

## Beyond Health Education: Equity Oriented Pathways For Sustainable Behavior Change In Health Promotion Research

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### ABSTRACT

Promosi kesehatan tidak lagi dapat dipahami semata-mata sebagai penyampaian pendidikan kesehatan, tetapi perlu dirancang sebagai proses pemberdayaan yang mendukung perubahan perilaku secara berkelanjutan, kontekstual, dan berkeadilan. Penelitian ini bertujuan untuk menganalisis tren penelitian, tema dominan, pola metodologis, serta kesenjangan riset dalam kajian promosi kesehatan dan perubahan perilaku, dengan perhatian khusus pada jalur promosi kesehatan yang berorientasi pada keadilan. Penelitian ini menggunakan metode systematic literature review terhadap artikel berbahasa Inggris yang terindeks Scopus pada rentang tahun 2021–2026. Strategi pencarian menggabungkan istilah yang berkaitan dengan promosi kesehatan, pendidikan kesehatan, literasi kesehatan, komunikasi kesehatan, perubahan perilaku, perilaku gaya hidup, perilaku preventif, dan manajemen diri. Proses pelaporan mengikuti prinsip PRISMA 2020 dan PRISMA-S. Dari 200 artikel awal, sebanyak 60 artikel dipertahankan untuk dianalisis melalui sintesis naratif dan tematik, sedangkan kualitas metodologis ditafsirkan menggunakan pendekatan appraisal deskriptif berbasis MMAT. Hasil penelitian mengidentifikasi lima tema dominan, yaitu intervensi berbasis sekolah, remaja, dan universitas; intervensi gaya hidup serta pencegahan atau pengelolaan penyakit tidak menular; promosi kesehatan digital; literasi kesehatan dan komunikasi risiko; serta promosi kesehatan komunitas, keadilan, dan determinan kontekstual. Sintesis menunjukkan bahwa pendidikan kesehatan tetap penting, tetapi tidak memadai tanpa motivasi, efikasi diri, persepsi risiko, dukungan sosial, keterlibatan bermakna, kelayakan implementasi, dan peluang struktural yang adil.

*Health promotion was positioned in this review not merely as the delivery of health education, but as an enabling process that supported sustainable, contextual, and equitable behavior change. This review aimed to analyze recent research trends, dominant themes, methodological patterns, and research gaps in health promotion and behavior change studies, with particular attention to equity-oriented pathways. A systematic literature review was conducted using Scopus records published in English from 2021 to 2026. The search combined terms related to health promotion, health education, health literacy, health communication, behavior change, lifestyle behavior, preventive behavior, and self-management. The reporting process was guided by PRISMA 2020 and PRISMA-S principles. From 200 initial records, 60 articles were retained for narrative and thematic synthesis, while methodological quality was interpreted through an MMAT-informed descriptive appraisal. The review identified five dominant themes: school-, adolescent-, and university-based interventions; lifestyle intervention and non-communicable disease prevention or management; digital health promotion; health literacy and risk communication; and community health promotion, equity, and contextual determinants. The synthesis indicated that education remained necessary but was insufficient without motivation, self-efficacy, perceived risk, social support, meaningful engagement, implementation feasibility, and structural opportunity.*

*This review proposed an equity-oriented pathway model in which sustainable behavior change emerged from the interaction of educational inputs, behavioral mechanisms, engagement quality, enabling environments, and fair access to opportunities for action.*



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## INTRODUCTION

Health promotion research has increasingly moved beyond the narrow assumption that knowledge transfer alone is sufficient to change health behavior. Contemporary studies indicate that health-promoting practices are shaped not only by knowledge, but also by motivation, perceived risk, self-efficacy, social support, institutional capacity, digital access, and the unequal distribution of resources that may enable or restrict healthy choices (Aldukair et al., 2026; Gurlan et al., 2026; Hameed et al., 2026; Jiang et al., 2026; Koelmans et al., 2026). This development shows that health promotion should not be understood merely as the delivery of information, but as an enabling process that creates practical, social, digital, and structural conditions through which individuals and communities can adopt and maintain healthier practices. Therefore, the urgency of this study lies in the need to reinterpret health promotion as a contextual and equity-oriented process rather than as a conventional educational activity.

