementing, and monitoring health promotion programs?
13	Do you believe the current staffing level is sufficient to meet the needs of your health promotion initiatives?
14	Have you encountered any challenges related to staff training or expertise in health promotion?
15	Are there opportunities to involve volunteers or community health workers in program delivery?

The researcher contacted the informants to arrange an interview appointment and asked for their time availability. Interviews were conducted for approximately 20-30 minutes with each informant. All interviews were conducted at each informant's health center according to a previously agreed upon schedule. Observations and documentation were carried out simultaneously during interviews and while reviewing documents related to implementing health promotion programs.

The data analysis was conducted using an interactive model, namely a qualitative study, presented in descriptive form accompanied by narrative. Data analysis began with data reduction, verification, and conclusion (Miles & Huberman, 1994). The researcher categorized the data into codes that represented certain themes or concepts, which was done manually. Themes were analyzed deductively. The coder consisted of three members of the research team: PM, NDA, NDF, and MRS. Furthermore, the researcher compiled a matrix to display the relationship between the codes that emerged from the reduction in the interview transcripts (Table 3).

Table 3. Coding scheme

Code	Subtheme	Theme
KBJ1	Foundation of central government regulations	Policy
KBJ2	Local policies/derivative regulations are not yet available	Policy
AGR1	Funding for health promotion programs is limited	Funding
AGR2	Funding allocation is still lacking	Funding
FSL1	Puskesmas facilities are inadequate	Facilities
FSL2	Media and health promotion tools are incomplete	Facilities
FSL3	Operational vehicles for staff are still lacking	Facilities
SDM1	Competent health workers in the field of health promotion are still lacking	Human Resources
SDM2	Excessive workload of health workers	Human Resources

The researcher validated (checked the validity of the data) the research findings using data triangulation techniques (comparing data sources). In this study, data triangulation was conducted by comparing data from field observations and interview results with triangulation informants, namely the four community health cadres. In addition, the interview transcripts were reviewed by the informants to ensure that they were consistent with what the informants and researchers said (member check). Feedback from the informants was used by the researcher to help them better understand their perspectives and complement the research findings. The researcher also discussed the results with peers who conducted research on relevant topics and methods.

RESULTS AND DISCUSSION

The Waterfall Model Approach

Policy

Health promotion services are one of the primary functions of Public Health Centers (Puskesmas), constituting activities within promotive and preventive programs that have been implemented for a long time. These services apply to the entire community within the jurisdiction of the Puskesmas. Minister of Health Regulation No. 43 of 2019 explains that Puskesmas is a healthcare facility that provides public health and primary individual health efforts prioritizing promotive and preventive measures to achieve the highest possible level of community health within its jurisdiction (Kementerian Kesehatan, 2019). This regulation is a solid basis for Puskesmas to prioritize implementing health promotion programs. Additionally, Puskesmas also has guidelines for providing health promotion unit services, which are prepared as a reference for healthcare workers in delivering health promotion services.

> "*Health promotion services are indeed a responsibility of the Public Health Center, as it's mandated by law. There are guidelines for health promotion activities as well. So, it's mandatory to implement them; the Public Health Center already has routine activities for health promotion.*" (IF05, Head of Puskesmas)
>
> "*...I believe the regulations are there; because without regulations, there wouldn't be budget allocations for the activities. We also have Standard Operating Procedures (SOP) for health promotion in the field*." (IF08, Person Responsible for Health Promotion Program)

Document search results indicate that Community Health Centers (Puskesmas) have Standard Operating Procedures (SOP) for conducting health promotion activities, such as SOP for In-building Counseling, SOP for Surveying Clean and Healthy Living Behaviors in Household Settings, SOP for Group Counseling outside Buildings, SOP for Surveying Clean and Healthy Living Behaviors in Healthcare Institutions, SOP for Surveying Clean and Healthy Living Behaviors in Educational Institutions, SOP for Surveying Clean and Healthy Living Behaviors in Workplace Settings, SOP for Surveying Clean and Healthy Living Behaviors in Public Places, SOP for the Development and Supervision of Integrated Health Posts (Posyandu), and Protocols for the Development and Supervision of Alert Villages. It can be concluded that the policy aspect has been well implemented, with regulations and SOPs guiding the implementation of health promotion programs.

