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A Study of Cervical Cancer Screening at Puskesmas Gianyar I Based on The Social Ecological Model

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Abstract

***Background**: Cervical cancer is a leading cause of death among women, and early detection through screening is crucial to prevent its progression. Despite this, participation in screening programs remains low, including in Bali. This study explores factors influencing participation at five levels individual, interpersonal, community, organizational, and policy focusing on the screening program at the local Community Health Center (Puskesmas) Gianyar I.*

***Method**: The study employed a qualitative approach through in-depth interview and document analysis. This Study conducted from July to December 2024 at Puskesmas Gianyar 1 located in Gianyar District, Bali Province. Informants included healthcare workers, the head of community health centre, program coordinator for disease prevention, and patient who had participated in screening. Data were analyzed using thematic analysis to identify key themes aligned with the Social Ecological Model Framework.*

***Results**: Participation in cervical cancer screening is influenced by the Social Ecological Model. Individual barriers include fear and lack of knowledge, while family and community roles involve support, stigma, and social norms. Organizational challenges include limited facilities and inadequate training, whereas policies require subsidization supported by simplified procedures.*

***Conclusion**: This study identifies barriers to cervical cancer screening participation, such as perceptions of being 'healthy', stigma, and facility limitations. Promotional strategies are positive but require cultural approaches, enhanced training, and procedural simplifications.*

***Keywords**: Barriers, Cervical cancer screening, Facilitators, Reproductive health, Social ecological model*

INTRODUCTION

Cervical cancer is one of the most common types of cancer in Indonesia. Women aged 40 and over are more likely to get cancer, which is called the cancer age group.[1] In 2022, there were approximately 660,000 new cases, and 94% of the 350,000 deaths were attributed to cervical cancer. The highest incidence and mortality rates are found in Sub-Saharan Africa, Central America, and Southeast Asia.[2] As a Southeast Asian country, according to the Global Burden of Cancer Study (Globocan) data from the World Health Organization (WHO) in 2022, there were 36,964 cases, making cervical cancer the second most common cancer after breast cancer.[3]

According to Ministry of Health Regulation No. 34 of 2015 on the Prevention of Breast and Cervical Cancer, early detection through screening is essential to prevent disease progression.[4] The local Community Health Center (Puskesmas) plays an important role in providing access to screening through Visual Inspection with Acetic Acid (VIA) and pap smears. However, participation and coverage remain inconsistent. A study by Sumarmi reported that 81% of respondents had never had a pap smear, 28% had never heard of cervical cancer, and 33% were unaware of pap smear screening.[5] Additionally, data from 2019 showed that the percentage of early cervical cancer detection in Bali was only 12.3%.[6] These findings reflect broader systemic barriers commonly observed in low- and middle-income countries, including fear of diagnosis, limited awareness, and restricted access to screening services.[7,8] In Indonesia, similar challenges are reflected in the low coverage of screening services, especially in rural and underserved areas.[5]

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Puskesmas Gianyar I is one of 13 public health centers in Gianyar Regency, serving a 27.35 km², which includes six villages and four sub-districts. Based on an initial field survey, Puskesmas Gianyar I has a target of providing screening services to 10,000 individuals within a five-year period. Thus, the health center is expected to reach 2,000 individuals per year or approximately 166 individuals per month. However, during the initial visit, it was found that Puskesmas Gianyar I was only able to conduct VIA examinations on 57 women from March to November 2024. The cervical cancer screening clinic generally receives fewer visitors compared to other services, such as the general, geriatric, or pediatric clinics.

This study is important due to the high prevalence of cervical cancer in Indonesia. Early detection through screening is a critical step to prevent the spread of the disease. However, participation in cervical cancer screening programs at various health centers still varies and is often low. By using the Social Ecological Model (SEM) approach, this research will explore various levels of factors influencing screening, from individual to policy.

The urgency of this research is also based on the need to evaluate the effectiveness of the current health education strategies used at Puskesmas Gianyar I. Effective health education is key to increasing public awareness and participation in screening programs. The findings of this study are expected to provide practical recommendations for health centers and policymakers to improve the quality and coverage of screening programs. Thus, this research has the potential to make a significant contribution to cervical cancer prevention efforts at both the local and national levels, as well as improve overall women's reproductive health.

