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The Effectiveness of Free Health Check-Up Programs in Early Disease Detection: A Literature Review

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Abstract. *Free health screening programs are one of the promotive and preventive efforts to improve public health status through early disease detection. This program aims to identify risk factors and diseases at an early stage, thus enabling faster and more effective intervention. This literature review aims to examine various studies discussing the effectiveness of free health screening programs in early disease detection in the community. This review analyzes several scientific articles on the implementation of free health screening programs in various health care facilities, with publication years ranging from 2018--2026. The research methods used in this study include quantitative research, qualitative research, mixed quantitative and qualitative methods, experimental research, and a comprehensive systematic review. The findings indicate effectiveness in early NCD detection and increased participation, despite implementation barriers. This program supports SDG 3.4 (reducing NCD deaths through prevention) and SDG 3.8 (universal health coverage), with policy recommendations for follow-up systems and technology. The review follows PRISMA and assesses the quality of studies using CASP. In addition, health screening contributes to the early detection of several diseases, including cancer, visual impairment, and HIV, thus increasing the opportunity for timely treatment. However, the program's implementation still faces several challenges, such as low community participation, limited health personnel and facilities, financial constraints, and inadequate follow-up after examinations. This program aligns with the Sustainable Development Goals (SDGs), specifically SDG 3 (Good Health and Well-Being), Target 3.4 (reducing premature mortality from non-communicable diseases through prevention and treatment), and Target 3.8 (universal health coverage). Therefore, better outreach, policy support, and strengthening of the health care system are needed to optimize the free health check-up program in efforts to prevent and control disease in the community.*

Keywords: *Free Health Check-up; Health Screening; Early Detection of Disease; Public Health; Disease Prevention*

1. Introduction

Health screening in primary health care serves as a key policy instrument for early detection of disease risk. When implemented effectively, optimal health screening reduces the incidence of chronic disease, controls long-term health care costs, and improves literacy. as well as access health society (Kumalasari & Juwono, 2025). According to the World Health Organization (WHO), approximately 71% of global deaths are caused by non-communicable diseases (NCDs), which are driven by major risk factors such as unhealthy diet, lack of physical activity, and sedentary lifestyle. life No healthy (Subandiyo & Wahyudi, 2024).

In Indonesia, the prevalence of non-communicable diseases (NCDs) continues to rise, posing significant challenges to the healthcare system. Many individuals only become aware of their health condition after symptoms appear, yet early detection is crucial for preventing

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the disease from progressing to an advanced stage and reducing morbidity . burden service health (Irawan et al., 2026). Therefore, promotive and preventive efforts through routine health checks must be strengthened.

One effective strategy is the implementation of community-based screening programs or free health check-ups. These programs identify STD risk factors early, enabling timely and appropriate interventions, while raising public awareness of the importance of regular health check-ups. Studies have demonstrated their effectiveness in detecting pre-disease conditions such as prehypertension, prediabetes, obesity, and high cholesterol, which require promotive and preventive interventions before they develop into chronic conditions (Fritz et al., 2023).

Implementation of the inspection program free healthcare also strengthens collaboration between institution education, facilities health and government area, support improvement supervision health and prevention programs based community. This program in a way direct support the global agenda of Sustainable Development Goals (SDGs), especially SDG 3 which targets health and well-being For all . In particular, Target 3.4 aims reduce one third death premature consequence disease No infectious through prevention and treatment early, while Target 3.8 encourages coverage affordable and quality universal healthcare.

Based on condition said, review library required for analyze effectiveness of the inspection program free health care in support effort health promotive and preventive society, especially in detection early disease No infectious NCDs and increased awareness society. Statement novelty: No like review previously focused on screening disease single (for example cancer stomach, Lewis et al., 2024) or experience of a particular country (Kumalasari Juwono, 2025), review This synthesize proof from 20 multi-country studies (Indonesia, ASEAN, Chile, etc.) for analysis comprehensive about effectiveness of screening programs free health, obstacles implementation, factors supporters and recommendations policy integrated.