A strong policy foundation is crucial for the success of health programs, as it provides a framework for evaluation (Lawless et al., 2017). Regulations and policies serve as mechanisms for translating public policy into action, and their interaction with regulatory bodies is as significant as the laws they enforce (Porter et al., 2018; Anderson et al., 2023). However, the complexity of these regulations can be burdensome, necessitating simplification (Frisse & Misulis, 2019). Moreover, these regulations can help harmonise and align practices, leading to greater efficiency (Sheets, 2018). The evaluation process should be comprehensive, covering various aspects of the program, and should be designed before program implementation (Shrivastava et al., 2015). A program theory-based evaluation framework can accommodate the complexity of public policy-making and provide a basis for predicting policy impacts (Lawless et al., 2017).

Funding

Adequate funding is crucial for the successful implementation of health programs, especially in efforts to reach a broad population (Barry, 2021; Sony et al., 2023). In public health promotion, funding should consider a wider understanding of resources, the role of social relationships, and the dynamic nature of society (Kavanagh et al., 2022). Funding sources for the implementation of health promotion programs include Health Operational Assistance (BOK), Regional Revenue and Expenditure Budget (APBD), and the Social Security Agency (BPJS). The available funds for implementing health promotion programs can be used for all work programs or Budget Plans (RAB) and Budget Activity Plans (RKA). Funds for health promotion program services come from BOK and are also supplemented by The Indonesian Health Security Agency (BPJS Kesehatan), although not fully utilized due to regulations that only allow the use of one funding source. However, the implementation of health promotion activities such as socialization, counseling, and others is still irregular and uneven due to lack of readiness, personnel, long distances between neighborhoods, and a large population requiring significant operational costs.

> "*Funding and financing depend on the situation; sometimes it can be funded by the National Health Insurance (JKN), while others come from Health Operational Assistance (BOK). But whether funding is available or not, health promotion still needs to continue*." (IF02, Person Responsible for Health Promotion Program)
>
> "*...it's not optimal yet; the allocation of funds for health promotion programs is still insufficient compared to other programs. Especially since we have to strictly adhere to the rules in fund usage, fearing any overlapping of funds from different sources*." (IF07, Head of Puskesmas)

Ultimately, the limitation of funds hampers officers in optimizing the implementation of health promotion activities. Insufficient funding can lead to a reduction in the frequency and coverage of health promotion activities. This can result in lower levels of community awareness and knowledge about health.

> "*...so far, we just have to make do with the funds available, even though it's insufficient. The main thing is to align our actions with the available funds*." (IF04, Person Responsible for Health Promotion Program)
>
> "*...the funds from the Health Operational Assistance (BOK) just have to suffice, as long as the program can still be carried out*." (IF08, Person Responsible for Health Promotion Program)

The Health Operational Assistance (BOK) policy is a measure taken by the central government to address the lack of operational funds for promotive and preventive programs. The implementation of this policy faces significant challenges in the era of decentralization. Some of the emerging challenges include the government's limited financial capacity and technical difficulties in disbursing funds from the central government to the regions. The implication is that regions experience technical difficulties in planning and absorption (Dodo, 2014). Community-based programs play a crucial role in health promotion, but many are unsustainable due to a lack of strategic planning and limited funding sources for implementation, which has been proven to hinder the sustainability of many community programs over time (Proctor et al., 2015; Ishola & Cekan, 2019). There is a need for political interest and an understanding of the benefits of program sustainability by stakeholders to prioritize funding for a health program (Donessouné et al., 2023).

Facilities

Health facilities refer to the infrastructure, equipment, and amenities provided by the government, local authorities, or private sector to the community to maintain or improve health through preventive, curative, and rehabilitative measures. The interview results show that the facilities, infrastructure, and equipment available are already in place but not fully supportive of the readiness for optimal implementation of health promotion programs. Limited transportation and a lack of computers for health promotion staff hinder the implementation of health promotion programs at Puskesmas.

