



MASS MEDIA REVIEW (ISSN: 1597-4200)

AN INTERNATIONAL JOURNAL OF DEPARTMENT OF MASS COMMUNICATION
CHUKWUEMEKA ODUMEGWU OJUKWU UNIVERSITY
IGBARIAM ANAMBRA STATE, NIGERIA.



Volume: 1 Issue 6, (2026) <https://www.massmediareview.net/>

Research Article

Behavioural Change Communication Theories and Cardiovascular Health Promotion in Nigeria: A Review of the Theory of Planned Behaviour, the Transtheoretical Model, and the Ecological Model of Health Behaviour

Nkechi Anthonia Umuze, PhD, Venatus Nosike Agbanu, PhD & Gideon Uchechukwu Nwafor, PhD

About Article

Article History

Submission: July 28, 2026

Acceptance: August 1, 2026

Publication: August 5, 2026

Keywords:

Behavioural Change Communication, Library Research, Theory of Planned Behaviour, Transtheoretical Model, Ecological Model of Health Behaviour, Cardiovascular Health, Nigeria

About the Authors

Nkechi Anthonia Umuze, PhD

Department of Mass Communication
Delta State Polytechnic, Ogwashi-Ukwu

Email: umuzenkechi2019@gmail.com

Venatus Nosike Agbanu, PhD

Department of Mass Communication
Chukwuemeka Odumegwu Ojukwu University, Igbaram

Email: vn.agbanu@coou.edu.ng

&

Gideon Uchechukwu Nwafor, PhD

Department of Mass Communication
Chukwuemeka Odumegwu Ojukwu University

Email: gu.nwafor@coou.edu.ng

ABSTRACT

Cardiovascular diseases (CVDs) are a leading cause of morbidity and mortality in Nigeria, and behavioural change communication (BCC) has become a central strategy for addressing the modifiable lifestyle risk factors that underlie this burden. Yet the theoretical basis of BCC interventions for cardiovascular health is often applied without systematic comparative scrutiny of the assumptions, strengths, and limitations of the frameworks in use. This paper undertakes a library-based (desk) review synthesising secondary literature — peer-reviewed journal articles, systematic reviews, institutional reports, and foundational texts — on three theories commonly applied in this domain: the Theory of Planned Behaviour (TPB), the Transtheoretical Model (TTM), and the Ecological Model of Health Behaviour (EMHB). Using thematic documentary analysis rather than primary data collection, the review traces the origins, core constructs, empirical applications, and critiques of each theory, with particular attention to their use in Nigerian and broader African health communication research. The review finds that TPB best explains the cognitive mechanics linking message exposure to behavioural intention, TTM best explains the heterogeneous pace and readiness of change across a population, and EMHB best explains the structural and environmental barriers that persist despite individual-level attitude and intention change. A comparative analytical matrix and an integrated conceptual model are presented to guide the design of theoretically coherent, multi-level BCC interventions for cardiovascular health promotion among vulnerable Nigerian populations such as informal-sector traders. The review concludes that no single theory is sufficient in isolation and recommends deliberate theoretical triangulation in future BCC programme design and evaluation.



INTRODUCTION

Cardiovascular diseases (CVDs) remain a global health challenge, accounting for a substantial share of the disease burden faced by populations and health systems worldwide (World Health Organization, 2021; Roth et al., 2023). In Nigeria, the rising prevalence of hypertension, obesity, diabetes, and tobacco use has positioned CVDs as a central concern for public health communication, alongside longer-established priorities such as maternal health and infectious disease control. Behavioural change communication (BCC) — the strategic, audience-segmented use of tailored messaging and multiple communication channels to shift knowledge, attitudes, and practice — has consequently become one of the principal tools through which health authorities, non-governmental organisations, and community bodies seek to reduce cardiovascular risk at the population level (Ezeaka et al., 2020).