A persistent problem in health promotion research is the gap between health knowledge and preventive action. Coker et al. (2026) reported that cardiovascular disease knowledge among university students did not necessarily correspond with adequate personal risk perception. Similarly, Jonsson et al. (2026) found that women may recognize breast cancer as a serious condition while still lacking actionable understanding of how lifestyle factors shape risk. These findings indicate that information becomes behaviorally meaningful only when it is connected to personal relevance, feasible action, emotional acceptability, and supportive environments. Thus, health education remains important, but it is insufficient when it fails to generate motivation, risk appraisal, self-efficacy, social support, and sustained behavioral routines.

Previous studies have offered several theoretical and practical alternatives for strengthening health promotion. The Theory of Planned Behavior explains behavior through attitudes, subjective norms, and perceived behavioral control, whereas the COM-B model explains behavior as the result of capability, opportunity, and motivation. Aldukair et al. (2026) showed that obesity prevention in female-only schools was influenced not only by students' motivation, but also by curriculum limitations, lack of trained staff, school environment, and contextual barriers. Gurlan et al. (2026) also demonstrated that school-based physical activity intervention could improve behavior, although the expected psychosocial variables did not fully explain the intervention effect. These studies suggest that theory-informed intervention is necessary, but it remains limited when structural barriers, institutional readiness, gender norms, digital inequality, service access, and community resources are not integrated into program design.

Digital health promotion has become another important alternative because digital platforms can expand reach, personalize communication, and support repeated engagement with health-related content. Cattaneo et al. (2026) showed that social media campaigns can extend public health communication, while Wagner et al. (2026) emphasized that meaningful digital engagement with adolescent nutrition content is more closely related to beliefs, intentions, and behaviors than awareness alone. However, digital reach cannot automatically be equated with behavioral impact. Digital tools may also reproduce inequality when participation, retention, and benefit distribution are shaped by literacy, age, socioeconomic position, access to devices, and trust in digital platforms (Jiang et al., 2026; König et al., 2026). Therefore, health promotion needs to be evaluated not only through exposure or audience size, but also through engagement quality, accessibility, sustainability, and equity of outcomes.

Based on these issues, this review selected an equity-oriented pathway as the analytical solution. This approach was chosen because sustainable behavior change cannot be explained only by education, individual intention, or digital exposure. Instead, it emerges through the interaction of educational inputs, behavioral mechanisms, engagement quality, enabling environments, and fair access to opportunities for action. The equity-oriented perspective is important because health promotion

programs may appear effective on average while still leaving disadvantaged groups behind. In contexts such as Indonesia, where health literacy, digital access, geographical conditions, income, gender norms, and service availability vary across communities, health promotion must be designed and evaluated through fairness, accessibility, and sustainability.

This review aims to analyze recent research trends, dominant themes, methodological patterns, and research gaps in health promotion and behavior change studies, with particular attention to equity-oriented pathways. Specifically, this article synthesizes evidence from school-based interventions, lifestyle programs, digital health promotion, health literacy initiatives, and community-oriented studies published between 2021 and 2026. The study is expected to contribute conceptually by proposing an equity-oriented pathway model for sustainable behavior change and practically by providing a framework for future health promotion research, intervention design, digital health communication, and public health programs in diverse community settings, including Indonesian public health contexts.

## METHOD

### Research design

This study used a systematic literature review design to synthesize recent evidence on health promotion and sustainable behavior change. This design was selected because the study aimed to identify research trends, dominant themes, methodological patterns, and research gaps across empirical and review-based studies. The review did not treat health education as a stand-alone intervention; instead, it examined how education, health literacy, digital engagement, behavioral mechanisms, implementation conditions, and equity considerations interacted in shaping sustainable behavior change. The reporting process was guided by PRISMA 2020 and PRISMA-S to improve transparency in article identification, screening, eligibility assessment, inclusion, and search strategy reporting (Page et al., 2021; Rethlefsen et al., 2021). This study was not experimental and did not involve human participants directly.

### Time and place of research

The study was conducted through a literature search and review of Scopus-indexed publications. In this systematic literature review, the research place refers to the Scopus database as the source of bibliographic data. The literature search and data export were conducted on 15 April 2026. The publication period was limited to English-language articles published between 2021 and 2026 in order to capture recent post-pandemic developments in health promotion, digital health engagement, lifestyle intervention, health literacy, and equity-sensitive behavior-change research. Scopus was selected because it provides broad coverage of peer-reviewed journals in public health, health education, health promotion, behavioral science, digital health, preventive medicine, and implementation research.