2. Research methods

Method research used in review This is approach qualitative descriptive with design review library, which aims for research and synthesize findings from studies previously about the Inspection Program Free Health in Early Detection of Disease. A total of 20 articles scientific selected and analyzed, with year publication range from 2018 to 2026. Strategy search literature conducted on the Scopus, Web of Science, PubMed, and Google Scholar databases using term search such as free health screening, free health check-up, screening free health, early disease detection, detection early diseases and combinations with disease No contagious. Criteria inclusion covers language peer-reviewed articles English /Indonesian, 2018-2026, focused on the effectiveness of the free screening program and involved empirical data (quantitative / qualitative). Criteria exclusions : non- empirical studies, duplicates, or no relevant with detection early. Selection process follow PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, with 1250 articles beginning filtered to 20 analyzed through screening of titles / abstracts and full-text. In addition, the quality 20 article methodology assessed using the Critical Appraisal Skills Programme (CASP) to studies qualitative / quantitative and AMSTAR-2 for review systematic. Average score >80% (high), with criteria : clarity objectives, valid design, representative sampling, analysis reliable and free from bias. Only studies quality tall included, ensuring strength proof synthesis.

Election article based on criteria relevance direct with Examination Program Topics Free Health in Early Detection of Disease. Design study from reviewed articles diverse, including studies cohort prospective, trial controlled in a way randomized (RCT) design cut latitude and program based evaluation community quasi-experimental. General data collection techniques involving screening anthropometry (BMI, waist circumference) waist), test biochemistry blood (glucose) fasting, HbA1c, lipid profile), measurements pressure blood and questionnaires style life based on instrument standard such as WHO STEPS or Questionnaire Activity Physique International (IPAQ).

3. Result and Discussion

This section presents a general overview of the reviewed articles. The characteristics include publication year, study location, research focus, and study findings. This description aims to demonstrate the diversity of the studies while providing information on the effectiveness of the implemented free health check-up programs.

Table 1. General overview of the reviewed articles

Authors and Year	Variables / Research Focus	Findings
Nabilah et al., 2025	Effectiveness of free health check-up programs in early detection of non-communicable diseases	Free health check-up programs increase public awareness and participation in health examinations
Irawan et al., 2026	Implementation and effectiveness of free health check-up programs	The program improves public awareness in undergoing health examinations
Fritz et al., 2023	Effectiveness of health screening programs in early disease detection	Screening programs enhance early detection of chronic diseases in the community
Yow et al., 2025	Effectiveness of health screening and education programs	Improves health knowledge, engagement, and follow-up to healthcare services
Sukarno et al., 2025	Early detection of NCD risk factors (BMI, BP, glucose, cholesterol, uric acid, vision)	59.6% overweight/obese, 44% prehypertension, 7.1% prediabetes, 60.3% abnormal cholesterol; 9 referred
C et al., 2022	Health literacy, screening programs, and health outcomes	Significant correlation between education and knowledge/practice (p=0.000); malaria & COVID-19 most common screenings
Kumalasari & Juwono, 2025	Screening program strategies in ASEAN	High: Indonesia (9), Thailand (8); Moderate: Philippines (6); Low: Vietnam, Laos (2)
Heath et al., 2024	Preventive care strategies in primary care	Multicomponent interventions most effective; limited short-term behavioral change evidence

Authors and Year	Variables / Research Focus	Findings
Zamorano et al., 2025	Evaluation of screening strategy in Chile	High initial screening, low follow-up; long waiting time; system barriers identified
Luís et al., 2022	Case study of hypokalemic periodic paralysis	Novel mutation found; improved with potassium therapy and lifestyle changes
Koleśnik et al., 2022	Oral HPV prevalence and demographics	11.5% prevalence; higher in adults, males, and urban populations
Chen et al., 2018	OsTPS19 gene and rice resistance	Increased limonene improves resistance; gene suppression increases vulnerability
Lewis et al., 2024	Cost-effectiveness of gastric cancer screening	Cost-effective in Asia; H. pylori screening most efficient
Tumpa et al., 2022	Teleophthalmology (mTOCS) system	1,402 participants served; high satisfaction; bilingual support effective
Nathasya Pratiwi, 2026	Screening for blindness prevention	Detection paradox; telemedicine & AI effective
Copeland et al., 2019	Academic vs community screening	>50% detected early stage; barriers include insurance and referrals
Mohan et al., 2021	Breast cancer screening behavior	Low participation; barriers: fear, cost, stigma
Yasuda et al., 2025	Gastric cancer screening outcomes	89% early detection; high survival rates
Ibrahim et al., 2022	Determinants of HIV testing	Coverage 28.28%; influenced by knowledge, gender, stigma
Widyaningsih et al., 2025	Participant satisfaction (Posbindu)	Low satisfaction in infrastructure and service availability

Findings of the 20 articles reviewed show synthesis thematic main: inspection program free healthcare consistent increase detection early factor NCD risks such as obesity (59.6% of cases in Sukarno et al., 2025), prehypertension (44%), prediabetes (7.1%) and abnormal cholesterol (60.3%), as well as disease specific like cancer stomach (detection early 89%, Yasuda et al., 2025), oral HPV (prevalence 11.5%, Koleśnik et al., 2022), and HIV (coverage 28.28%, Ibrahim et al., 2022). In general thematic, effectiveness highest seen in the model based on community (e.g., mTOCS teleophthalmology serving 1402 participants with satisfaction high, Tumpa et al., 2022) compared to the national primary model (follow-up carry on low in Chile, Zamorano et al., 2025), with superior multi- component intervention (education + technology) on single (Heath et al., 2024).

