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Integration of Tropical Disease Screening in Reproductive Health Services at Amplas Community Health Center, North Sumatra

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ABSTRACT

Tropical diseases remain important determinants of reproductive health in endemic regions; However, screening for these infections is rarely integrated into reproductive health services at the primary care level. This fragmentation contributes to low early detection and an increased risk of complications among women of reproductive age. This community service program aims to develop and implement an integrated model for tropical disease screening within reproductive health services at Puskesmas Amplas, Medan City. The program employed a pre–post intervention design involving women of reproductive age (15–49 years) selected through stratified random sampling. The intervention included clinical screening, health education, and the strengthening of referral and integrated recording systems. The results demonstrated a significant increase in early detection coverage and participants' knowledge, with a substantial proportion of respondents identified as having previously undetected risk factors for tropical diseases. Implementation of the integrated service model also enhanced the capacity of primary healthcare providers in delivering promotional and preventive services. These findings indicate that integrating tropical disease screening into reproductive health services is an effective and scalable approach to strengthening primary healthcare systems in endemic areas and improving community reproductive health outcomes

Keywords: Tropical, Disease, Health, Reproductive

1. INTRODUCTION

Tropical diseases remain a major public health burden in developing countries, including Indonesia, particularly in tropical regions, such as North Sumatra. Diseases such as dengue, tuberculosis, filariasis, malaria, and various parasitic infections not only cause significant morbidity and mortality, but also contribute substantially to reproductive health problems in both women and men. Scientific evidence has shown that chronic and recurrent infections can trigger anemia, systemic inflammation, hormonal disorders, infertility, pregnancy complications, and an increased risk of miscarriage and premature birth. In the context of primary health-care, the impact of tropical diseases on reproductive health is often undetected because reproductive health services and infectious disease control are managed separately. In the Amplas Community Health Center (Puskesmas) area, which has a high population density and high risk of exposure to tropical diseases, this fragmentation of services has the potential to increase the health burden on mothers and families. Therefore, an integrative approach that links tropical disease screening with reproductive health services at the community health center level is crucial for improving early detection, complication prevention, and the quality of reproductive health in a sustainable manner.

Although the Amplas Community Health Center (Puskesmas) operates in an area at high risk of tropical diseases, screening and treatment for these infections have not been systematically integrated into routine reproductive health services. Pregnant women, women of childbearing age, and couples accessing antenatal, family planning, and adolescent health services often do not under early screening for tropical diseases that can potentially affect fertility, pregnancy, and delivery outcomes. Consequently, various infections can remain undiagnosed, leading to more severe clinical complications. This situation is exacerbated by fragmented services, limited integrated referral channels, and suboptimal cross-program recording and education at the community health center level. The absence of an operational model linking tropical disease control services with reproductive health services leads to missed opportunities for

primary and secondary prevention, thereby increasing the risk of disease burden and reproductive health complications in the community.

This community service program aims to develop and implement a model for integrating tropical disease screening into reproductive health services at the Amplas Community Health Center (Puskesmas), North Sumatra, to improve early detection, prevent complications, and improve the quality of primary health-care services. Specifically, the program aims to increase health workers' capacity to identify and manage tropical diseases early in reproductive health-care target groups, including pregnant women, women of childbearing age, and couples of childbearing age. Furthermore, the program aims to increase public knowledge and awareness of the relationship between tropical diseases and reproductive health as well as strengthen the integrated referral and registration system at the community health center level. Through a primary care-based approach and community empowerment, this activity is expected to produce an effective, sustainable, and replicable service model for other community health centers in endemic areas.

Although various public health and community service programs have been implemented to control tropical diseases and improve reproductive health, most remain isolated and sectoral. Existing public health and community service (PkM) literature and practices generally position tropical diseases as infection control issues and reproductive health as the domain of maternal and family planning services without an integrative approach at the primary care level. Furthermore, most PkM reports focus on education activities or health campaigns, with limited implementation of structured clinical screening directly linked to community health center (Puskesmas) service systems. To date, there is limited evidence and operational models documenting how tropical disease screening can be systematically integrated into routine reproductive health services in Puskesmas, particularly in endemic areas such as North Sumatra. This gap hinders the optimization of early prevention and reduction of the impact of tropical diseases on community reproductive health.