METHOD

Study Design and Informants Selection

The research was conducted from July to December 2024 at Puskesmas Gianyar I located in Gianyar District, Bali Province, Indonesia. This qualitative study used an exploratory case study approach to explore participants' experiences and perspectives on cervical cancer screening, allowing the in-depth understanding of complex meanings and dynamics in a natural setting.[9]

Informants to be interviewed were selected through purposive sampling. The characteristics of purposive sampling include: 1) Emergent sampling design (temporary); 2) Serial selection of sample units (snowballing); 3) Continuous adjustment (adapted to needs); and 4) Selection to the point of redundancy (sampled until saturation).[10] Therefore, informants were not selected statistically, but rather to capture diverse perspectives on the participation and implementation of cervical cancer screening at Puskesmas Gianyar I. The inclusion criteria comprised individuals with firsthand experience of the studied phenomenon and participants who were willing and able to articulate their experiences. Exclusion criteria included individuals lacking relevant exposure or experience, those unable to provide informed and voluntary consent, and individuals not representative of the studied context. The study subjects included: Head/ Staff of Gianyar Regency Health Office Head of the Family Welfare Empowerment or *Pemberdayaan Kesejahteraan Keluarga* (PKK) of Gianyar, Head of Puskesmas Gianyar I, Person in charge of public health efforts at Puskesmas Gianyar I, Coordinator of disease prevention and control at Puskesmas Gianyar I, Cervical cancer screening implementers at Puskesmas Gianyar I, and patients visiting Puskesmas Gianyar I for cervical cancer screening.

Data validation in qualitative research ensures that findings reflect field realities.[11] This study used prolonged engagement by returning for follow-up interviews and observations. Second, triangulation was used to assess the credibility of the data through various sources, methods, and times. Source triangulation was done by conducting interviews on different days, while time triangulation involved interviewing different subjects, such as healthcare workers and patients. Methodological triangulation was achieved by collecting data through multiple techniques, such as in-depth interviews and document analysis.[9]

Data Collection

The researcher used research instruments to ensure systematic data collection. The data collection methods included two techniques. First, document study likely field notes and related records on the cervical cancer screening program at Puskesmas Gianyar I.[9] Second, in-depth interviews were conducted to obtain data. Semi-structured interviews with participants were utilised to gain a deep

understanding of the factors influencing the implementation and participation in cervical cancer screening.[12]

Table 1. Interview Guidelines

Research Subject	Purpose	Questions
Head/ Staff of Gianyar Regency Health Office	To identify the policies and strategies implemented by the health department in the implementation of the cervical cancer screening program.	1. What are the views and support from the Gianyar Regency Health Office regarding the ongoing cervical cancer screening program at the health centers? 2. What challenges are faced in the implementation of cervical cancer screening at the health centers, both from the medical staff's side and community participation? 3. What efforts are being made by the Gianyar Regency Health Office to raise public awareness about the importance of cervical cancer screening, especially among women at risk? 4. How does the Gianyar Regency Health Office view the role of families, communities, and other parties in supporting the success of the cervical cancer screening program? 5. Are there any specific programs or collaborations that have been carried out by the Health Office with other parties to support cervical cancer screening at health centers? If so, what are the forms and impacts of these programs?
Head of the PKK of Gianyar	To understand the role and views of the PKK Chairperson regarding the cervical cancer screening program at Puskesmas Gianyar I.	1. What is your view on the importance of the cervical cancer screening program in this area? 2. How do you perceive the participation of women in the community in the cervical cancer screening program? 3. Are there any barriers faced in increasing women's participation in cervical cancer screening? 4. What is the role of PKK in supporting the cervical cancer screening program at Puskesmas Gianyar I? 5. Are there any strategies or educational programs that have been implemented to raise awareness about cervical cancer among women?
Head of Puskesmas Gianyar I.	To identify the policies and strategies implemented by Puskesmas in the cervical cancer screening program	1. What are the policies of Puskesmas in implementing the cervical cancer screening program? 2. What strategies have been implemented to increase screening coverage? 3. What are the common barriers faced in the implementation of cervical cancer screening? 4. How does Puskesmas assess the effectiveness of the current health education strategies used? Is there any collaboration with other organizations or institutions in supporting this program?