BCC interventions, however, are rarely theory-free. Nearly every documented outreach or health-education campaign implicitly or explicitly rests on assumptions about how individuals come to know, want, and act upon health information. Three theoretical frameworks recur with particular frequency across the cardiovascular and broader health-behaviour literature: the Theory of Planned Behaviour (Ajzen, 1991), the Transtheoretical Model (Prochaska & DiClemente, 2019), and the Ecological Model of Health Behaviour (McLeroy et al., 1988; Sallis et al., 2021). Each offers a distinct lens — respectively, cognitive-attitudinal, stage-developmental, and multilevel-structural — for

understanding why some BCC interventions succeed in shifting behaviour while others fail to achieve lasting change. Despite the ubiquity of these three frameworks in published cardiovascular BCC research, relatively few Nigerian studies undertake a deliberate, comparative theoretical synthesis; most apply a single theory to a single empirical setting. This creates a fragmented evidence base in which the comparative strengths, blind spots, and complementarities of the three frameworks are rarely made explicit. This paper addresses that gap through a purely library-based review: rather than collecting new primary data, it systematically synthesises existing secondary literature — published empirical studies, systematic reviews, and foundational theoretical texts — to construct a comparative and integrative account of how TPB, TTM, and EMHB variously illuminate the dynamics of cardiovascular health BCC, with particular reference to the Nigerian context.

Objectives of the Review

This library-based review sought to: (1) trace the theoretical origins and core constructs of the TPB, TTM, and EMHB; (2) synthesise documented empirical applications of each theory to health behaviour generally and cardiovascular health specifically, with emphasis on Nigerian and African evidence; (3) critically compare the three frameworks' strengths, limitations, and contextual applicability; and (4) propose an integrated conceptual model that draws on the complementary strengths of all three theories for the design of cardiovascular health BCC interventions in Nigeria.

Methodology: Library (Desk) Research Design

Research Design

This review adopted a library-based (desk) research design, which relies exclusively on existing, previously published secondary sources rather than the collection of new primary data. The approach is appropriate for developing a comprehensive theoretical and thematic synthesis, systematically identifying convergences, divergences, and gaps across a defined literature base. Unlike survey or experimental designs, library research proceeds through documentary analysis: the systematic reading, classification, comparison, and thematic synthesis of published material.

Sources of Literature

Literature for this review was drawn from a diverse range of academic and institutional sources. Peer-reviewed journal articles provided the primary evidentiary base, particularly those reporting empirical applications of TPB, TTM, and EMHB to health behaviour in Nigerian, African, and international settings. Foundational theoretical texts — including Ajzen's (1991) original statement of the Theory of Planned Behaviour, Prochaska and DiClemente's (2019) primer on the Transtheoretical Model, and McLeroy et al.'s (1988) and Bronfenbrenner's (1979) formative statements on ecological approaches — anchored the conceptual discussion. Institutional and governmental sources, including World Health Organization (2021) fact sheets and Centers for Disease Control and Prevention programme documentation (CDC, 2019), supplemented the academic literature with contextual and epidemiological grounding.

Selection and Analytical Procedure

Sources were selected on the basis of thematic relevance to one or more of the three focal theories, cardiovascular or related non-communicable disease behaviour, and — where available — Nigerian or African application. Priority was given to peer-reviewed empirical studies and systematic reviews over grey literature. Once assembled, sources were read and coded thematically according to: (a) the theory or theories invoked; (b) the health behaviour domain addressed; (c) the geographic and population context; (d) reported empirical findings; and (e) documented critiques or limitations. This thematic coding enabled the cross-source comparative synthesis presented in Sections 3 through 5, and the construction of the comparative matrix (Table 1) and integrated conceptual model (Figure 1) presented later in this paper. As a purely documentary method, no human respondents were involved, and no claims of statistical generalisability are made; the review's contribution lies instead in the systematic organisation and synthesis of existing theoretical and empirical knowledge.

Conceptual Review

3.1 Behavioural Change

Communication

Behavioural Change Communication (BCC) is a communication process that utilises tailored messages and media to influence knowledge, attitudes, and practices toward positive health outcomes (Ezeaka et al., 2020). Unlike generalised awareness campaigns, BCC is deliberately segmented by audience, tested for message resonance, and delivered through multiple, often overlapping channels — interpersonal

communication, mass media, and community mobilisation. BCC emerged from the recognised gap between knowledge and action in health education: information provision alone was repeatedly found insufficient to produce behaviour change absent attention to motivation, social norms, and environmental constraint (National Cancer Institute, 2020). While BCC in Nigeria has historically concentrated on infectious disease and maternal health communication, its extension to non-communicable diseases such as cardiovascular conditions reflects the country's ongoing epidemiological transition.

3.2 Cardiovascular Health and Modifiable Lifestyle Risk

Cardiovascular health encompasses the well-being of the heart and vascular system and is shaped by both non-modifiable factors (age, sex, genetic predisposition) and modifiable lifestyle factors, including diet, physical activity, tobacco use, alcohol consumption, and stress management (American Heart Association, 2023). Hypertension in particular affects a substantial proportion of the global population and is frequently described as a 'silent' risk factor because of its largely asymptomatic progression (Roth et al., 2023; Adeloye et al., 2021). Because these principal risk factors are behavioural and therefore modifiable, cardiovascular health has become one of the clearest domains in which communication-based, rather than purely clinical, intervention is theorised to yield measurable population-level benefit — provided the underlying behavioural theory guiding intervention design is sound.