> "*The challenge lies in transportation, especially when conducting outreach in remote villages. During field activities, many staff members are usually involved, often carrying medical equipment for examinations and educational materials. Sometimes, we have to use the ambulance from the health center as additional transportation*." (IF02, Person Responsible for Health Promotion Program)
>
> "*...the facilities and infrastructure for fieldwork are sometimes lacking and constrained by the limited media and transportation equipment available*." (IF06, Person Responsible for Health Promotion Program)
>
> "*...we need more diverse health promotion media to attract public attention. Currently, the media we usually bring include posters, projectors, and presentation slides for educational materials*." (IF07, Head of Puskesmas)

Interview results with the Community Health Cadres indicate that they require health promotion media that can be taken home, such as leaflets and booklets. They also hope for the availability of posters and pamphlets containing education in strategically located public places.

> "*...typically, the health center brings posters during sessions, but having takeaway health promotion materials would be helpful so residents can review them at home*." (IT01, Community Health Cadres)
>
> "*...there was a suggestion from village officials to put up billboards or health pamphlets at street intersections, for example. It would allow people to read them when passing by or returning home. People might forget about the material if there are only posters during counseling sessions*." (IT04, Community Health Cadres)

The quality of health services is a determining factor in patient satisfaction and their loyalty to health care facilities (Setiani et al., 2021). Health facilities can support the success of community health promotion programs by providing essential resources, services, and infrastructure that enable the implementation and sustainability of these programs. This support is crucial in the public health sector, where effective initiative development requires consideration of different intervention levels and the selection of appropriate media (Donessouné et al., 2023). Regarding recording and reporting, the availability of information system facilities and computer devices is vital for accurately evaluating the extent of activity achievement and effectiveness. Additionally, health centers must provide health promotion media in various forms for promotion within and during community health promotion activities. Previous studies have emphasized the importance of selecting the suitable media and regular training to enhance understanding and create engaging promotional media (Setiawan et al., 2017; A'yunin et al., 2018; Mutmainnah et al., 2023). A bibliometric analysis reports the importance of technological

adaptation in message delivery, as it can reach a wider audience (Hidayati et al., 2024). Features such as discussion forums, online groups, and chatbots allow people to interact with health experts, share experiences, and obtain social support. Providing adequate transportation or motor vehicles also needs attention from local governments to avoid hindering activities in remote or difficult-to-reach areas. A study revealed that the need for promotion facilities and infrastructure such as motor vehicle units should be met to facilitate staff in reaching broader areas, primarily rural areas (Santosa & Akhmad, 2021).

Human Resources

Human resources are a primary element in organizations and crucial to achieving organizational goals. Human resources are vital in controlling other factors such as budget and technology. According to interview results regarding human resources for health promotion program implementers at Puskesmas, it was found that the healthcare workforce is sufficient in terms of quantity. However, not all health promotion program staff have relevant qualifications in terms of education. Additionally, not all health promotion staff have undergone the training provided by the Serdang Bedagai District Health Office.

> "*...it's sufficient in terms of human resources, and it's even formalized in the implementation team's decree*." (IF03, Head of Puskesmas)
>
> "*...we have a responsible person along with a team. But not everyone has a background in health promotion education. Since our healthcare workforce is limited, there are also polyclinic nurses who double as health promotion staff*." (IF07, Head of Puskesmas)
>
> "*...some staff have been sent to attend training at the District Health Office*." (IF06, Person Responsible for Health Promotion Program)

Various studies have highlighted the importance of competent human resources in supporting the success of health promotion programs in communities. Skilled healthcare workers in providing education will facilitate the transfer of health information to the community. Carnaúba & Ferreira (2023) emphasize the importance of health promotion competencies, particularly in the capacity for change and health advocacy domains, in the context of multidisciplinary residency programs. These competencies are crucial for promoting healthy lifestyles and guiding clients on the importance of community participation in spaces intended for social control in primary healthcare. Botchwey et al. (2023) also stressed the role of community design and revitalization in promoting health, which requires competent human resources to implement effectively. One study reported the importance of good communication between healthcare workers and patients. Effective communication not only helps in the delivery of information related to their health but also creates a sense of trust and comfort for the patient (Pasulu et al., 2023). This will encourage a sense of optimism that can improve patients' quality of life. They tended to feel happier, more satisfied with their lives, and have better social relationships (Putra et al., 2023).