This community service program offers an innovative approach by integrating tropical disease screening directly into the reproductive health service flow at the community health center (Puskesmas) level, a strategy rarely implemented in primary health-care practices in endemic areas. Unlike conventional programs that separate infectious disease control and reproductive health services, this approach builds an integrated service model that connects early detection, education, record-keeping, and clinical referrals within a single cohesive operational system. This innovation not only strengthens the capacity of community health centers to address the risks of tropical diseases affecting reproductive health but also makes a significant contribution to the development of primary care-based health policies. By producing a model that can be replicated and adapted to other community health centers in endemic areas, this Community Service Program has strong scientific and practical justification as a strategic effort to sustainably improve the quality of reproductive health and reduce the burden of tropical diseases.

2. METHOD

Community Service Design

This community service activity employed a primary healthcare-based intervention design with pre- and post-intervention approaches (pretest-posttest design). The program focused on integrating tropical disease screening into routine reproductive health services at the Amplas Community Health Center in Medan. This approach allowed for the evaluation of changes in knowledge, screening status, and service affordability before and after the program implementation.

Population and Sample

The target population for this activity was women of reproductive age (15–49 years) within the Amplas Community Health Center (Puskesmas) working area in Medan City. The sample was determined using a stratified random sampling method based on age group and reproductive status (adolescents, women of childbearing age, and pregnant women) to ensure representation of at-risk groups. Respondents were randomly selected within each stratum based on their visit list and data from the Puskesmas working area.

PkM Implementation Procedures

The implementation of PkM is carried out through several structured stages: (1) preparation and coordination with the Amplas Health Center, including the preparation of an integrated service flow and short training for health workers.

(2) Initial screening, which includes checking the medical history, symptoms of tropical infections, and reproductive health status.

(3) Health education regarding the relationship between tropical diseases and reproductive health

(4) Simple clinical and laboratory screening according to community health center standards to detect relevant tropical diseases.

(5) Follow-up and referrals for participants with positive or high-risk screening results.

Data collection

Data collection was conducted at the Amplas Community Health Center (Puskesmas) in Medan City using a combination of structured questionnaires, clinical screening sheets, and health-care records. The data collected included demographic characteristics, history of tropical diseases, reproductive health status, knowledge level, and

pre- and post-intervention screening results. All instruments were adapted to community health center service standards and administered by trained health workers.

Data Analysis Techniques

Data were analyzed using descriptive and analytical statistical approaches. Descriptive analysis was used to describe the respondent characteristics, risk factor prevalence, and screening outcomes. Pre- and post-intervention comparative analyses were conducted to assess changes in knowledge levels, screening coverage, and clinical findings using statistical tests appropriate for the data distribution. The results of the analysis are presented in tables and graphs to illustrate the program's impact on improving reproductive health services based on tropical disease screenings.

3. RESULTS AND DISCUSSION

3.1. Program Design and Implementation

This community service program was implemented using a pre- and post-intervention design, integrated into routine reproductive health services at the Amplas Community Health Center in Medan City. The developed service model combined tropical disease screening, health education, and a referral system within a single integrated service flow. All program stages can be operationally implemented by community health center personnel after initial training and development of service guidelines.

3.2. Population and Sample Characteristics

The target population was comprised of all women of reproductive age (15–49 years) within the Amplas Community Health Center's working area, which, according to community health center data, amounts to approximately 3,240 people. Stratified random sampling resulted in 240 respondents, including non-pregnant women of childbearing age, pregnant women, and adolescent girls. This distribution ensured the representation of high-risk groups for reproductive health problems owing to tropical diseases.

3.3. Implementation of PkM Procedures

All respondents participated in a series of activities that included (1) completing an initial questionnaire regarding medical history and reproductive health knowledge, (2) clinical screening for tropical diseases and reproductive health status, (3) a structured education session, and (4) follow-up examinations and referrals for participants with positive screening results. The program was run according to the health center's service flow, without disrupting routine services.

3.4. Key Data and Findings

Initial screening results showed that 34.6% of the respondents had a history or symptoms suggestive of tropical diseases, with anemia, parasitic infections, and suspected latent TB being the most common findings. Among the pregnant women, 28.1% had risk factors potentially affecting pregnancy. Following the integrated education and screening intervention, there was a significant increase in early detection coverage, with 82.5% of at-risk respondents successfully identifying and referring to or being treated according to community health center standards. Knowledge levels regarding the relationship between tropical diseases and reproductive health also significantly increased compared to those before the intervention.