### Target and study subject

The target of this study was scholarly literature addressing health promotion and sustainable behavior change. The study subjects were peer-reviewed articles, review articles, intervention studies, qualitative studies, cross-sectional studies, protocols, digital intervention studies, and evidence syntheses that substantively discussed health promotion, health education, health literacy, health communication, health behavior, behavior change, lifestyle behavior, preventive behavior, self-management, digital health promotion, or equity-related health promotion. The articles were obtained through criterion-based screening according to topic relevance, document type, metadata completeness, language, publication period, and contribution to at least one synthesis theme.

### Data and research instruments

The data in this study consisted of bibliographic metadata and substantive information extracted from the selected articles. The extracted data included author name, publication year, article title, study design, population or research focus, intervention or study objective, key findings, methodological strengths, limitations, and relevance to the equity-oriented behavior-change framework. The research instruments consisted of the Scopus search string, inclusion and exclusion criteria, PRISMA-based screening guide, structured data extraction matrix, and MMAT-informed appraisal guide. These instruments were used to ensure that article selection, data extraction, and evidence interpretation were conducted systematically and transparently.

**Search strategy and data collection procedure**

The search syntax combined terms related to health promotion, health education, health literacy, health communication, health behavior, behavior change, lifestyle behavior, preventive behavior, self-management, and health practices. The main search string was: TITLE-ABS-KEY(("health promotion" OR "health-promoting" OR "health education" OR "health intervention\*" OR "public health intervention\*" OR "health communication" OR "health literacy") AND (behavior\* OR behaviour\* OR "behavior change" OR "behaviour change" OR "health behavior\*" OR "health behaviour\*" OR "health-related behavior\*" OR "health-related behaviour\*" OR lifestyle\* OR "lifestyle behavior\*" OR "lifestyle behaviour\*" OR "risk behavior\*" OR "risk behaviour\*" OR "preventive behavior\*" OR "preventive behaviour\*" OR "self-management" OR "health practice\*")).

The article selection procedure was conducted sequentially as follows: (1) records were identified from Scopus using the predetermined search string; (2) duplicate checking was performed by comparing article titles, DOI information, authorship, and source titles; (3) records were screened based on title, abstract, keywords, document type, DOI or publisher traceability, and relevance to the review objectives; (4) articles were assessed using predefined inclusion and exclusion criteria; and (5) eligible articles were retained for narrative and thematic synthesis. The initial search identified 200 records. No duplicate records were found. After screening and eligibility assessment, 60 articles were included in the final review corpus, while 140 records were excluded. The article selection process is summarized in Figure 1.

**Inclusion and exclusion criteria**

The inclusion and exclusion criteria were used to determine whether a record was suitable for review. Articles were included when they addressed health promotion, health education, health literacy, behavior change, lifestyle behavior, preventive behavior, self-management, digital health promotion, or equity-related health promotion. Eligible documents included peer-reviewed journal articles, review articles, intervention studies, qualitative studies, cross-sectional studies, protocols, and evidence syntheses with sufficient methodological information. Records were also required to contain complete bibliographic information, including title, abstract, author metadata, source title, DOI or traceable publisher information, and sufficient content for thematic coding. Articles were excluded when they only mentioned health incidentally, lacked substantive connection to promotion, behavior, education, literacy, intervention, or prevention, consisted of non-academic materials, had incomplete metadata, were outside the 2021–2026 publication period, or were not available in English.

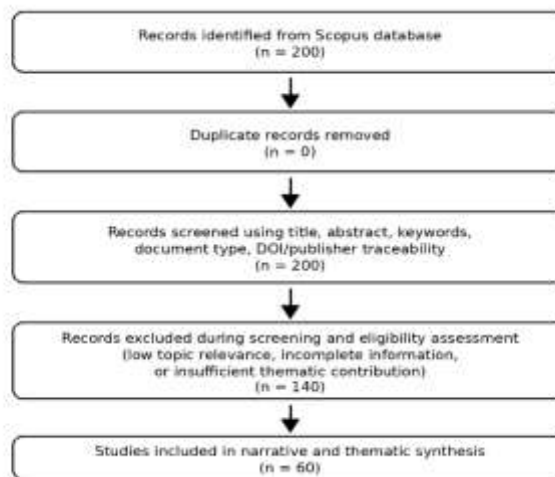


Figure 1. Simplified PRISMA flow diagram of article selection

Table 1. Inclusion and exclusion criteria

Screening domain	Inclusion criteria	Exclusion criteria
Topic relevance	Studies addressing health promotion, health education, health literacy, behavior change, lifestyle behavior, preventive behavior, self	Studies mentioning health only incidentally or not addressing promotion, behavior, education, literacy, intervention, or prevention.

