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# Effectiveness Health education based on Behavioral theory of change Public health behavior: *Sistematic Literature Review*

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## ABSTRACT

**Introduction** : A strategic initiative to enhance the attainment of optimal health status is improving public health behavior. Research shows that health education initiatives can increase self-efficacy and community preparedness for disasters, both of which are critical to encouraging lasting behavior change. Public health education is not only information, but also a systematic effort to change individual and community attitudes and behaviors to promote and prevent health systems at the national and global levels. **Objective :** Of this study to analyze how health education based on behavioral theory can alter public health behavior. **Metodu**: Systematic Literature Review (SLR) approach, utilizing PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Data were obtained from three scientific databases : Google Scholar, PubMed, ScienceDirect, from 2021-2026 total 50 articles. **Results** : Educational interventions based on the behavioral theories of Health Belief Model (HBM), Social Cognitive Theory (SCT), Theory of Planned Behavior (TPB), and Behavior Regulation Theory (BRT) are important public health strategies to change population behavior. Education not only enhances knowledge, but also influences psychosocial constructs such as attitude, self-efficacy, and risk perception, which play a major role in determining health behavior. However, evidence also shows that education alone is not sufficient, as social and environmental barriers such as lack of time, routine, and social support continue to be major obstacles. **Conclusion :** Theory-based education is effective in initiating behavior change, but to achieve lasting population impact, an integrated approach that considers individual, social, and environmental factors is needed.
**Keywords :** Health Education, Behavioral Theory, Public Health Behavior

## INTRODUCTION

One strategic initiative to enhance the attainment of optimal health status is improving public health behavior. A number of variables, such as lack of understanding of the meaning of leading a healthy lifestyle, lack of access to reliable health information, and challenges in implementing Healthy Living Practices (HLPs), will cause vulnerable groups to experience multiple health problems. This circumstance highlights the importance of behavior modification in initiatives to enhance community health.(Khoramaki, 2022) & (Kurniawan et al., 2024).

One important tactic to address these issues is through health education programs. Research shows that health education initiatives can increase self-efficacy and community preparedness for disasters, both of which are critical to encouraging lasting behavior change. (Khaira et al., 2024). In this context, public health education encompasses not only the dissemination of information but also a methodical and coordinated effort to modify the attitudes and behaviors of individuals and communities in order to promote the promotion and prevention of health systems on a national

and global scale. (Tudang & Nasri, 2025). Furthermore, self-care practice behavior was positively impacted by community-based health education, particularly in the adult population. The risk of chronic disease and other health issues can be reduced through organized education initiatives that support primary prevention and encourage long-term healthy behaviors.(Binti, 2026).

Individual counseling, social communication campaigns, education in workplaces and schools, and the use of digital technologies such as social media, online platforms, and mHealth applications are among the strategies used. However, the ability to modify and sustain behavior at that time is also as important to the success of health education as increasing knowledge. Important elements including theoretical framework, community involvement, resource accessibility, and cultural and social sensitivity should therefore be considered when designing interventions. (Haga et al., 2025).

But in reality, there will be several restrictions, some health education initiatives lack a solid foundation in behavior modification theory. Some interventions exclusively address knowledge transfer, ignoring behavior change processes such as motivation and preparation phases. (Şahan et al., 2025). The sustainability of the program will face challenges such as lack of infrastructure, qualified human resources, and funding. Interventions that are not sensitive to the local environment may not yield positive results because the cultural and social elements of the community can directly impact the effectiveness of the program. (Tudang & Nasri, 2025).

In this regard, behavior theory provides a crucial foundation for understanding the causes, mechanisms, and timing of behavior change. Behavior theory can be classified into three categories based on their level of action : 1. Individual level of action, 2. Interpersonal level of action and Community level of action and is provided by theories such as Health Belief Model/ Health Belief Model, Transtheorist Model, and others. When used correctly, these techniques can improve the effectiveness of health education initiatives. (Kirat et al., 2024). Health behavior change is seen as essential for health promotion, as it can increase disease prevention, reduce morbidity and mortality at the individual, community, or population level.(Koulouvari et al., 2025).

There remains a research gap on how to successfully incorporate behavior theory into health education programs to create sustainable behavior change in public health, despite evidence of the advantages of behavior theory and health education. Therefore, this systematic literature has an important objective to analyze how health education based on behavioral theory can alter public health behavior so as to develop an effective and sustainable health system.