Beyond the individual risk factors themselves, the reviewed literature emphasises that cardiovascular health behaviours rarely change in response to information alone. Successful lifestyle modification — whether adopting a heart-healthy diet, increasing physical activity, moderating alcohol intake, or ceasing tobacco use — depends on a combination of individual motivation, social support, and environmental enablement, which is precisely why the theoretical frameworks reviewed in this paper, each addressing a different dimension of this combination, have proliferated within the cardiovascular BCC literature rather than any single framework becoming dominant. This observation itself motivates the comparative and integrative approach taken in the remainder of this review.

4. Theoretical Review

4.1 The Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB), conceptualised by Ajzen (1991), extended the earlier Theory of Reasoned Action by adding perceived behavioural control to the original constructs of attitude and subjective norm, thereby accounting for behaviours not entirely under volitional control. TPB posits that behavioural intention — the most immediate and reliable predictor of actual behaviour — is jointly determined by (a) attitude toward the behaviour, or the degree to which a person favourably or unfavourably evaluates a given action; (b) subjective norms, or perceived social pressure to perform or not perform the behaviour; and (c) perceived behavioural control, or the person's perception of the ease or difficulty of performing the

behaviour, which also serves as a proxy for actual control.

TPB has accumulated an unusually broad empirical base across health and non-health domains. Meta-analytic work by McEachan et al. (2016) and Afsar et al. (2020) confirms that the model reliably predicts a meaningful proportion of variance in health and sustainability-related behaviour across diverse populations, though the relative predictive weight of its three constructs varies by behaviour and context. Within Nigeria, TPB has been applied to a striking range of behavioural domains beyond cardiovascular health, including academic engagement (Eze & Okafor, 2022), gym attendance and fitness intentions (Chidi & Ugo, 2021), COVID-19 vaccination intention (Chukwuma et al., 2023) and guideline compliance (Ayo & Okoro, 2022), and online learning adoption (Akinyemi & Yusuf, 2022) — a versatility that underscores its status as arguably the most portable of the three theories reviewed here.

Notwithstanding this versatility, TPB has attracted sustained critique. Conner (2021) argues that the model's rational-choice orientation underplays the role of emotion, habit, and past behaviour in shaping action, treating intention formation as a more deliberative process than it often is in practice. Critics further note that perceived behavioural control, while intended as a proxy for actual control, may diverge substantially from it — a concern with direct bearing on cardiovascular BCC among economically constrained populations, where intention to change diet or exercise may be entirely genuine yet frustrated by

resource limitations beyond the individual's control.

4.2 The Transtheoretical Model (Stages of Change)

The Transtheoretical Model (TTM), developed by James O. Prochaska and Carlo C. DiClemente, conceptualises behaviour change not as a discrete event but as a temporal process through which individuals progress across five identifiable stages: precontemplation, in which the individual is not yet considering change; contemplation, in which the need for change is recognised but action has not been committed to; preparation, in which small steps toward change begin; action, in which overt behavioural change is underway; and maintenance, in which the new behaviour is sustained and relapse is actively guarded against (Prochaska & DiClemente, 2019). The model further specifies cognitive and behavioural 'processes of change' that facilitate movement between stages, alongside constructs of decisional balance (the weighing of the pros and cons of change) and self-efficacy (confidence in one's capacity to sustain change).

TTM has been extensively applied to smoking cessation, with Smedley et al.'s (2016) systematic review confirming that stage-matched interventions significantly improve cessation outcomes relative to undifferentiated approaches. Within Nigeria, Nwachukwu et al. (2020) found that most adolescents surveyed regarding dietary behaviour occupied the contemplation stage, while Osuagwu et al.'s (2022) study of physical activity adherence among Lagos residents similarly found

participants concentrated in the preparation and action stages, suggesting readiness for targeted reinforcement. Kinnunen et al. (2021) demonstrated the model's applicability to weight-management interventions, and Dika et al. (2022) applied a culturally sensitive, TTM-based approach to cardiovascular health promotion in South Africa, reporting improved stage progression among participants.