	management, digital health promotion, or equity-related health promotion.	
Document type	Peer reviewed journal articles, reviews, intervention studies, qualitative studies, cross sectional studies, protocols, and evidence syntheses with sufficient methodological information.	Letters, notes, editorials, non academic materials, and records without sufficient scholarly structure.
Information completeness	Records with title, abstract, author metadata, source title, DOI or traceable publisher information, and sufficient information for thematic coding.	Records without abstracts, incomplete bibliographic information, or insufficient information for screening and extraction.
Language and period	English-language publications from 2021 to 2026.	Publications outside the defined period or not available in English.
Final inclusion logic	Studies contributing evidence to at least one of the five synthesis themes and to the equity-oriented behavior-change framework.	Studies below the priority threshold or insufficiently connected to the review objectives.

#### **Data collection technique**

Data were collected through systematic searching, screening, and extraction of Scopus-indexed records. Because this review was conducted by a single author, the screening process was managed through a structured single-reviewer audit trail. Screening decisions were checked against operational criteria covering topic relevance, document type, abstract availability, DOI or publisher traceability, and contribution to at least one synthesis theme. Although dual independent screening was not conducted, the use of a transparent audit trail helped reduce arbitrariness and made the review process more reproducible.

#### **Data analysis technique**

Data were analyzed using narrative and thematic synthesis. Narrative synthesis was used to explain patterns, similarities, and differences across heterogeneous study designs, including randomized trials, quasi-experimental studies, qualitative studies, cross-sectional studies, protocols, digital intervention studies, and evidence syntheses. Thematic synthesis was used to classify the reviewed articles into major themes and to interpret how health education, health literacy, digital engagement, behavioral mechanisms, implementation conditions, and equity considerations contributed to sustainable behavior change (Campbell et al., 2020; Thomas & Harden, 2008).

Methodological quality was assessed descriptively using an MMAT-informed appraisal approach because the corpus contained mixed study designs (Hong et al., 2018). The appraisal considered the clarity of research questions, appropriateness of study design, adequacy of sample or data source, transparency of data collection and analysis, relevance of outcome indicators, and limitations affecting inference. The appraisal was not used to exclude studies; instead, it was used to interpret the strength and limitations of evidence within each theme. The meaning of the data was interpreted in relation to the study objectives, namely to identify research trends, dominant themes, methodological patterns, research gaps, and equity-oriented pathways for sustainable behavior change.

## **RESULTS AND DISCUSSION**

The thematic synthesis identified five dominant themes across the 60 reviewed articles. The most prominent theme was school-, adolescent-, and university-based interventions, comprising 18 articles or 30.0% of the corpus. The second theme was lifestyle intervention and non communicable disease prevention or management, with 17 articles or 28.3%. Digital health, mHealth, telehealth, and social

media formed the third theme, with 10 articles or 16.7%. The remaining themes were health literacy, knowledge-attitude-practice, risk communication, and preventive education with 9 articles or 15.0%, and community health promotion, equity, and contextual determinants with 6 articles or 10.0%.

This distribution shows that educational and lifestyle settings dominate the evidence base, while equity and community context remain less frequently foregrounded despite their theoretical importance. The finding is important because sustainable behavior change cannot be fully explained by individual education when access, opportunity, digital capability, gender norms, service availability, and social support shape whether healthy practices are feasible.

Table 2. Dominant themes and synthesis of reviewed articles (n = 60)

Main theme	Articles	Dominant subthemes	Main synthesis finding	Representative studies
School, adolescent, and university based interventions	18 (30.0%)	Physical activity, nutrition education, obesity prevention, adolescent risk behavior, school implementation	Educational settings are strategic for early behavior formation when interventions are interactive, theory informed, family linked, and institutionally feasible.	Gourlan et al. (2026); Aldukair et al. (2026); Schaefers et al. (2026); Wagner et al. (2026)
Lifestyle intervention and NCD prevention or management	17 (28.3%)	Diet, physical activity, obesity, prediabetes, cancer prevention, fruit and vegetable intake, lifestyle counseling	Lifestyle interventions are stronger when they combine education, individualized support, self management, risk communication, and maintenance planning.	Persson et al. (2026); Holm et al. (2026); de Carvalho & Lopes (2026); Jonsson et al. (2026)
Digital health, mHealth, telehealth, and social media	10 (16.7%)	Social media campaigns, digital tools, mobile intervention inequality, adolescent digital health tools	Digital tools can expand reach, but meaningful engagement, retention, digital literacy, and subgroup benefit distribution are more important than exposure alone.	Cattaneo et al. (2026); Wagner et al. (2026); Kilintzis et al. (2026); Jiang et al. (2026); König et al. (2026)
Health literacy, KAP, risk communication, and preventive education	9 (15.0%)	Health literacy, cancer prevention knowledge, risk perception, cardiovascular knowledge, preventive education	Knowledge and literacy are necessary but insufficient unless linked to perceived relevance, self efficacy, trust, and practical action.	Koelmans et al. (2026); Coker et al. (2026); Jonsson et al. (2026); Kilintzis et al. (2026)
Community health promotion, equity, and contextual determinants	6 (10.0%)	Limited health literacy, older adults, gendered settings, social support, digital inequality, community co-creation	Contextual determinants shape whether individuals can adopt, maintain, and benefit from health promoting behavior.	Hameed et al. (2026); Koelmans et al. (2026); Aldukair et al. (2026); Jiang et al. (2026); König et al. (2026)