## METHOD

This study used a Systematic Literature Review (SLR) approach according to PRISMA guidelines. A comprehensive search was conducted in three major databases Google Scholar, PubMed, ScienceDirect using the keywords “Health Education”, “behavioral theory “ and “public health behavior.” The search was restricted to peer-reviewed articles of papers published in the last decade (2021–2026) to ensure the inclusion of contemporary and relevant evidence. Of the 50 initially identified articles, studies were selected based on a structured PICO framework, focusing on public health mitigation, implementation strategies, implementation outcomes based on problems sensitive to public health behavior. Inclusion criteria prioritized systematic reviews and original research that logically aligned with the theme of health education for community

behavior change. This rigorous screening process ensured that only the highest quality and most relevant studies were synthesized in the final analysis.

**Inclusion or Exclusion Criteria**

The population studied was: the title was systematic; public health mitigation, health education interventions, implementation strategies, implementation results, comparative refers to implementation approaches; the results are findings from previous research that adhere to a logical theme, the study design is a systematic review.

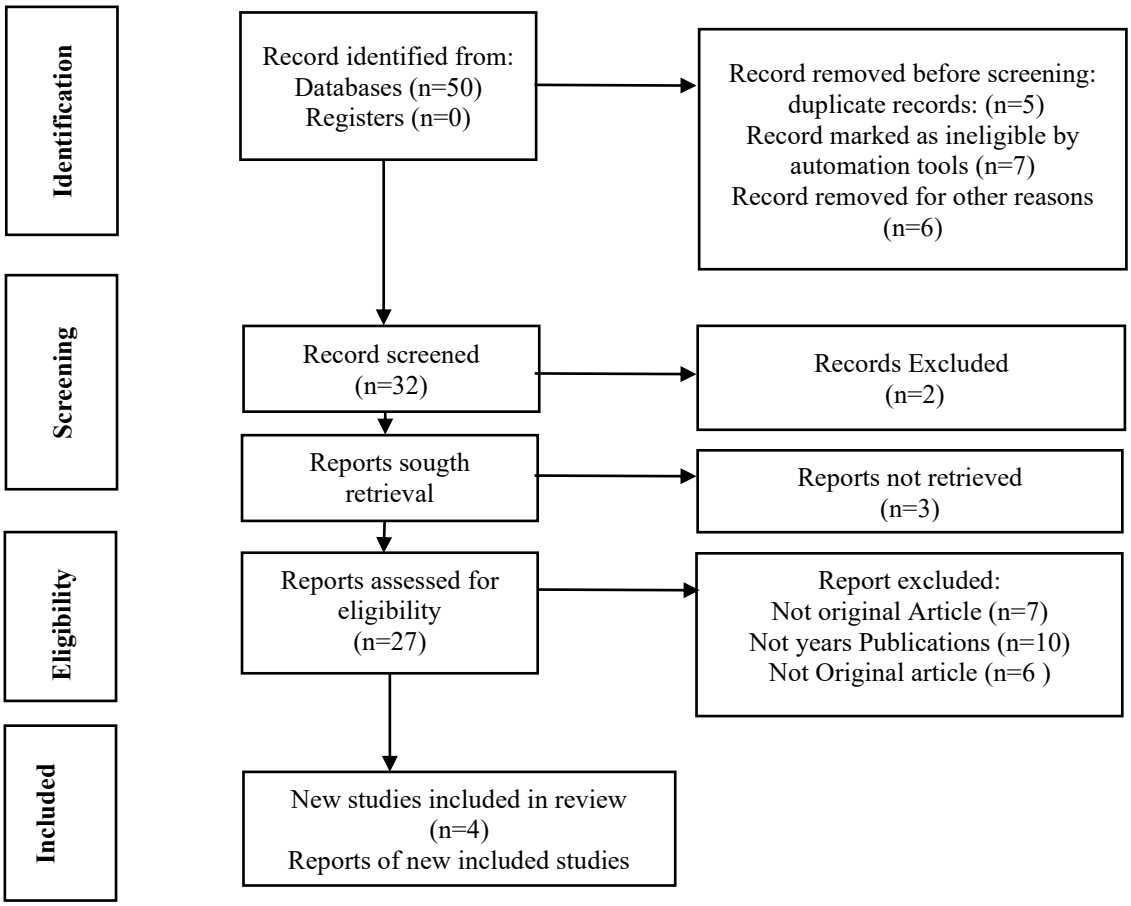
Table 1. Inclusion or Exclusion Criteria

| Criteria | Inclusion | Exclusion |
|---|---|---|
| **Populastion** | Individual, Group, Community | Non human population |
| **Outcome** | Behavioral Theory-Based health education for behavior change Public Health | None |
| **Desing Study** | Articles that can be accessed | Artigu ne'ebe labele asesu |
| **Article Access** | Original/Empirical | Literature Review, Book, Unpublished article |
| **Year Publication** | 2021-2026 | Before 2020 |
| **Language** | English & Indonesian English | Other |

*Source : Researcher*

**Data extraction process**

PRISMA was used in the data extraction process to select and exclude articles from the literature review through identification, screening, eligibility, and inclusion, then proceeding to the next stage.