In Indonesia, Community Health Cadres enhance community participation in health development. Interview results with Community Health Cadres indicate their active involvement in health education processes within the community. Their presence is quite effective as a solution to the shortage of healthcare workers in implementing health programs.

> "*...we involve our cadres in every health promotion activity in the field. Usually, two to three cadre members. They are enthusiastic to help us during a health education session*." (IF04, Person Responsible for Health Promotion Program
>
> "*...we always communicate with the Puskesmas staff when there's going to be a health education session. We help announce it to the community and assist during the session*." (IT03, Community Health Cadres)
>
> "*...I take turns with other cadres when I can't participate in activities. It's just enjoyable, you know, because I can contribute to training my community to be healthier*." (IT04, Community Health Cadres)

Community health cadres are voluntary workers selected by the community and tasked with community development. In this role, they are also called health promoters or facilitators (Randell et al., 2024). These cadres are equipped with health skills through training provided by local health centers. Becoming a community health cadre is a form of community participation in Primary Health Care (PHC). These cadres then become primary health efforts' driving force or managers (Tumbelaka et al., 2018).

Health promotion is a shared responsibility among healthcare workers, cadres, and the community. Community health cadres are expected to be role models for healthy community behaviour and initiate community empowerment movements. One study reported that cadres can facilitate communities to be more independent in maintaining health. They can provide education, counseling, and conduct home visits (Oktafia et al., 2023). Effective health promotion media is essential to fulfill their responsibilities as community health cadres. A previous study concluded that video education was effective in improving cadres' knowledge and attitudes (Friska et al., 2022). Health information, a necessity for the community, can be effectively and productively communicated. An additional investigation found that brief training programs consistently and markedly improved the knowledge of health workers and effectively supported their visits to homes of children experiencing stunted growth (Siswati et al., 2022).

Ultimately, community health promotion is strategically significant in contemporary health systems, particularly for achieving equity in health systems with resource constraints. Effective implementation requires clear concepts, intersectoral action, and community empowerment. Health promotion, protection, and disease prevention are interconnected constructs fulfilling the public health mission of ensuring population health and well-being (Caron et al., 2024). However, the implementation of promotive and preventive programs faces challenges, including lack of community trust, insufficient training, and unclear task division (Mulfatun et al., 2024). These studies emphasize the importance of community participation, adequate resources, and clear policies in optimizing health promotion programs across various settings.

This study provides valuable insights into the challenges of health promotion services at Puskesmas, particularly highlighting the complexities of financing these programs. The difficulties associated with utilizing various funding sources, such as the Health Operational Assistance (BOK) and the National Health Insurance (JKN), are significant issues that persist in the context of health promotion efforts in Indonesia. Budget constraints notably affect the intensity and reach of health promotion activities, a critical factor often overlooked in public health research. The examination of community health cadres reveals their crucial role in addressing deficiencies in health service delivery. Their contributions are essential for enhancing community participation in health promotion initiatives. This focus on grassroots participation offers a fresh perspective on how community dynamics influence health outcomes, emphasizing the need for effective engagement strategies to improve public health. Overall, this study underscores the importance of understanding the intricate interplay between funding, community involvement, and health service delivery in shaping effective health promotion strategies within Indonesia's primary healthcare system.

