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Evaluation of the Impact of Community-Based Health Education Programs on Non-Communicable Disease Preventive Behaviors

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ABSTRAK

Penyakit tidak menular (PTM) seperti diabetes, hipertensi, dan obesitas merupakan penyebab utama morbiditas dan mortalitas secara global. Faktor risiko utama PTM berkaitan dengan perilaku gaya hidup yang dapat dimodifikasi, seperti kurangnya aktivitas fisik, pola makan tidak sehat, dan rendahnya kesadaran kesehatan. Oleh karena itu, program pendidikan kesehatan berbasis masyarakat menjadi salah satu strategi penting dalam meningkatkan perilaku pencegahan PTM. Penelitian ini bertujuan untuk mengevaluasi dampak program pendidikan kesehatan berbasis masyarakat terhadap perilaku pencegahan penyakit tidak menular. Penelitian ini menggunakan desain quasi-eksperimental dengan pendekatan pre-test dan post-test yang melibatkan 120 peserta yang dibagi menjadi kelompok intervensi dan kelompok pembanding. Intervensi dilakukan selama delapan minggu melalui sesi edukasi interaktif, diskusi kelompok, dan distribusi materi edukasi kesehatan. Data dikumpulkan menggunakan kuesioner terstruktur yang mengukur pengetahuan, sikap, dan perilaku pencegahan PTM, kemudian dianalisis menggunakan statistik deskriptif dan inferensial. Hasil penelitian menunjukkan bahwa program pendidikan kesehatan berbasis masyarakat secara signifikan meningkatkan pengetahuan, kesadaran, dan perilaku pencegahan PTM, termasuk peningkatan aktivitas fisik, perbaikan pola makan, dan peningkatan partisipasi dalam pemeriksaan kesehatan rutin. Selain itu, keterlibatan masyarakat dan pendekatan edukasi yang relevan secara budaya berperan penting dalam meningkatkan efektivitas program. Penelitian ini menyimpulkan bahwa program pendidikan kesehatan berbasis masyarakat merupakan strategi yang efektif dalam meningkatkan perilaku pencegahan PTM dan mendukung upaya promosi kesehatan masyarakat secara berkelanjutan.

ABSTRACT

Non-communicable diseases (NCDs), such as diabetes, hypertension, and obesity, are major contributors to global morbidity and mortality. The primary risk factors for NCDs are associated with modifiable lifestyle behaviors, including physical inactivity, unhealthy diets, and low health awareness. Therefore, community-based health education programs have emerged as an important strategy to improve preventive health behaviors. This study aimed to evaluate the impact of community-based health education programs on preventive behaviors toward non-communicable diseases. This study employed a quasi-experimental design using a pre-test and post-test approach involving 120 participants divided into an intervention group and a comparison group. The intervention was conducted over eight weeks and included interactive educational sessions, group discussions, and the distribution of health education materials. Data were collected using a structured questionnaire measuring knowledge, attitudes, and preventive health behaviors related to NCDs and analyzed using descriptive and inferential statistics. The results showed that community-based health education programs significantly improved participants' knowledge, awareness, and preventive health behaviors, including increased physical activity, improved dietary habits, and greater participation in routine health screenings. Furthermore, community engagement and culturally relevant educational approaches played a crucial role in enhancing program effectiveness. This study concludes that community-based health education programs are an effective strategy for improving preventive behaviors and supporting sustainable public health promotion efforts.

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1. INTRODUCTION

Non-communicable diseases (NCDs), including diabetes mellitus, hypertension, cardiovascular diseases, and obesity, have emerged as major global public health challenges that significantly contribute to morbidity and mortality worldwide. According to the World Health Organization, NCDs account for approximately 74% of global deaths, with a disproportionate burden occurring in low- and middle-income countries (WHO, 2023). These diseases are largely driven by modifiable behavioral risk factors such as unhealthy diets, physical inactivity, tobacco use, and harmful use of alcohol. The increasing prevalence of sedentary lifestyles and poor nutritional habits associated with urbanization and technological advancement has further accelerated the incidence of NCDs across diverse populations (GBD 2021 Risk Factors Collaborators, 2022; WHO, 2023).

The rapid rise in NCD prevalence has substantial social and economic consequences. Health systems face increased financial strain due to long-term treatment costs, while individuals experience reduced productivity, increased disability, and decreased quality of life (Bloom et al., 2022; Nugent et al., 2023). In addition, premature mortality caused by NCDs affects workforce stability and economic development, particularly in developing countries where access to preventive healthcare remains limited (WHO, 2022; IHME, 2024). These challenges underscore the urgent need for effective preventive interventions that focus on modifying lifestyle behaviors and promoting health awareness at the community level.