TTM's principal limitation, frequently raised in the literature, concerns its assumption of a broadly linear progression through discrete stages, which critics argue does not adequately capture the cyclical, non-linear, and often regressive nature of real-world behaviour change, in which relapse to earlier stages is common rather than exceptional. A further critique, of particular relevance to this review, is that TTM was developed primarily within Western clinical and public-health contexts, raising questions about its unmodified applicability to different cultural settings without adaptation (Prochaska & DiClemente, 2019) — a concern that motivates the integrative, culturally attentive model proposed in Section 6.

4.3 The Ecological Model of Health Behaviour

The Ecological Model of Health Behaviour (EMHB) traces its conceptual roots to Bronfenbrenner's (1979) ecological systems theory, which described human development as shaped by nested environmental systems. McLeroy et al. (1988) adapted this logic specifically to health promotion, arguing that health behaviour is jointly determined by factors

operating at five interacting levels: the intrapersonal (individual knowledge, attitudes, and skills), the interpersonal (social support from family, peers, and community), the organisational (institutional policies and environments), the community (social networks and local norms), and the policy level (laws and regulations that support or constrain health behaviour). Sallis et al. (2021) further elaborated the model's emphasis on multilevel intervention, arguing that strategies addressing several ecological levels simultaneously tend to outperform single-level interventions.

EMHB has been widely applied across diverse health domains. Glanz et al. (2016) and Robinson et al. (2018) documented its application to physical activity promotion and obesity prevention respectively through systematic review, while Evans et al. (2020) applied the framework to mental health promotion in Australia, finding that programmes addressing individual and community-level factors simultaneously produced superior outcomes to individually focused interventions. In African contexts, Ndung'u and Wamwangi (2022) applied the model to school-based vegetable-intake interventions in Kenya, addressing both organisational (school) and interpersonal (family) levels concurrently, while Mwesigwa et al. (2022) used the framework to design community-based substance-abuse prevention programming in Uganda. Moyo and Mahlangu (2022) demonstrated the model's relevance to workplace-based wellness interventions in South Africa, and Mensah and Addo (2023) applied an ecological lens to national tobacco-control

policy analysis in Ghana, illustrating the model's applicability from the individual workplace to the level of national legislation.

The most consistently cited limitation of EMHB concerns the complexity of designing, implementing, and — especially — evaluating genuinely multilevel interventions, which require coordination across sectors and stakeholders that single-level programmes do not (Sallis et al., 2021). Measurement difficulty compounds this challenge: isolating the independent contribution of, say, a policy-level change from a simultaneous community-level intervention is analytically difficult, which may partly explain why much published cardiovascular BCC literature, even when nominally invoking an ecological framework, in practice concentrates empirical measurement at the intrapersonal or interpersonal level alone.

4.4 Nigerian and African Contextual Applications to Cardiovascular Health Communication

Beyond the theory-specific applications reviewed above, a distinct body of Nigerian and African literature addresses the cultural conditions under which any of the three theories must operate if BCC interventions are to succeed. Okeke et al. (2021) found that cultural tailoring significantly improved the effectiveness of BCC interventions in Nigeria, while Duru et al. (2022) documented specific cultural barriers — including fatalistic beliefs about cardiovascular risk and reliance on traditional remedies — that constrain the translation of awareness into adherence regardless of the theoretical framework

applied. Ogunniyi et al. (2024) similarly emphasised that cultural considerations are not peripheral but central to designing effective cardiovascular disease prevention communication in the Nigerian context. Sanni and Nwankwo (2023) further demonstrated that careful audience segmentation — a communicative technique compatible with all three theories reviewed here — substantially improved outcomes in rural Nigerian health campaigns. Taken together, this literature suggests that theoretical soundness alone is insufficient: TPB, TTM, and EMHB each require deliberate cultural adaptation to function as intended within the Nigerian context.

4.5 Methodological Approaches to Evaluating These Theories

The literature synthesised above also reveals a discernible pattern in how each theory is typically operationalised and evaluated methodologically. TPB studies are overwhelmingly quantitative and cross-sectional, using validated Likert-scale instruments to measure attitude, subjective norm, perceived behavioural control, and intention, with structural equation modelling or regression used to test the predictive relationships among constructs (McEachan et al., 2016; Afsar et al., 2020). This methodological convention makes TPB comparatively easy to test with a single-wave survey, which likely accounts for its popularity among Nigerian graduate and journal-length studies operating under resource and time constraints. TTM studies, by contrast, more frequently require either longitudinal designs capable of tracking stage transitions over time, or cross-sectional designs that classify a sample into

discrete stages at a single point in time using validated staging algorithms (Nwachukwu et al., 2020; Osuagwu et al., 2022). Where feasible, randomised designs comparing stage-matched to generic interventions, as in Smedley et al.'s (2016) systematic review of smoking-cessation programming, provide the strongest evidence for the model's central claim that tailoring intervention content to stage improves outcomes.