While the study contributes valuable insights, it also has several limitations. The findings may not be universally applicable across all regions of Indonesia due to variations in local governance, resource availability, and levels of community engagement. The unique context of Serdang Bedagai District may restrict the broader applicability of the findings. Although qualitative interviews offer rich insights, they may introduce bias influenced by respondents' perceptions and experiences. Reliance on subjective accounts can compromise the objectivity of the findings. The study acknowledges that funding sources are frequently inconsistent and subject to change, complicating the sustainability of health promotion programs. However, it does not investigate alternative funding models or innovative financing strategies that could help mitigate these challenges.

CONCLUSION

Implementing health promotion programs in several community health centers in Serdang Bedagai Regency is hindered by several factors, such as inadequate funding, limited transportation, a lack of computer equipment, and a shortage of competent human resources. The combined effects of these challenges reveal systemic weaknesses in the implementation of health promotion programs. To improve public health outcomes, it is essential to address these issues through sustained increases in funding, ensuring that adequate resources are available. This approach includes building the capacity of program staff through regular training and professional development, as well as strengthening partnerships by enhancing coordination with public health cadres and relevant stakeholders.

ACKNOWLEDGMENTS

The researchers thank the Serdang Bedagai District Health Office for permitting the research and data collection. The researchers also thank the research informants who participated in this study.

AUTHOR CONTRIBUTIONS

Conceptualization, SLRN, EG and PM; Methodology, SLRN, EG and PM; Software, NDA and NDF; Validation, NDA, NDF and MRS; Formal Analysis, SLRN, PM, and MRS; Investigation, EG and PM; Resources, NDA and NDF; Data Curation, NDA and NDF; Writing – Original Draft Preparation, SLRN, PM, MRS; Writing – Review & Editing, EG and PM; Visualization, SLRN and NDA; Supervision, EG and PM; Project Administration, SLRN and MRS; Funding Acquisition, SLRN".

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

REFERENCES

A'yunin, E. N., Gamelia, E., & Masfiah, S. (2018). Pengaruh pelatihan pengembangan media promosi kesehatan ibu hamil terhadap pengetahuan dan keterampilan pada petugas penyuluh kesehatan di Kabupaten Banyumas [The influence of training in developing health promotion media for pregnant women on the knowledge and skills of health extension workers in Banyumas Regency]. *Kesmas Indonesia: Jurnal Kesmas Indonesia*, *10*(1), 1–12. https://doi.org/10.20884/1.ki.2018.10.1.599.

Abdullah, M. Y., Alshehri, S. A., Mahnashi, H. A., Alshahrani, S. S., Alkhaldi, S. S., Alshammari, S. M., Alotaibi, R. S., Qutub, R. M., Jamhan, A. Y., Alhussain, S. A., Abdulqader, A. K., & Binmahri, M. K. (2022). Role of primary care physician in health promotion and education. *International Journal Of Community Medicine And Public Health*, *9*(12), 4705. https://doi.org/10.18203/2394-6040.ijcmph20223234.

Anderson, C., Baskerville, R., & Kaul, M. (2023). Managing compliance with privacy regulations through translation guardrails: A health information exchange case study. *Information and Organization*, *33*(1), 100455. https://doi.org/10.1016/j.infoandorg.2023.100455.

Artha, K. A. D., Suarjana, K., & Januraga, P. P. (2017). The provision of promotive and preventative healthcare services by private primary care physicians in the era of the national health insurance program. *Public Health and Preventive Medicine Archive*, *5*(2), 140–146. https://doi.org/10.15562/phpma.v5i2.29.

Barry, M. M. (2021). Transformative health promotion: what is needed to advance progress? *Global Health Promotion*, *28*(4), 8–16. https://doi.org/10.1177/17579759211013766.

Bodkin, A., & Hakimi, S. (2020). Sustainable by design: a systematic review of factors for health promotion program sustainability. *BMC Public Health*, *20*(1), 964. https://doi.org/10.1186/s12889-020-09091-9.

Botchwey, N., Stiftel, B., Coutts, C., Ross, C., & Chatman, O. (2023). Community Design and Revitalization to Promote Health. *Journal of the American Planning Association*, *89*(2), 157–159. https://doi.org/10.1080/01944363.2023.2174354.