Tabel 1. Continues

Research Subject	Purpose	Questions
Person in charge of public health efforts at Puskesmas Gianyar I	To understand the implementation of the cervical cancer screening program from an operational perspective	1. How is the cervical cancer screening process implemented at this Puskesmas? 2. What challenges does the health team face in carrying out this program? 3. How would you assess the level of participation of women in this program? 4. What strategies are used to overcome these challenges? 5. What role does health education play in increasing participation in the screening program?
Coordinator of disease prevention and control at Puskesmas Gianyar I	To explore information regarding prevention policies and operational barriers in program implementation.	1. What cervical cancer prevention policies are implemented at Puskesmas Gianyar 1? 2. What are the main barriers to prevention and early detection of cervical cancer in this area? 3. What strategies are in place for managing and handling positive cases? 4. How would you assess the effectiveness of the education efforts conducted? 5. Are there any special training programs provided to healthcare workers regarding cervical cancer screening?
Cervical cancer screening implementers at Puskesmas Gianyar I	To understand the firsthand experience of healthcare workers in conducting cervical cancer screening.	1. What is the procedure for conducting cervical cancer screening here? 2. Are there any technical difficulties commonly encountered during the screening process? 3. How do women typically respond to the invitation to participate in the screening? 4. What methods are used to ensure the success of the screening? 5. What suggestions would you offer to improve the effectiveness of the screening implementation?
Patients visiting Puskesmas Gianyar I for cervical cancer screening	To explore the perceptions, attitudes, and experiences of women who have participated in the screening program.	1. What motivated you to participate in the cervical cancer screening? 2. How was your experience during the screening process at Puskesmas Gianyar 1? 3. Did you feel you received sufficient information about the screening before undergoing it? 4. Were there any concerns or barriers you experienced before or after participating in the screening? Do you think the health education provided was sufficient to raise awareness about cervical cancer?

Data Analysis and Ethical Clearence

The data analysis technique used was the SEM analysis to categorize and understand the factors influencing cervical cancer screening at various levels (Figure 1). At the individual level, this study examined factors such as knowledge, attitudes, behaviors, and perceptions that influence motivation to undergo cervical cancer screening.[14] The interpersonal level explored how relationships with partners, family, and neighbors may shape an individual's screening decisions. The community level considered broader social influences, including cultural norms and societal expectations. The organizational level focused on access to health education, promotion efforts, and the implementation of screening services.[15] The policy level included regional and national laws and policies.[16]



Figure 1. A *Social Ecological Model Framework*[13]

All interviews were recorded and transcribed, followed by an inductive thematic analysis using Braun and Clarke's six-step framework: 1) familiarization with the data; 2) generation of initial codes; 3) searching for themes; 4) reviewing themes; 5) defining and naming themes; and 6) producing the final report.[17] The data were filtered to remove irrelevant information, and the codes were visually organized to identify patterns and relationships. Each code was triangulated and supported by prolonged engagement to enhance credibility.[10] The final themes were mapped onto the levels of the SEM to explore the dynamics at the individual to policy levels.[13] All credible findings were supported and reviewed using primary literature sources. The research activities were approved by the *Komisi Etik Penelitian Kesehatan* (KEPK) of the Faculty of Medicine and Health Sciences, Warmadewa University, as stated in the Ethical Clearance Certificate Number: 563/Unwar/FKIK/EC-KEPK/XII/2024.

RESULTS

This study evaluated various aspects of the implementation of cervical cancer screening at Puskesmas Gianyar I using the SEM approach. Based on interview results, it was found that barriers and facilitators in the implementation of cervical cancer screening exist at five levels: individual, interpersonal, community, organizational, and policy.