3.5. Data Analysis Techniques

Descriptive analysis was used to describe the respondents' characteristics and prevalence of risk factors. Pre- and post-intervention analyses were conducted using comparative statistical tests to assess the changes in knowledge levels and screening coverage. The analysis showed statistically significant improvements in both indicators, confirming the effectiveness of the integrated tropical disease-screening model within community health center-based reproductive health services.

The program's implementation results indicated that integrating tropical disease screening into reproductive health services at the Amplas Community Health Center significantly improved the primary care system's ability to identify previously undetected reproductive health risks. The high proportion of women of reproductive age with a history or symptoms of tropical diseases confirms that endemic infections are an important, yet largely overlooked, determinant of reproductive health. The increased detection and referral coverage following the implementation of the integrated service model indicates that previous service fragmentation contributed to low levels of early diagnosis and preventive intervention. These findings align with the theory of integrated primary healthcare, which emphasizes that combining services at a single point of care improves efficiency, continuity of care, and quality of health outcomes. Therefore, the implemented integrated model not only improves service performance at the community health center level, but also strengthens the promotive-preventive approach based on the primary health care system in tropical disease-endemic areas.

3.5. Discussion

The results of this study demonstrate that integrating tropical disease screening into reproductive health services at the Amplas Community Health Center substantially improves the early detection of reproductive health risks in women of reproductive age. The finding of a high proportion of participants with symptoms or a history of tropical diseases strengthens the theoretical framework that endemic infections are a significant biological determinant of fertility disorders, pregnancy complications, and maternal morbidity. The increase in screening and referral coverage following the implementation of the integrated service model indicates that the previous service system was fragmented and unable to capture risks comprehensively. Within the context of integrated primary healthcare theory, these results can be interpreted as evidence that combining infectious disease surveillance and reproductive health services within a single service pathway increases the sensitivity of the primary health-care system in identifying and responding to health risks more effectively and sustainably.

The findings of this Community Service Program (PKM) provide important contributions to the development of primary health-care theory and practice, particularly in the context of tropical disease-endemic areas. Theoretically, these results reinforce the view that infectious diseases are not only epidemiological issues, but also key determinants within the reproductive health framework, thus requiring an integrated, cross-program approach. The developed service model demonstrates that the concept of integrated primary care can be effectively operationalized at the community health center level, even within resource constraints. From a practical perspective, the integration of tropical disease screening into reproductive health services provides a concrete working model for health workers, improves the efficiency of service flows, and expands the scope of the detection and prevention of complications. These implications are strategic because they support the transformation of primary care from a fragmented curative approach to an evidence-based promotive and preventive system that is relevant for strengthening public health policies in endemic areas.

Although the results of this Community Empowerment Program (PKM) demonstrated promising impacts, several limitations should be considered when interpreting the findings. The program's focus on a single location, the Amplas Community Health Center, limits the generalizability of the results to other areas, with different epidemiological characteristics and service delivery systems. Furthermore, the pre- and post-intervention design, without a comparison group, limits the ability to draw strong causal conclusions about the effectiveness of the intervention. Reliance on field screening data and routine community health center records also potentially introduces information bias and variations in data quality. The relatively short duration of the intervention does not allow for the evaluation of long-term effects on reproductive health outcomes, such as reduced pregnancy complications or increased fertility. Therefore, these findings should be understood as preliminary evidence supporting the feasibility and potential benefits of the service integration model, which requires further testing through larger longitudinal studies.

4. CONCLUSION

This community service project demonstrates that integrating tropical disease screening into reproductive health services at the Amplas Community Health Center in North Sumatra is an effective and feasible approach for primary health-care in endemic areas. The developed integrated service model improves the early detection of tropical disease risk factors in women of reproductive age, strengthens the referral system, and enhances the capacity of health workers to provide more comprehensive preventive and promotive services. These findings confirm that tropical diseases are important determinants of reproductive health and have not been optimally addressed owing to service fragmentation. By integrating screening, education, and record-keeping functions within a single community health center service flow, this program contributes not only to improving the quality of public health services but also to strengthening the integrated primary healthcare framework in tropical disease-endemic areas.

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