Carnaúba, J. P., & Ferreira, M. J. M. (2023). Competências em promoção da saúde na residência multiprofissional: capacidade de mudanças e advocacia em saúde. *Ciência & Saúde Coletiva*, *28*(8), 2227–2236. https://doi.org/10.1590/1413-81232023288.05802023.

Caron, R. M., Noel, K., Reed, R. N., Sibel, J., & Smith, H. J. (2024). Health promotion, health protection, and disease prevention: challenges and opportunities in a dynamic landscape. *AJPM Focus*, *3*(1), 100167. https://doi.org/10.1016/j.focus.2023.100167.

Castillo-Carandang, N. T., Buenaventura, R., Chia, Y.-C., Do Van, D., Lee, C., Duong, N. L., Ng, C. H., Robles, Y. R., Santoso, A., Sigua, H., Sukonthasarn, A., Tan, R., Viora, E., Zakaria, H., Brizuela, G. E., Ratnasingham, P., Thomas, M., & Majumdar, A. (2020). Moving towards optimized noncommunicable disease management in the ASEAN Region: Recommendations from a review and multidisciplinary expert panel. *Risk Management and Healthcare Policy*, *13*, 803–819. https://doi.org/10.2147/RMHP.S256165.

Dodo, D. O. (2014). Monitoring pelaksanaan kebijakan bantuan operasional kesehatan di daerah terpencil, perbatasan dan kepulauan [Monitoring the implementation of health operational assistance policy in remote, border, and island regions]. *Jurnal Kebijakan Kesehatan Indonesia*, *3*(2), 82–96.

Donessoué, F. M. G., Sossa, G. O., & Kouanda, S. (2023). Sustainability of community health programme using community-based organizations: a challenge for stakeholders. *BMC Health Services Research*, *23*(1), 434. https://doi.org/10.1186/s12913-023-09320-y.

Friska, D., Kekalih, A., Runtu, F., Rahmawati, A., Ibrahim, N. A. A., Anugrapaksi, E., Utami, N. P. B. S., Wijaya, A. D., & Ayuningtyas, R. (2022). Health cadres empowerment program through smartphone application-based educational videos to promote child growth and development. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.887288.

Frisse, M. E., & Misulis, K. E. (2019). Policies, Laws, Regulations, Contracts, and Procedures. In M. E. Frisse & K. E. Misulis (Eds.), *Essentials of Clinical Informatics* (pp. 29–37). Oxford University Press. https://doi.org/10.1093/med/9780190855574.003.0005.

Hidayati, A., Susanti, E., Jamalong, A., Ginting, D., Suwanto, W., & Arifin, A. (2024). Marketing analytics in the era of digital-based marketing strategy. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, *8*(1), 61–75. https://doi.org/10.22437/jiituj.v8i1.31908.

Ishola, F., & Cekan, J. (2019). Evaluating the sustainability of health programmes: A literature review. *African Evaluation Journal*, *7*(1). https://doi.org/10.4102/aej.v7i1.369.

Kavanagh, S., Shiell, A., Hawe, P., & Garvey, K. (2022). Resources, relationships, and systems thinking should inform the way community health promotion is funded. *Critical Public Health*, *32*(3), 273–282. https://doi.org/10.1080/09581596.2020.1813255.

Kementerian Kesehatan. (2019). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 43 Tahun 2019 Tentang Pusat Kesehatan Masyarakat (Regulation of the Minister of Health of the Republic of Indonesia Number 43 of 2019 Concerning Community Health Centers)*. Kementerian Kesehatan.

Kementerian Kesehatan. (2022). *Profil Kesehatan Indonesia Tahun 2021*. Kementerian Kesehatan.

Khotimah, C., Giesthafanny, F., & Istanti, N. D. (2022). Faktor penghambat penyelenggaraan puskesmas berdasarkan permenkes nomor 75 tahun 2014 tentang puskesmas: Literature review [Barriers to Primary Healthcare Center (Puskesmas) Implementation Based on Ministry of Health Regulation No. 75 of 2014: A Literatur Review]. *Seminar Nasional Kesehatan Masyarakat UPNVJ 2022*, 1–11.