**Dezeñu 1.** Diagrama Analiza PRISMA, Efetividade Edukasaun Saúde husi Teoria Hahalok ba mudansa hahalok Saúde Públika

*Source : Researcher*

After going through the identification, screening, eligibility, and inclusion phase of the PRISMA (Preferred Reporting Items for Systematic Reviews and MetaAnalyses) method process, 4 articles were used to proceed to the article discussion phase.

**Research Relevance**

A research review is a methodical process of collecting, analyzing, integrating, and presenting data from multiple studies on a particular research topic to produce a more comprehensive and accurate knowledge. It also incorporates database-based searches of articles to enhance the quality of the result.

**Quality Study**

Using Google Scholar, PubMed, Science Direct, databases, 50 English-language and Indonesian-Language scientific publications from 2021 to 2026 were collected. To ensure that the retrieved articles met the inclusion and exclusion requirements, screening was performed.

Following the screening procedure, additional analysis was performed using the PRISMA flow diagram.

**Data Extration**

The final results will proceed to the data extraction phase in the following table for the methodological analysis of the articles after completing the meta-analysis phase using PRISMA.

Tabela 2. Extrasaun Dadus

| No | Author and Year | Title | Outcome |
|---|---|---|---|
| 1 | (Ranjbar et al., 2024) | The effect of educational intervention based on the behavioral reasoning theory on self management behaviors in type 2 diabetes patients. | After the educational interventions in the intervention group, statistically significant changes were observed in the mean scores of all constructs, fasting blood sugar, and glycosylated hemoglobin. On the other hand, no statistically significant change was observed in the mean values of the control group. All observed changes were significant at the 0.05 level. |
| 2 | (Mohammadniamotlagh et al., 2022) | Effect of theory-based education on promoting a healthy lifestyle in pre-diabetic women: RCT | After the intervention, the mean scores of knowledge ( $P < 0.001$), attitude ( $P = 0.047$) and perceived behavioral control related to physical activity ( $P = 0.046$) and dietary function ( $P = 0.01$) were significantly increased in the intervention group. Moreover, fasting blood glucose in the intervention group ($99.70 \pm 11.06$) was significantly improved compared to the control group ($110.94 \pm 17.09$) ($P = 0.003$). |
| 3 | (Armoon et al., 2021) | Effect of a hospital-based oral health education program on Iranian staff: evaluating a theory-driven intervention | The results showed significant differences between the two groups after the education intervention on attitudes, subjective norms, perceived behavioral control, intention to seek treatment, oral health behaviors as well as tooth cavities, falls, and welding and bleeding during treatment ($p<0.001$). Two months after the intervention, except for denture construction ($p = 0.18$), the difference between the two groups was significant ($p<0.001$). |
| 4 | (Kirat et al., 2024) | The effectiveness of a model-based health education program on genital warts preventive behaviors: a quasi-experimental study | The two research groups had no statistically significant differences in terms of awareness, perceived susceptibility, severity, benefits, barriers, and self-efficacy before the intervention (at pre-test) ($p > .05$). After the educational intervention, both groups showed |

| | |
|---|---|
| | statistically significant differences in all constructs except for perceived benefits ($p < .001$). In the intervention group, at pretest (before the intervention), the behavior score was $2.77 \pm 2.59$, which increased to $3.73 \pm .52$ after the intervention ($p < .001$). In the control group, however, the difference was not statistically significant ($p = 0.227$). |

## RESULTS AND DISCUSSION

Health behavior can be understood through the perspective of complexity science, which views the human body as an adaptable and dynamic system. Physiological and psychological regulatory mechanisms in organs allow adaptation to life stimuli, optimizing better health outcomes.(Fang et al., 2025).

**A. Effects of Behavioral Theory-based health education interventions**

The result of (Ranjbar et al., 2024) showed that educational interventions based on behavioral theory had a significant effect in the intervention group compared to the control group. Significant improvements in HbA1c and fasting blood sugar were observed, whereas the control group remained unchanged. This indicates that education not only increases knowledge and changes attitudes, but also succeeds in changing self-care behaviors that contribute to diabetes control. According to Behavior Regulation Theory (BRT) and Health Belief Model (HBM), changes in motivation, perceived benefits, and self-efficacy are important factors in influencing intention and behavior.