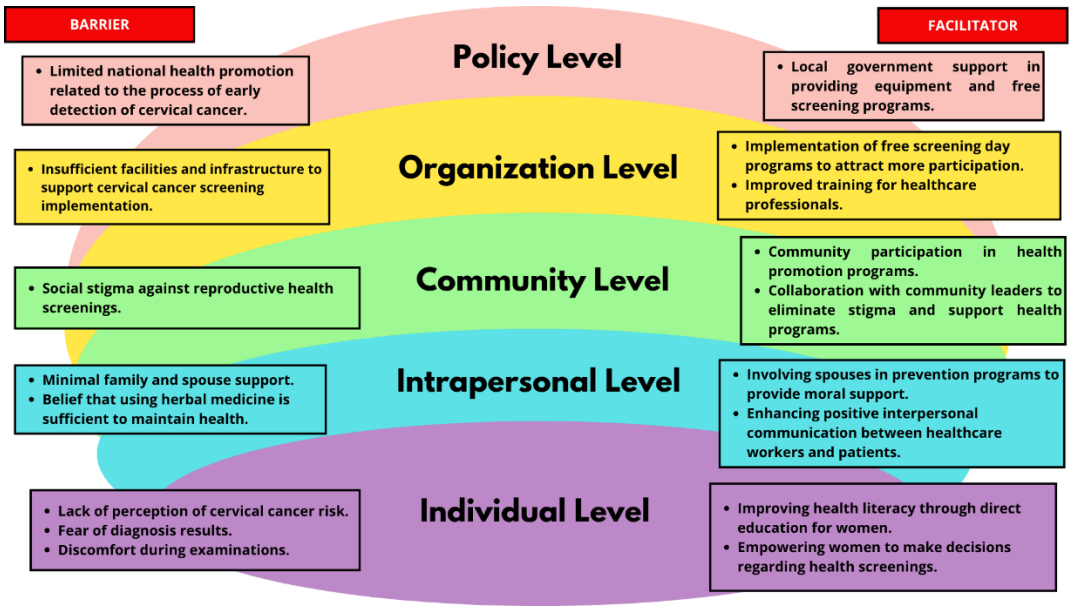


Figure 2. A Summary of Cervical Cancer Screening at Puskesmas Gianyar I Using The Social Ecological Model

Individual Level

At the individual level, factors such as health perception, fear of diagnostic results, and limited knowledge influence the decision to undergo cervical cancer screening. In Gianyar, the community's

perception of being healthy often becomes the main reason for not getting screened. One of the informants stated:

> *"I feel perfectly healthy myself and see no reason to get screened."* (A1)

On the other hand, fear of a cancer diagnosis is a significant barrier. Many women worry that the screening results might indicate a severe disease. One of the informants revealed:

> *"Initially, I was reluctant to undergo screening because I felt healthy and was paranoid about hearing the word cancer, fearing the results would be bad."* (A2)

Limited knowledge about the importance of early detection exacerbates this situation. People often do not realize that cervical cancer can be prevented if detected early. This lack of awareness reflects a dynamic also seen in other regions of Indonesia, where inadequate health education becomes a major barrier to increasing public participation in preventive health programs.

Interpersonal Level

At the interpersonal level, women's decisions to undergo cervical cancer screening are strongly influenced by family dynamics, partners, and close social environments. Many informants revealed that support from family and partners is a critical factor. One of the informants mentioned:

> *"My family feels there's no need to participate in screening because we believe herbal medicine is enough as long as it's not severe."* (A3)

This indicates that there is still a belief in Gianyar, particularly in rural areas, that traditional treatments, such as herbal medicine, are sufficient for maintaining health. This belief often hinders individuals from utilizing preventive medical services like cervical cancer screening. Moreover, the role of partners also poses a challenge, as one of the informants stated:

> *"My family and husband also didn't recommend it, fearing it might cause unnecessary worry."* (A4)

The fear of psychological impacts from screening results, such as stress over a potential positive diagnosis, is often the main reason partners discourage screening. This perspective reflects a lack of family understanding about the importance of early detection of cervical cancer.