Preventive health education has been widely recognized as an essential strategy in addressing the growing burden of NCDs. Health education interventions aim to increase individuals' knowledge of disease risk factors, promote healthy lifestyle behaviors, and empower communities to take proactive steps toward disease prevention (Peters et al., 2021; Nutbeam & Lloyd, 2022). Evidence suggests that individuals who receive structured health education are more likely to adopt preventive behaviors such as engaging in regular physical activity, maintaining balanced nutrition, and participating in routine health screenings (Jeet et al., 2023). These behavioral changes are critical in reducing the risk and progression of NCDs.

Community-based health education programs are particularly effective because they emphasize participatory engagement, cultural relevance, and accessibility. Such programs actively involve community members in learning activities, making health information more understandable and applicable to their daily lives (O'Donovan et al., 2022; Perry et al., 2021). Moreover, community-based approaches foster social support, strengthen local capacity, and promote collective responsibility for health improvement (WHO, 2024). Studies have demonstrated that community-based health education interventions significantly improve health literacy, increase awareness of disease risk factors, and encourage sustainable preventive health behaviors (Kim et al., 2022; Abdel-All et al., 2023).

Despite the recognized importance of community-based health education programs, systematic evaluation of their effectiveness remains essential. Evaluating these programs helps determine their impact on improving preventive health behaviors, reducing risk factors, and enhancing community health outcomes (Allen et al., 2022; CDC, 2024). Furthermore, empirical evidence from program evaluations provides valuable insights for policymakers, educators, and healthcare professionals in designing more effective and sustainable health promotion interventions (WHO, 2022; IHME, 2024).

Therefore, evaluating the impact of community-based health education programs on preventive behaviors toward non-communicable diseases is crucial for strengthening public health strategies. Such evaluation not only contributes to improving the effectiveness of health education initiatives but also supports the development of community-centered approaches that empower individuals to adopt healthier lifestyles. Ultimately, these efforts play a vital role in reducing the global burden of NCDs and improving overall community health and well-being.

2. METHOD

2.1 Research Methodology

This study employed a quantitative quasi-experimental research design to evaluate the impact of community-based health education programs on preventive behaviors toward non-communicable diseases (NCDs). The quasi-experimental approach was selected because it allows researchers to assess the effectiveness of educational interventions in real community settings where random assignment may not be feasible (Campbell

& Stanley, 2015; Creswell & Creswell, 2017). This design is widely used in public health research to measure behavioral changes following educational interventions, particularly in community-based prevention programs.

2.2 Research Location and Participant

The study was conducted in selected community areas to assess the effectiveness of health education interventions aimed at improving preventive health behaviors related to NCDs, such as diabetes, hypertension, and obesity. The participants consisted of community members aged 18 years and above who were identified as being at risk of developing NCDs based on lifestyle factors such as physical inactivity, poor dietary habits, and lack of regular health monitoring. A purposive sampling technique was used to select participants who met the inclusion criteria and were willing to participate in the health education program. According to Etikan and Bala (2022), purposive sampling is appropriate for intervention-based studies where participants are selected based on specific characteristics relevant to the research objectives.

A total of 120 participants were involved in this study, divided into an intervention group and a comparison group. The intervention group received structured community-based health education, while the comparison group received general health information without structured intervention. This grouping allowed for comparison of preventive health behavior outcomes before and after the intervention.

2.3 Healt Education Intervention

The community-based health education program was conducted over a period of eight weeks and included interactive educational sessions, group discussions, demonstrations, and distribution of educational materials. The intervention focused on improving participants' knowledge and awareness of NCD risk factors and promoting preventive behaviors such as healthy eating, regular physical activity, routine health screening, and lifestyle modification. The educational content was designed to be culturally appropriate and relevant to the community context.

Community-based health education interventions are effective because they encourage active participation, improve health literacy, and empower individuals to adopt healthier behaviors (World Health Organization, 2022; Nutbeam & Muscat, 2021). The program was delivered by trained health educators and supported by community leaders to enhance participation and engagement.

2.4 Data Collection Instruments

Data were collected using a structured questionnaire designed to measure participants' preventive health behaviors, health knowledge, and attitudes toward NCD prevention. The questionnaire was adapted from validated health behavior assessment tools and consisted of four sections: demographic information, knowledge of NCD risk factors, preventive health behaviors, and lifestyle practices.