In addition, another study by (Hatice Ağralı, 2022) showed that although the intervention improved psychosocial constructs such as self-efficacy, perceived susceptibility, barriers, and benefits, there was no significant difference in HbA1c between the intervention and control groups. According to Behavior Ressons Theory and the Health Belief Model, this means that changes in perception and motivation are not enough to change effective behavior, as barriers and daily habits continue to have a strong influence on diabetes control. The result is supported by the study (Sidabutar et al., 2023) The results identified that although motivation is present, the main barriers such as lack of time, lack of social support, and difficulty changing daily routines are major obstacles to behavior change. Therefore, a comprehensive strategy is needed to overcome these obstacles because psychological adjustment alone is not sufficient.

**B. Effects of theory-based education on changing psychosocial constructs**

The result of (Mohammadniamotlagh et al., 2022) it showed that knowledge ($P < 0.001$), attitude ($P= 0.047$), and behavior control related to physical activity ($P = 0.046$) and diet ($P = 0.01$) were significantly increased after the intervention, along with improvements in fasting blood sugar (99.706 vs. $1.19 \pm 1.019$; P 0.003), indicating that educational interventions are effective in improving glycemic control and behavior change. This result is consistent with Social Cognitive Theory, which explains that the interaction between individual thoughts, environment, and experience determines health-related behavior. Elements such as self-efficacy, outcome expectations, and self-regulation skills play an important role in encouraging people to adopt healthy behaviors such as physical activity and a balanced diet. (Rodrigues et al., 2023). In contrast, however, the results of (Rubab et al., 2025) identified that education interventions based

on mobile health apps/MHAs had no significant difference in HbA1c between the intervention and control groups ($p = 0.86$), indicating that isolated digital interventions were not sufficient to change glycemic control in adolescents.

**C. Effects of Theory-Based Education Interventions on Oral Health**

The result of (Armoon et al., 2021) The results showed significant differences between the two groups after the education intervention on attitudes, subjective norms, perceived behavioral control, intention to seek treatment, oral health behaviors as well as tooth cavities, falls, and bleeding during treatment ($p<0.001$). Two months after the intervention, except for denture construction ($p = 0.18$), the difference between the two groups was significant ($p<0.001$). It means that education is effective, because most of the variables changed significantly ($p<0.001$).

Two months later, the change was still present, but teeth grinding was not significant ($p = 0.18$). This result is also consistent with the study (Khoramaki, 2022) results identified that educational interventions significantly increased knowledge, oral health literacy, and oral health behaviors. However, evidence on the strength and sustainability of change over time remains limited, suggesting that education alone may not be sufficient to ensure strong and consistent behavior change. This result ties in with the Theory of Planned Behavior of the study (Malik et al., 2025) that human behavior depends on 3 main constructs: Attitude (opinion/thought about the benefits of behavior), Subjective norms (social pressure from family, colleagues, doctors) and (self-efficacy: increase intention to show action).

**D. Effects of educational interventions on changing Health Belief Model constructs**

The result of (Kirat et al., 2024) showed that before the intervention, the two groups were similar ($p >.05$). After the intervention, the intervention group showed significant improvement in all constructs except benefit ($p<.001$) and preventive behavior also increased, whereas the control group remained unchanged ($p = 0.227$). The results are consistent with the study of (Hosseini et al., 2021) sample results that the two groups did not differ significantly in the pretest for awareness, susceptibility, severity, benefits, barriers, and self-efficacy ($p>.05$). After the intervention, there were significant differences in all constructs except benefit ($p<.001$). In the intervention group, preventive behavior increased from $2.77 \pm 2.59$ to $3.73 \pm 0.52$ ($p<.001$), while the control group did not change significantly ($p = 0.227$). It means that the study of (Kirat et al., 2024) & (Hosseini et al., 2021) results emphasize that educational interventions are effective in changing awareness and behavior. A study by (Karimi et al., 2025) quoting the definition of the HBM says that people are more likely to change health behaviors when they feel they are at risk for a condition (susceptibility), understand the seriousness of the problem (severity), see the benefits of preventive action (benefit), can overcome obstacles (barriers), and have the confidence to do the action (self-efficacy).

## CONCLUSION

Educational interventions based on the behavioral theory Health Belief Model (HBM), Social Cognitive Theory (SCT), Theory of Planned Behavior (TPB), and Behavior Regulation Theory (BRT) are important public health strategies to change population behavior. Education not only enhances knowledge, but also influences psychosocial constructs such as attitude, self-efficacy, and risk perception, which play a major role in determining health behavior. In the context of public health, this change can contribute to the prevention and control of chronic diseases such as diabetes and oral health problems through improved self-care and preventive

behavior. However, evidence also shows that education alone is not sufficient, as social and environmental barriers such as lack of time, routine, and social support continue to be major obstacles. The public health principle that behavior change depends not only on the individual, but also on social and environmental determinants. This means that interventions need to be integrated, not only with education, but also with community and health system support to ensure sustainable change.

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