EMHB studies present the greatest methodological challenge of the three, since a genuinely multilevel evaluation requires data collection and, ideally, intervention at more than one ecological level simultaneously — a requirement that few single studies fully satisfy. Consequently, much published EMHB-framed research, including several studies reviewed in Section 4.3, in practice measures outcomes at only one or two levels (typically intrapersonal and interpersonal) while invoking the broader ecological framework primarily as an interpretive lens rather than a fully operationalised multilevel design. This observed gap between the model's theoretical ambition and its typical empirical operationalisation is itself an important finding of this review, with direct implications for future cardiovascular BCC evaluation design in Nigeria.

Comparable patterns are evident beyond Nigeria's borders. Ghanaian tobacco-control research by Mensah and Addo (2023) and Ugandan substance-abuse prevention work by Mwesigwa et al. (2022) both demonstrate that policy- and community-level ecological interventions can succeed even where

individual-level attitudinal change, the traditional preserve of TPB, is not the primary lever employed. Conversely, South African fitness- and wellness-related TPB and TTM applications, such as those of Dika et al. (2022) and Moyo and Mahlangu (2022), suggest that individually and organisationally focused interventions can each independently produce measurable gains, reinforcing this review's central contention that the three theories address genuinely distinct and non-substitutable dimensions of the behaviour-change process rather than competing for explanatory primacy over the same dimension.

5. Comparative Analysis of the Three Theories

Table 1 synthesises the preceding review into a comparative analytical matrix, juxtaposing the three theories across their originators, level of analysis, core constructs, principal strengths, key limitations, and specific relevance to cardiovascular BCC in the Nigerian context. This synthesis makes explicit what is often left implicit in single-theory studies: that the three frameworks are not competing alternatives but operate at complementary levels of explanation — cognitive-individual (TPB), temporal-developmental (TTM), and structural-environmental (EMHB).

Table 1

Comparative Matrix of the Theory of Planned Behaviour, Transtheoretical Model, and Ecological Model of Health Behaviour

Dimension	Theory of Planned Behaviour	Transtheoretical Model	Ecological Model of Health Behaviour
Originators	Ajzen (1991)	Prochaska & DiClemente	McLeroy et al. (1988), building on Bronfenbrenner (1979)
Level of analysis	Individual cognitive	Individual, temporal/stage-based	Multilevel (individual to policy)
Core constructs	Attitude, subjective norm, perceived behavioural control, intention	Precontemplation, contemplation, preparation, action, maintenance	Intrapersonal, interpersonal, organisational, community, policy factors
Primary strength	Explains the psychological mechanics linking message exposure to intention	Explains readiness and timing of change; supports message tailoring	Explains structural and environmental determinants beyond the individual
Key limitation	Underplays emotion, habit, and past behaviour	Assumes linear progression; may not fit non-Western contexts	Complex to operationalise and measure across levels
Relevance to CVD BCC in Nigeria	Explains why culturally framed outreach messages shift trader attitudes and norms	Explains why traders show heterogeneous adherence despite uniform outreach exposure	Explains why structural barriers (cost, time, access) persist despite awareness gains

To ground this comparative matrix in the empirical record reviewed in Section 4, Table 2 summarises a purposively selected set of studies illustrating each theory's application, spanning Nigeria and comparable African settings. The table is illustrative rather than exhaustive, intended to demonstrate the range of contexts — from gym attendance and

vaccination intention to school nutrition and workplace wellness — across which each framework has been applied, and to show that the theory-specific patterns identified in Section 4 recur consistently across independent studies rather than being artefacts of any single piece of research.