Ladusingh, L., Mohanty, S. K., & Thangjam, M. (2018). Triple burden of disease and out of pocket healthcare expenditure of women in India. *PLOS ONE*, *13*(5), e0196835. https://doi.org/10.1371/journal.pone.0196835.

Lawless, A., Baum, F., Delany-Crowe, T., MacDougall, C., Williams, C., McDermott, D., & Eyk, H. van. (2017). Developing a framework for a program theory-based approach to evaluating policy processes and outcomes: Health in all policies in South Australia. *International Journal of Health Policy and Management*, *7*(6), 510–521. https://doi.org/10.15171/ijhpm.2017.121.

Lobo, R., Petrich, M., & Burns, S. K. (2014). Supporting health promotion practitioners to undertake evaluation for program development. *BMC Public Health*, *14*(1), 1315. https://doi.org/10.1186/1471-2458-14-1315.

Mahendradhata, Y., Trisnantoro, L., Listyadewi, S., Soewondo, P., Marthias, T., Harimurti, P., & Prawira, J. (2017). The Republic of Indonesia health system review. *Health Systems in Transition*, *7*(1). https://iris.who.int/handle/10665/254716.

McFarlane, K., Judd, J., Devine, S., & Watt, K. (2016). Reorientation of health services: enablers and barriers faced by organisations when increasing health promotion capacity. *Health Promotion Journal of Australia*, *27*(2), 118–133. https://doi.org/10.1071/HE15078.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook* (2nd ed.). SAGE Publications.

Mulfatun, A., Sabilu, Y., & Suhadi, S. (2024). Implementasi program promotif dan preventif di Puskesmas Pasir Putih Kecamatan Pasir Putih Tahun 2023 (*Implementation of Promotive and Preventive Programs at Pasir Putih Community Health Center, Pasir Putih Sub-district, 2023*). *Jurnal Administrasi Kebijakan Kesehatan Universitas Halu Oleo*, *4*(4). https://doi.org/10.37887/jakk.v4i4.46986.

Mutmainnah, M., Meinarisa, M., & Mulyani, S. (2023). Module and audiovisual package interventions

in increasing students' knowledge and hard skill in maternity nursing courses. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, *7*(1), 1–4. https://doi.org/10.22437/jiituj.v7i1.18280.

Nadya, S. F., Arya, I. F. D., & Alam, A. (2016). Health promotion activities in bandung public health centre (Puskesmas). *Althea Medical Journal*, *3*(3), 460–468. https://doi.org/10.15850/amj.v3n3.864.

Oktafia, R., Rahmayanti, R., & Indriastuti, N. A. (2023). Empowering community health volunteers (cadre) as an effort to improve health in postpartum mothers. *Proceeding International Conference of Community Service*, *1*(2). https://doi.org/10.18196/iccs.v1i2.214.

Pasulu, Y. T., Budiyanto, A. B., & Astuti, R. A. (2023). Evaluation of the level of patient satisfaction with pharmacy services at dr. J.P. Wanane, Sorong District. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, *7*(2), 175–183. https://doi.org/10.22437/jiituj.v7i2.30113.

Porter, K. M. P., Rutkow, L., & McGinty, E. E. (2018). The Importance of Policy Change for Addressing Public Health Problems. *Public Health Reports*, *133*(1_suppl), 9S-14S. https://doi.org/10.1177/0033354918788880.

Proctor, E., Luke, D., Calhoun, A., McMillen, C., Brownson, R., McCrary, S., & Padek, M. (2015). Sustainability of evidence-based healthcare: research agenda, methodological advances, and infrastructure support. *Implementation Science*, *10*(1), 88. https://doi.org/10.1186/s13012-015-0274-5.

Putra, R. P., Ramadhanti, A., & Darmawan, H. (2023). Male or female, who is the highest? Life optimism in cardiovascular disease patients. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, *7*(1), 11–21. https://doi.org/10.22437/jiituj.v7i1.26618.