The instrument used a five-point Likert scale ranging from strongly disagree to strongly agree. The validity of the instrument was evaluated through expert review, and reliability testing was conducted using Cronbach's alpha coefficient, with a value of 0.70 or higher considered acceptable (Taber, 2021; Hair et al., 2022). Data collection was conducted twice: before the intervention (pre-test) and after the intervention (post-test) to assess changes in preventive health behaviors.

2.5 Data Analysis

Data were analyzed using descriptive and inferential statistical methods. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to summarize participants' demographic characteristics and preventive health behavior levels. Inferential analysis was conducted using paired sample t-tests to examine differences between pre-test and post-test scores within the intervention group, and independent sample t-tests were used to compare differences between the intervention and comparison groups.

These statistical techniques are appropriate for evaluating intervention effectiveness and identifying significant changes in behavioral outcomes (Field, 2022; Pallant, 2023). A significance level of $p < 0.05$ was used to determine statistical significance. Data analysis was performed using statistical software such as SPSS version 26.

2.6 Ethical Considerations

Ethical approval for this study was obtained from the relevant institutional ethics committee prior to data collection. Participants were informed about the purpose of the study, and written informed consent was obtained. Confidentiality and anonymity of participants were strictly maintained throughout the research process. Ethical considerations are essential in community-based health research to ensure participant protection and research integrity.

3. RESULT AND DISCUSSION

3.1 Improvement in Knowledge and Awareness of Non-Communicable Diseases

The findings of this study demonstrate that community-based health education programs significantly improved participants' knowledge and awareness regarding non-communicable diseases (NCDs), including diabetes, hypertension, and obesity. Based on pre-test and post-test analysis, participants in the intervention group showed a substantial increase in their understanding of NCD risk factors, preventive strategies, and the importance of maintaining healthy lifestyles. This improvement indicates that structured and culturally relevant health education interventions play a critical role in enhancing health literacy at the community level.

Health literacy is a key determinant of preventive health behavior, as individuals with higher levels of health knowledge are more likely to adopt healthy lifestyle practices and engage in preventive health measures (Nutbeam & Muscat, 2021; Sørensen et al., 2022). Community-based health education programs are particularly effective because they provide accessible and practical information that enables individuals to understand the relationship between lifestyle factors such as poor diet and physical inactivity and the development of chronic diseases. According to the World Health Organization, improving community awareness through health education is essential for reducing the global burden of NCDs and promoting preventive health behaviors (WHO, 2023).

These findings are consistent with previous studies that have reported significant improvements in knowledge and awareness following community-based health education interventions. Kim et al. (2022) found that community health education programs significantly increased participants' understanding of disease prevention and encouraged greater engagement in preventive health practices. Similarly, Abdel-All et al. (2023) reported that community-centered educational interventions improved public awareness of NCD risk factors and strengthened individuals' capacity to make informed health decisions.

3.2 Changes in Preventive Health Behaviors

In addition to improving knowledge, the health education program led to significant positive changes in participants' preventive health behaviors. Participants in the intervention group reported increased engagement in regular physical activity, improved dietary habits, and greater participation in routine health screenings. Statistical analysis revealed a significant increase in preventive behavior scores following the intervention, indicating that community-based health education programs can effectively influence behavioral change.

Behavior change is a critical outcome of health education interventions, as knowledge alone is insufficient to prevent NCDs without corresponding changes in lifestyle practices. Community-based programs provide opportunities for participants to develop practical skills, receive social support, and reinforce healthy behaviors through group activities and interactive learning (Jeet et al., 2023). Furthermore, culturally tailored interventions that address local beliefs and practices have been shown to be more effective in promoting sustainable behavioral changes (Perry et al., 2021; WHO, 2024).

These results are supported by previous research demonstrating that community-based health education interventions significantly improve physical activity levels and promote healthier dietary practices. For instance, Allen et al. (2022) found that structured health education programs contributed to increased physical activity participation and reduced unhealthy dietary behaviors among community members. Similarly, O'Donovan et al. (2022) reported that community engagement and participatory education approaches were effective in promoting sustainable lifestyle changes.

3.3 Impact on Health Risk Factors

The study also found that community-based health education programs contributed to improvements in selected health risk indicators associated with NCDs. Participants reported reductions in sedentary behavior, increased engagement in physical activity, and improved dietary patterns, which are important factors in reducing the risk of chronic diseases. Although this study primarily focused on behavioral outcomes, participants also reported increased motivation to monitor their health regularly, including checking blood pressure and blood glucose levels.