**Discussion**

**School, Adolescent, and University Based Health Promotion**

The dominance of school, adolescent, and university based studies indicates that educational institutions remain strategic environments for shaping long term health behavior. Gourlan et al. (2026) evaluated a two school year cluster randomized intervention grounded in the Theory of Planned Behavior and found improvements in the proportion of children meeting physical activity guidelines.

However, the expected psychosocial mediators did not fully explain the intervention effect, suggesting that school based behavior change cannot be reduced to attitudes, subjective norms, and perceived control alone.

Aldukair et al. (2026) provides a complementary perspective through the COM-B model. Their qualitative study in female-only high schools in Riyadh found that obesity prevention was shaped by capability, opportunity, and motivation, with opportunity related barriers such as weather, curriculum limitations, staff capacity, and built school environments playing a prominent role. Schaefer et al. (2026) further strengthens the implementation perspective by combining student health outcomes with implementation outcomes such as acceptability, appropriateness, feasibility, and delivery strategy. These studies indicate that school based health promotion is strongest when classroom education is reinforced by family routines, school policy, teacher capacity, peer norms, and safe opportunities for activity.

### **Lifestyle Intervention and NCD Prevention or Management**

The second major theme concerns lifestyle intervention and non-communicable disease prevention or management. This theme reflects the strong connection between health promotion and chronic disease prevention through diet, physical activity, obesity management, screening behavior, cancer prevention, and self management. Persson et al. (2026) proposed an individualized lifestyle intervention for adults with overweight and obesity, while Holm et al. (2026) developed a complex digital lifestyle intervention for individuals with prediabetes using the Medical Research Council framework.

The central weakness of this theme is that many studies remain limited by protocol status, short follow up, or self reported outcomes. Development studies and protocols are valuable because they make intervention logic transparent, but they do not yet provide definitive evidence of long term maintenance. Future studies should therefore prioritize objective behavioral measurement, 6 to 12 month follow up, maintenance indicators, and mediation analyses that clarify whether changes in motivation, self efficacy, social support, and perceived risk explain sustained change.

### **Digital Health Promotion, Engagement, and Equity**

Digital health promotion emerged as a rapidly expanding theme. Cattaneo et al. (2026) found that a social media campaign targeting parents and carers reached substantially more people than a print based communication campaign. However, reach does not prove behavior change. Wagner et al. (2026) offers a more behaviorally meaningful indicator by distinguishing awareness from engagement, showing that digital engagement was more consistently associated with positive receptivity, beliefs, intentions, and behaviors than campaign awareness alone.

Digital interventions also raise important equity questions. Jiang et al. (2026) and König et al. (2026) showed that digital health interventions may produce unequal uptake and engagement across social groups. This creates a digital equity paradox: digital platforms can expand scale and accessibility, but they can also reproduce inequality when people with lower digital literacy, lower socioeconomic resources, older age, limited connectivity, or lower trust are less likely to participate or remain engaged. Digital health promotion should therefore measure subgroup uptake, digital literacy, retention, and distribution of benefit rather than reporting average reach only.

### **Health Literacy, Risk Communication, and the Knowledge Behavior Gap**

Health literacy, risk communication, and preventive education remain foundational to health promotion, but the reviewed evidence shows that their relationship with behavior is not linear. Koelmans et al. (2026) found that a community based and co created health literacy intervention was valued because it combined personal coaching, peer interaction, acknowledgment, and tailored support. This reframes health literacy as a relational and contextual resource rather than a purely individual cognitive capacity.