Randell, M., Li, M., Rachmi, C. N., Jusril, H., Abimbola, S., Tama, A. Y., Aswitama, T., Phebe, N., Sulasmi, Alam, N. A., Negin, J., & Bernays, S. (2024). 'Of' the community but not 'of' the health system: Translating community health workers' knowledge into credible advice in Aceh, Indonesia. *Discover Health Systems*, *3*(1), 5. https://doi.org/10.1007/s44250-024-00069-7.

Santosa, A., & Akhmad, J. (2021). Upaya peningkatan kinerja petugas promosi kesehatan di Kabupaten Magelang [Strategies for improving the performance of health promotion personnel in Magelang Regency]. *Jurnal Riset Akuntansi Dan Bisnis Indonesia STIE Wiya Wiwaha*, *1*(2).

Setiani, L. A., Almasyhuri, A., & Megawati, N. (2021). Analisis Tingkat Kepuasan Pasien Rawat Inap Terhadap Kualitas Pelayanan Instalasi Farmasi di Rumah Sakit Kartini Rangkasbitung (*Analysis of Inpatient Satisfaction with the Quality of Pharmaceutical Services at Kartini Rangkasbitung Hospital*). *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, *5*(2), 264–275. https://doi.org/10.22437/jiituj.v5i2.16052.

Setiawan, H., Adi, S., & Ulfah, N. H. (2017). Pengembangan multimedia interaktif berbasis autoplay sebagai media promosi kesehatan tentang kesehatan gigi dan mulut pada siswa Kelas V SDN Percobaan 02 Kota Malang [Development of autoplay-based interactive multimedia as a health promotion tool for oral]. *Preventia: The Indonesian Journal of Public Health*, *2*(2), 93. https://doi.org/10.17977/um044v2i2p93-103.

Sheets, R. (2018). Regulatory Policy and Public Health Policy. In *Fundamentals of Biologicals Regulation* (pp. 365–373). Elsevier. https://doi.org/10.1016/B978-0-12-809290-3.00022-5.

Shrivastava, S., Shrivastava, P., & Ramasamy, J. (2015). Evaluation of the multifaceted and complex health strategies: A guide to program managers. *International Journal of Preventive Medicine*, *6*(1), 72. https://doi.org/10.4103/2008-7802.162459.

Siswati, T., Iskandar, S., Pramestuti, N., Raharjo, J., Rialihanto, M. P., Rubaya, A. K., & Wiratama, B. S. (2022). Effect of a Short Course on Improving the Cadres' Knowledge in the Context of Reducing Stunting through Home Visits in Yogyakarta, Indonesia. *International Journal of Environmental Research and Public Health*, *19*(16), 9843. https://doi.org/10.3390/ijerph19169843.

Sony, M., Antony, J., & Tortorella, G. L. (2023). Critical Success Factors for Successful Implementation of Healthcare 4.0: A Literature Review and Future Research Agenda. *International Journal of Environmental Research and Public Health*, *20*(5), 4669. https://doi.org/10.3390/ijerph20054669.

Tumbelaka, P., Limato, R., Nasir, S., Syafruddin, D., Ormel, H., & Ahmed, R. (2018). Analysis of Indonesia's community health volunteers (kader) as maternal health promoters in the community integrated health service (Posyandu) following health promotion training. *International Journal Of Community Medicine And Public Health*, *5*(3), 856. https://doi.org/10.18203/2394-6040.ijcmph20180462.

van Weel, C., & Kidd, M. R. (2018). Why strengthening primary health care is essential to achieving universal health coverage. *Canadian Medical Association Journal*, *190*(15), 463–466. https://doi.org/10.1503/cmaj.170784.

Werdhani, R. (2019). Medical problem in Asia pacific and ways to solve it: The roles of primary care/family physician (Indonesia Xperience). *Journal of Family Medicine and Primary Care*, *8*(5), 1523. https://doi.org/10.4103/jfmpc.jfmpc_154_19.