Table 2*Illustrative Summary of Reviewed Empirical Studies by Theoretical Framework*

Study	Theory	Context	Key Finding
Chidi & Ugo (2021)	TPB	Gym attendance, Nigeria	Attitude and subjective norm jointly predicted exercise intention
Chukwuma et al. (2023)	TPB	COVID-19 vaccination, Nigeria	Perceived behavioural control was the strongest predictor of intention
Nwachukwu et al. (2020)	TTM	Adolescent diet, Enugu	Majority of participants clustered in the contemplation stage
Osuagwu et al. (2022)	TTM	Physical activity, Lagos	Participants concentrated in preparation/action stages, suggesting readiness for reinforcement
Smedley et al. (2016)	TTM	Smoking cessation, systematic review	Stage-matched interventions outperformed generic ones
Ndung'u & Wamwangi (2022)	EMHB	School nutrition, Kenya	Combined organisational and interpersonal-level action improved outcomes
Moyo & Mahlangu (2022)	EMHB	Workplace wellness, South Africa	Organisational-level policy change improved employee health behaviour
Duru et al. (2022)	Cross-cutting	Cultural barriers, Nigeria	Fatalistic beliefs constrained adherence regardless of theoretical framing

A close reading of the comparative matrix reveals a consistent pattern across the empirical literature reviewed: interventions and studies drawing on TPB alone tend to explain why cardiovascular BCC messaging changes attitudes and stated intentions but are less able to explain why intention frequently fails to translate into sustained behaviour. Studies drawing on TTM alone are well equipped to describe the pace and heterogeneity of change across a population but offer comparatively little purchase on why certain populations remain disproportionately stuck at earlier stages. Studies drawing on EMHB alone illuminate

the structural and environmental barriers to change but, in isolation, offer less specific guidance on the message design and framing questions that are TPB's particular strength. This complementarity, rather than any single theory's superiority, is the central analytical finding of this review.

6. Synthesis: Towards an Integrated Model for Cardiovascular Health BCC

Building on the comparative synthesis above, this review proposes an integrated conceptual pathway linking the three theories into a single explanatory model of how community-based cardiovascular BCC

translates into sustained lifestyle change (Figure 1). In this model, outreach communication first functions as a trigger for awareness creation, corresponding to the knowledge and attitude components addressed jointly by TPB and the earlier stages of TTM. Awareness, where successful, gives rise to behavioural intention, a stage in which TPB's three constructs — attitude, subjective norm, and perceived behavioural control —

operate most directly to determine whether intention forms at all. Where intention is formed, the individual moves into adoption of lifestyle change, corresponding to TTM's action stage, before progressing — contingent on the presence of enabling structural conditions described by EMHB — into sustainability of change, TTM's maintenance stage.

Figure 1: Integrated Conceptual Pathway Linking BCC Theories to Cardiovascular Health Lifestyle Change (Synthesised from Reviewed Literature)

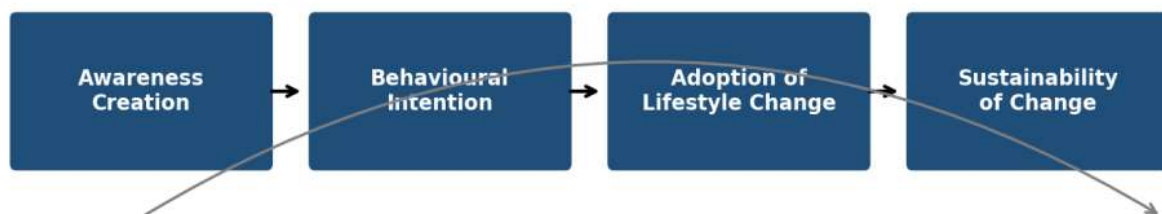


Figure 1. Integrated conceptual pathway linking BCC theories to cardiovascular health lifestyle change, synthesised from the reviewed literature.

Two features of this integrated pathway merit emphasis. First, the model incorporates an explicit feedback loop: because TTM recognises that relapse to earlier stages is common rather than exceptional, sustained BCC programming must include monitoring and re-engagement mechanisms rather than treating awareness creation as a one-time intervention (Prochaska & DiClemente, 2019). Second, and consistent with the ecological literature reviewed in Section 4.3, the model treats sustainability of change as contingent on enabling environmental conditions — affordability, access, and supportive policy — that lie beyond any individual trader's or communicator's control, and that must therefore be addressed through complementary organisational, community,

and policy-level action rather than communication alone (Sallis et al., 2021; Moyo & Mahlangu, 2022).

This integrated reading is consistent with, and extends, calls elsewhere in the literature for theoretical triangulation in health communication design. Rather than treating TPB, TTM, and EMHB as rival explanatory frameworks to be tested against one another, this review's synthesis suggests they are better understood as addressing sequential and structurally distinct moments within a single behaviour-change process — a reading with direct implications for how future cardiovascular BCC programmes in Nigeria should be designed, sequenced, and evaluated.