Healthcare providers at Puskesmas Gianyar I also confirmed that interpersonal influences often hinder women from participating in screening programs. A healthcare worker stated:

> *"Although we've already socialized the program, it still depends on the individual. Some refuse out of fear, while others agree because of stories from neighbors."* (A5)

This statement shows that individual decisions are often influenced by experiences or stories from close individuals, whether family or neighbors. Therefore, interpersonal approaches involving families and small communities are an important strategy to increase screening participation.

This issue is not limited to Gianyar but also occurs in other areas of Bali and Indonesia. In Balinese culture, strong family bonds and close social ties make culturally sensitive interpersonal approaches essential for the success of health programs. Similarly, in rural regions across Indonesia, relatives often play a central role in health decisions.

Community Level

At the community level, social stigma and the community's busyness are the main obstacles to implementing cervical cancer screening. In rural areas, women often worry about negative perceptions from the community if they are found to have undergone screening. One of the informants stated:

> *"The stigma in the village makes me hesitant to participate in screening. I'm afraid of being ostracized if the results show cervical cancer."* (A6

This stigma arises from a lack of public education on the importance of early detection of cervical cancer. In many Gianyar communities, reproductive health topics are still considered taboo, especially among women. This is compounded by the lack of community leaders who provide understanding on this issue, even though they have significant influence in shaping community opinions.

Additionally, the community's busyness with various traditional and religious activities, such as *ngayah* (volunteers) or other ceremonial events, reduces the time available to prioritize health. This was illustrated by an informant who said:

> *"I'm too busy with household activities, not to mention numerous traditional ceremonies in the village, such as* rahinan, odalan, ngayah *(volunteer), and others."* (A7)

The strong "ngayah" culture in Gianyar reflects the importance of collective traditions in community life. This provides both opportunities and challenges. Screening programs can be designed to integrate with traditional activities, such as providing health services during community events.

Organizational Level

At the organizational level, although screening facilities for cervical cancer, such as VIA and Pap smear methods, are available at Puskesmas Gianyar I, implementation still faces technical and human resource challenges. One of the informants shared their experience:

> *"This was my first time screening, and I was surprised that my genitals had to be examined with tools and for quite a long time. I felt nervous and uncomfortable even though the examiner was female."* (A10)

Discomfort during the examination process highlights the importance of improving service quality to create a better patient experience. Additionally, a healthcare worker mentioned that medical equipment malfunctions hinder screening implementation:

> *"Our cryo equipment is currently broken."* (A11)

These challenges indicate that technical limitations, particularly in training, remain unresolved. Inadequate and irregular training schedules lead to uneven competency among healthcare workers, with only a few possessing specific skills in cervical cancer screening. This creates dependency on limited personnel and contributes to a lack of confidence and consistency in service delivery, as previously noted by informants. Furthermore, the absence of essential medical equipment affects not only the screening process but also the continuity of care when clinical indications are detected.

Policy Level

At the policy level, the Gianyar government has provided free services for health insurance participants such as Social Security Agency or *Badan Penyelenggara Jaminan Sosial* (BPJS) and subsidies for residents without any health insurance.

> *"The government covers VIA screening costs through BPJS. For those without BPJS, Gianyar residents only need to bring their Family Card and ID, and they will be covered by Gianyar Regency's Health Assistance. For non-Bali residents without BPJS, the cost ranges from Rp 30,000 to Rp 75,000."* (A13)

However, complex administrative procedures often become obstacles. An informant revealed:

> *"Even though it's free, the BPJS procedure is complicated and time-consuming, making me reluctant to participate in screening."* (A14)

Efforts to simplify administrative procedures and improve access to screening services are essential to achieving broader participation in preventive health programs like cervical cancer screening.