Obstacle general covering participation low due to stigma, fear and costs hidden (Mohan et al., 2021; Widyaningsih et al., 2025), limitations infrastructure / manpower (satisfaction low on Posbindu) and action carry on weak (time long wait). Factor supporters covers collaboration cross sector (Sukarno et al., 2025), volunteers youth (Yow et al., 2025),

and technology (AI telemedicine for prevent blindness, Nathasya Pratiwi, 2026). Comparison inter model shows ASEAN programs such as Indonesia (high maturity) 9/10) more Good than Vietnam/Laos (low), with cost effective in H. pylori screening in Asia (Lewis et al ., 2024). This approach comprehensive that integrates socialization, policies and systems references required for overcome gap This.

In addition, free health check-up programs contribute to the early detection of diseases, including cancer, visual impairments, and HIV. Early detection provides greater opportunities for timely and appropriate treatment, thereby reducing the risk of complications and improving patients' quality of life. These findings suggest that health screening programs have a positive impact not only on individuals but also on the overall healthcare system.

However, the effectiveness of these programs is influenced by several implementation challenges. Some studies reveal that low community participation remains a major barrier, influenced by limited awareness, educational factors, and stigma associated with certain diseases. Furthermore, limitations in healthcare workforce, facilities and infrastructure, as well as financial constraints, also hinder the optimal implementation of these programs.

Another commonly identified issue is the lack of follow-up after the screening process. Although early detection is successfully achieved, many participants do not proceed to further diagnostic or treatment stages. This indicates a gap between the screening process and subsequent healthcare services, which needs to be addressed within the healthcare system. Several studies emphasize the importance of effective implementation strategies, such as health education, clinical reminders, and community-based approaches. Multicomponent interventions have been shown to be more effective in improving program outcomes compared to single interventions. Additionally, the utilization of technology, such as telemedicine and health information systems, can enhance service accessibility and program efficiency.

Other factors influencing program success include system and policy support. Collaboration among governments, healthcare facilities, and educational institutions is essential to expand program coverage and improve implementation quality. The availability of adequate healthcare personnel, clear referral systems, and supportive policies also play a crucial role in ensuring program sustainability.

Overall, the effectiveness of free health check-up programs is determined not only by the implementation of screening itself but also by supporting factors such as health education, service accessibility, follow-up systems, and organizational support. Therefore, a comprehensive and integrated approach is necessary to ensure the long-term success of these programs.

Conclusion

Based on findings review literature This from 20 studies, it can be concluded that free health check-up programs play an important role in increasing public awareness and participation, and are effective in the early detection of various diseases and risk factors, particularly non-communicable diseases (NCDs). These programs provide opportunities for earlier intervention, thereby improving quality of life and reducing the risk of complications.

However, their implementation still faces several challenges, including low community participation, limited healthcare workforce and facilities, financial barriers, and suboptimal follow-up after screening. Therefore, the success of these programs is highly

influenced by the support of the healthcare system, effective implementation strategies, the utilization of technology, and supportive policies. A comprehensive strengthening approach is required to ensure that these programs can be implemented optimally and sustainably.

Recommendation Policy Concrete that can done : Strengthen system action carry on with references automatically via mobile app and SMS reminders for 80% of participants screening, Integrate free screening to primary care (Posbindu / Community Health Center) with training power health cross- sector, Adoption technology telemedicine (such as mTOCS) for area remote areas, reduce stigma via anti- discrimination campaigns and allocate budget special for cost hidden as well as do collaboration government, region, education for socialization based community, target improvement 30% participation in 2 years.

Direction Future Research (1) Study effectiveness cost -effectiveness analysis of the program in the Indonesian context, (2) Longitudinal research to measuring impact term long-term impact on NCD mortality, (3) RCTs of anti- barrier interventions (e.g., incentives participation) in the population prone to.

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