Lifestyle modification is widely recognized as one of the most effective strategies for preventing and managing NCDs. Research indicates that individuals who adopt healthy lifestyle behaviors, such as regular exercise and balanced nutrition, have a significantly lower risk of developing chronic diseases (GBD 2021 Risk Factors Collaborators, 2022). Community-based health education programs play an important role in supporting these lifestyle changes by providing education, motivation, and community support (WHO, 2022).

These findings align with previous studies that have demonstrated the effectiveness of community-based interventions in reducing NCD risk factors. Nugent et al. (2023) reported that preventive health education programs contributed to measurable improvements in lifestyle behaviors and reduced disease risk among participants. Similarly, Abdel-All et al. (2023) found that community-based health education interventions improved health outcomes and reduced modifiable risk factors associated with chronic diseases.

3.4 Role of Community Engagement in Program Effectiveness

Community engagement emerged as a key factor contributing to the success of the health education program. Participants expressed positive responses to interactive learning activities, group discussions, and culturally relevant educational materials. The involvement of community leaders and local health educators enhanced trust, increased participation, and improved program acceptance.

Community engagement is essential for ensuring the effectiveness and sustainability of health education programs. Participatory approaches empower individuals and communities to take ownership of their health and promote collective responsibility for disease prevention (WHO, 2024). Studies have shown that community-based programs that involve local stakeholders and culturally appropriate strategies achieve higher participation rates and more sustainable outcomes (Perry et al., 2021; Kim et al., 2022).

Furthermore, social support and peer interaction play an important role in reinforcing behavioral change. Participants who received support from peers and community leaders were more likely to maintain healthy behaviors and adhere to preventive practices. This finding highlights the importance of integrating community participation into health education program design.

3.5 Challenges and Barriers to Program Implementation

Despite the positive outcomes, several challenges were identified during program implementation. Some participants reported barriers such as limited time, lack of access to health resources, and economic constraints that affected their ability to adopt recommended health behaviors. In addition, variations in participant motivation and attendance influenced the overall effectiveness of the intervention.

These findings are consistent with previous research indicating that socioeconomic factors, resource availability, and access to healthcare services can influence the effectiveness of community-based health education programs (Allen et al., 2022; Nugent et al., 2023). Individuals from disadvantaged backgrounds may face additional barriers in implementing lifestyle changes due to limited access to healthy food options and recreational facilities (WHO, 2023).

Addressing these barriers requires comprehensive strategies, including strengthening community infrastructure, improving access to health services, and providing ongoing support for participants. Integrating health education programs into existing community and primary healthcare systems can enhance sustainability and long-term impact (WHO, 2022).

3.6 Implications for Public Health Practice

The findings of this study have important implications for public health practice and community health promotion. Community-based health education programs represent an effective strategy for improving preventive health behaviors and reducing the risk of NCDs. These programs provide a cost-effective approach to disease prevention by empowering individuals and communities to adopt healthier lifestyles.

Policymakers and healthcare providers should prioritize the implementation and expansion of community-based health education programs as part of comprehensive public health strategies. Strengthening partnerships between healthcare institutions, community organizations, and local stakeholders can enhance program effectiveness and sustainability (WHO, 2024).

Furthermore, the integration of digital health technologies, such as mobile health applications and online education platforms, can improve access to health information and expand the reach of health education programs (Abdel-All et al., 2023). Future interventions should focus on developing culturally appropriate, accessible, and sustainable health education programs to address the growing burden of non-communicable diseases.

4. CONCLUSION

Based on the findings of the study, community-based health education programs have demonstrated a positive impact on improving preventive behaviors against non-communicable diseases (NCDs). The program significantly enhanced community knowledge, awareness, and attitudes regarding NCD risk factors, such as unhealthy diets, physical inactivity, smoking, and sedentary lifestyles. This increased knowledge contributed to positive behavioral changes, including the adoption of healthier lifestyles, increased physical activity, and greater awareness of the importance of regular health check-ups.

Furthermore, the effectiveness of the program was strongly influenced by active community participation, collaboration between stakeholders, and the relevance of the educational materials to the local context. Community-based approaches enabled more meaningful engagement, fostered a sense of ownership, and ensured the sustainability of health promotion efforts.

In conclusion, community-based health education programs are an effective strategy for promoting preventive health behaviors and reducing the risk of non-communicable diseases. These programs not only improve individual health awareness but also contribute to broader community empowerment and support long-term public health outcomes.

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