6.1 Implications for Practice

For organisations designing cardiovascular BCC programmes in Nigeria — including foundations, ministries of health, and non-governmental bodies — the integrated pathway proposed above carries several practical implications. At the awareness-creation stage, message design should draw explicitly on TPB's constructs, ensuring that messaging simultaneously frames healthy behaviour favourably (attitude), invokes credible and locally trusted messengers to shift perceived social norms (subjective norm), and provides concrete, low-cost means of acting on the message (perceived behavioural control). Programme monitoring should incorporate simple TTM-based staging instruments to identify what proportion of a target population sits in each stage of change, allowing outreach content to be differentiated rather than delivered uniformly to audiences at markedly different points of readiness.

At the sustainability stage, the review's synthesis indicates that communication-only interventions are structurally limited: without complementary organisational and community-level action — addressing, for example, the affordability and availability of healthy food options, or the provision of low-cost screening within accessible community locations — even successful awareness and intention-formation efforts documented by TPB-oriented evaluation are unlikely to translate into durable behaviour change. This implies that cardiovascular BCC programming is most likely to succeed when explicitly co-designed with actors capable of addressing EMHB's organisational, community, and policy levels, rather than being conceived and evaluated purely as a communication intervention in isolation.

7. Gaps in the Literature and Directions for Future Research

This review identifies several gaps warranting further scholarly attention. First, despite the individual popularity of all three theories in Nigerian health-behaviour research, genuinely integrated, multi-theory studies remain scarce; most published work applies a single framework to a single setting, limiting the field's capacity to build cumulative, comparative knowledge. Second, published EMHB applications in the Nigerian cardiovascular context rarely operationalise more than two of the model's five ecological levels simultaneously, reflecting the measurement difficulty noted in Section 4.3 and suggesting a need for methodological innovation in multilevel intervention evaluation. Third, while TTM's Western origins are widely acknowledged as a limitation, few Nigerian studies have undertaken the systematic cultural adaptation of stage definitions and processes of change that this limitation implies is necessary. Finally, comparative and integrative theoretical work of the kind attempted in this review remains rare relative to the volume of single-theory empirical studies, suggesting scope for further desk-based synthesis as the Nigerian cardiovascular BCC evidence base continues to expand.

7.1 Limitations of This Review

As a library-based synthesis, this review is itself subject to limitations inherent to the desk-research method. First, the review's conclusions are only as comprehensive as the secondary sources available for synthesis; where Nigerian empirical literature on a given theory or sub-theme is sparse, the review necessarily draws more heavily on international evidence, whose direct

transferability to the Nigerian trader context cannot be assumed without caveat. Second, because the review relies on published findings rather than re-analysed primary data, it cannot independently verify the methodological rigour of every source synthesised, though priority was given throughout to peer-reviewed and systematic-review sources precisely to mitigate this concern. Third, the comparative matrix and integrated model presented in Sections 5 and 6, while grounded in the reviewed literature, represent this review's own synthetic interpretation and should be treated as a conceptual proposal for future testing rather than an empirically validated model in its own right. These limitations do not undermine the review's central contribution — a systematic, comparative organisation of an otherwise fragmented theoretical literature — but they do define the boundaries within which its conclusions should be read and applied.

8. Conclusion

This library-based review has synthesised existing secondary literature on three theoretical frameworks widely applied to behavioural change communication for cardiovascular health: the Theory of Planned Behaviour, the Transtheoretical Model, and the Ecological Model of Health Behaviour. The review finds that each theory illuminates a distinct and necessary dimension of the behaviour-change process — cognitive-attitudinal, temporal-developmental, and structural-environmental, respectively — and that none is sufficient in isolation to explain the full trajectory from health message exposure to sustained lifestyle adherence. Drawing on this synthesis, the review proposes an integrated conceptual pathway that positions the three theories as sequential and complementary rather than competing,

and identifies specific gaps — particularly the scarcity of genuinely multi-theory and multilevel Nigerian studies — that future empirical and desk-based research should address. For scholars, programme designers, and health communicators working on cardiovascular disease prevention in Nigeria and comparable contexts, the review's central recommendation is deliberate theoretical triangulation: BCC interventions designed with explicit attention to attitudinal, developmental, and structural dimensions simultaneously are, on the weight of the reviewed evidence, more likely to achieve sustained population-level behaviour change than interventions grounded in any single theoretical frame.