Coker et al. (2026) and Jonsson et al. (2026) both illustrate the limits of knowledge-centered models. Information must be translated into perceived relevance, self efficacy, decision making capability, and action competence before it can support behavior change. KAP oriented evidence is useful for diagnosing knowledge gaps, but future research should combine literacy assessment with longitudinal follow up, mediation analysis, and mixed method process evaluation to clarify how knowledge becomes motivation, how motivation becomes action, and how action becomes routine.

**Community Health Promotion, Equity, and Contextual Determinants**

The smallest theme in the reviewed corpus concerns community health promotion, equity, and contextual determinants, yet this theme is conceptually central to the article. Hameed et al. (2026) showed that physical activity among older adults in Karachi was shaped by psychological barriers, social support, safety concerns, gender norms, infrastructure, and community resources. This demonstrates that health behavior is not simply an individual choice; it is a situated practice shaped by whether people have safe, culturally acceptable, socially supported, and accessible opportunities to act.

Equity should therefore be treated as more than a demographic background variable. It should become a design principle, an implementation criterion, and an outcome dimension. Health promotion models that are effective on average but inaccessible to disadvantaged groups cannot be considered fully successful. Future studies should use equity sensitive recruitment, community co-design, stratified analysis, and distributional outcome reporting to evaluate not only whether interventions work, but whether they work fairly.

**Cross Thematic Gaps and Future Directions**

Table 3. Cross-thematic research gaps and future directions

Research gap	Evidence pattern	Why it matters	Future direction
Knowledge behavior gap	Awareness or literacy may improve without sustained behavioral practice.	Education alone may overestimate intervention impact.	Test pathways linking knowledge, risk perception, self efficacy, motivation, social support, and objective behavior.
Weak mechanism testing	Theories such as TPB and COM-B are used, but mediators are not always tested.	Interventions are difficult to adapt or replicate when mechanisms are unclear.	Use mediation analysis, process evaluation, and mixed-method designs.
Limited sustainability evidence	Many studies use short follow up, pilots, protocols, or immediate post intervention outcomes.	Short term change does not prove habit formation or maintenance.	Include 6 to 12 month follow up, post intervention assessment, and maintenance indicators.
Digital reach versus digital equity	Digital tools increase reach but may exclude groups with low access, literacy, trust, or engagement capacity.	Digital innovation can reproduce inequality.	Measure digital literacy, access, subgroup effects, retention, and benefit distribution.
Equity not consistently operationalized	Equity is often mentioned but not used as a core design or outcome criterion.	Average effectiveness may hide unequal benefits.	Use equity sensitive recruitment, stratified analysis, and participatory co-design.

**Implications for Indonesian Public Health Promotion**

The findings have practical relevance for Indonesian health promotion programs. Community based services such as puskesmas, posyandu, school health programs, and digital public health campaigns need to combine education with enabling support. Messages about healthy lifestyle, screening, nutrition, physical activity, reproductive health, and disease prevention should be linked to accessible services, family involvement, school environments, community leaders, culturally appropriate communication, and digital inclusion strategies.

Equity oriented health promotion is particularly important in contexts where digital access, health literacy, income, geography, gender norms, and service availability vary across communities. Indonesian programs should therefore evaluate not only the number of people reached by a campaign but also who can understand, access, use, and sustain the recommended practice. Subgroup analysis by

age, gender, rural urban location, socioeconomic position, and digital access can help prevent the expansion of average program coverage from masking unequal benefit distribution.

## CONCLUSION

This literature review demonstrates that contemporary health promotion research is moving beyond a narrow reliance on health education toward more complex, theory informed, digitally mediated, context sensitive, and equity oriented approaches to behavior change. Across the reviewed studies, behavior change was shaped not only by knowledge and awareness but also by motivation, self efficacy, risk perception, social support, digital engagement, institutional readiness, community infrastructure, and enabling environments.

The main contribution of this review is the proposed equity oriented pathway model. The model positions health education, health literacy, and risk communication as foundational inputs that must activate behavioral mechanisms, be strengthened by meaningful engagement, and be supported by enabling contexts before sustainable behavior change can occur. Equity functions as a cross cutting evaluative principle because unequal access, digital exclusion, weak community infrastructure, and culturally mismatched communication can interrupt the pathway at any stage.

Future health promotion research should prioritize longitudinal evaluation, objective behavioral outcomes, mechanism testing, subgroup analysis, and participatory co design. Health promotion programs should be evaluated not only by average behavioral outcomes but also by the fairness, accessibility, and sustainability of behavior-change opportunities across social groups.

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