DISSCUSION

We identified key barriers and motivators to cervical cancer screening at the individual level. The next critical step is to interpret these findings using evidence-based health behavior change theories, such as the *Health Belief Model* (HBM). For instance, fear of the results and feeling healthy reflect low perceived susceptibility and high perceived barriers, which can reduce screening participation.[5] This theoretical perspective aligns with the realities found in the field, where most women delayed screening due to the absence of symptoms even though cervical cancer often develops without early signs. As described by Ayanto, women who perceive themselves as healthy tend to delay or refuse screening due to a lack of perceived urgency.[18] This is often accompanied by fear of the screening results, particularly the emotional and social consequences of a potential cancer diagnosis. In line with research in the United States, fear of knowing a serious illness can lead to avoidance behaviors, as women may choose to delay screening to avoid psychological distress.[7] Moreover, low awareness regarding cervical cancer risk factors and the benefits of early detection further reinforces these barriers. These findings highlight the need for empathetic and culturally appropriate health education to address misconceptions and psychological resistance.

At the intrapersonal level, family support, especially from partners, plays a significant role in the decision to undergo screening. Some informants expressed that family members who prefer alternative treatments or worry about the psychological impact of screening results reduce their interest in participating. Research by Darj shows similar findings, where social norms and family influence are important factors in deciding to participate in screening.[19] Therefore, involving families, particularly husbands, in health education and socialization is crucial so that they can support their partner's medical decisions. Positive family support can increase participation in the screening program and reduce any fears or anxieties that may arise.

The community level also shows significant barriers, including social stigma and prioritization of cultural activities that limit the time for screening. As explained by Akinyemiju, women in rural areas are often hindered by cultural norms and household responsibilities.[15] In Gianyar society, frequent traditional ceremonies and community obligations were repeatedly cited by participants as reasons for delaying or avoiding cervical cancer screening. This reflects how religious and cultural duties can overshadow personal health priorities, especially in communities where reproductive health is still considered a sensitive and private matter, consistent with findings from studies in the Netherlands and India.[8] [20] This indicates that health promotion should adopt a culturally-based approach by involving community or religious leaders, such as PKK and health cadres at Puskesmas Gianyar I to help overcome religious, cultural, and social barriers.[21]

At the organizational level, although screening facilities and methods such as VIA and Pap smear are available, there are technical issues such as equipment damage and limited human resources that affect service quality. This suggests that although infrastructure and facilities have been prepared, the quality of service provided needs attention to ensure patient comfort during the screening process.[8] Health worker training is also an important factor in improving service quality, but there is still a need to expand the scope of this training. As explained by Crespo, the quality of medical services, including health worker training, plays a crucial role in determining patient comfort and their participation in cervical cancer screening.[14]

Finally, at the policy level, despite support from the government through funding and subsidies, complex administrative procedures often become barriers for the public to access screening services. Research in Ecuador shows that administrative complexity can reduce public interest in utilizing health services, even when those services are provided for free or with subsidies.[14] This also occurs at Puskesmas Gianyar I, where complicated BPJS administrative procedures, such as the need for multiple referral letters and unclear information about required documents discourage public participation in cervical screening. These barriers often create confusion and frustration, particularly among first-time users or those with limited health literacy. As recommended by Sykes, simplifying administrative processes through clear, easy-to-understand documents, proportional requirements, and proactive community outreach is essential.[16]

Overall, this study emphasizes the importance of a holistic approach that involves various levels of the SEM to overcome obstacles in the implementation of cervical cancer screening. Efforts to increase screening participation require a combination of culturally-based education, family support, facility

improvements, and more efficient and accessible policies. In line with the findings of this study, it is important to develop more integrated and sustainable strategies to overcome existing barriers and improve public health overall.

CONCLUSION

We identified key barriers and facilitators to cervical cancer screening at the individual, interpersonal, community, organizational, and policy levels at Puskesmas Gianyar I. Women postponed screening due to limited knowledge, fear, and the belief that it is unnecessary without symptoms. Social stigma and traditional responsibilities often take precedence over health, while system and policy inefficiencies further restrict access. Addressing these issues requires not only structural improvements and community engagement but also the empowerment of women themselves through accessible, empathetic health education that builds confidence and awareness. By supporting both external enablers and internal motivation, screening participation can be meaningfully improved to protect women's health.

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