References

- Adeloye, D., Basquill, C., & Aderemi, A. V. (2021). Estimating the prevalence of hypertension in Nigeria: A systematic review and meta-analysis. *Journal of Hypertension*, 39(4), 1546-1554. <https://doi.org/10.1097/HJH.00000000000002761>
- Afsar, A., Khedmatgozar, H. R., & Dabbagh, R. (2020). A meta-analysis of the Theory of Planned Behavior in predicting sustainable behaviors. *Environmental Science and Pollution Research*, 27(10), 10542-10558.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Akinyemi, B., & Yusuf, A. (2022). Predicting online learning adoption during COVID-19: The role of attitudes and perceived control among Nigerian students. *Education and Information Technologies*, 27(6), 7055-7067.
- American Heart Association. (2023). What is

- cardiovascular health?
<https://www.heart.org/en/health-topics/cardiovascular-health>
- Ayo, B., & Okoro, U. (2022). Compliance with COVID-19 health guidelines in Nigeria: A theory of planned behavior perspective. *African Journal of Health Psychology*, 34(3), 123-134.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- CDC. (2019). *Healthy Communities Program: A comprehensive approach to building healthier communities*. Centers for Disease Control and Prevention.
- Chidi, O., & Ugo, N. (2021). Attitudes, social influences, and fitness intentions in Nigeria: A TPB analysis. *Journal of Health Promotion in Africa*, 17(2), 150-162.
- Chukwuma, C. O., Okeke, A. A., & Eze, O. (2023). COVID-19 vaccination intention among university students in Nigeria: A Theory of Planned Behavior approach. *Journal of Health Communication*, 28(1), 33-40.
- Conner, M. (2021). Critiques of the theory of planned behavior and the rational choice model. *Social and Behavioral Sciences Review*, 29(3), 189-205.
- Dika, M. C., Houghton, R., & Wanyonyi, K. (2022). Culturally sensitive interventions to improve cardiovascular health: A Transtheoretical Model approach in South Africa. *South African Journal of Public Health*, 2(1), 50-59.
- Duru, A. F., Anikwe, E. C., & Onyema, I. (2022). Addressing cultural barriers in promoting cardiovascular health among Nigerians: A qualitative study. *BMC Public Health*, 22(1), 1-10.
<https://doi.org/10.1186/s12889-022-14458-6>
- Evans, T., Reavley, N., & Jorm, A. (2020). The role of the ecological model in mental health promotion: A systematic review. *BMC Public Health*, 20(1), 1-12.
- Eze, B., & Okafor, C. (2022). Factors influencing Nigerian students' academic engagement: A TPB approach. *African Journal of Education and Development*, 14(2), 78-89.
- Ezeaka, N. B., Ezeoke, E. B., & Nwodu, G. E. (2020). Evaluating knowledge and practice of hand washing messages among secondary school students in Anambra State. *Nnamdi Azikiwe University Journal of Communication and Media Studies*, 1(1), 1-17.
- Glanz, K., Sallis, J. F., & Frank, L. D. (2016). Ecological approaches in the promotion of physical activity: A systematic review. *American Journal of Preventive Medicine*, 50(4), 674-680.
- Kinnunen, M. L., Sarna, L., & Watson, W. (2021). The impact of stage-matched interventions on weight loss in obese adults: A Transtheoretical Model approach. *International Journal of Obesity*, 45(4), 845-854.
- McEachan, R. R., Taylor, N. J., Harrison, R., Lawton, R. J., & Gardner, P. (2016). Meta-analysis of the theory of planned behavior: The role of subjective norms in health behaviors. *Health Psychology Review*, 10(2), 206-233.
- McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, 15(4), 351-377.
- Mensah, S., & Addo, J. (2023). The impact of national health policies on tobacco control in Ghana. *Ghana Medical Journal*, 57(1), 12-21.
- Moyo, T., & Mahlangu, M. (2022). The

- effectiveness of workplace wellness programs on employee health in South Africa. *South African Journal of Occupational Health*, 19(2), 110-118.
- Mwesigwa, R., Ndyabangi, S., & Byaruhanga, A. (2022). Community-based drug prevention programs in Uganda: An ecological model approach. *Journal of Substance Abuse Prevention*, 12(2), 95-107.
- National Cancer Institute. (2020). *Theory at a glance: A guide for health promotion practice*. National Institutes of Health.
- Ndung'u, M., & Wamwangi, J. (2022). Improving vegetable intake among Kenyan schoolchildren: An ecological model approach. *Journal of Nutrition Education and Behavior*, 54(5), 399-406.
- Nwachukwu, M. A., Okafor, I. M., & Nwankwo, O. (2020). Readiness to change dietary behaviors among adolescents in Enugu State, Nigeria: An application of the Transtheoretical Model. *Journal of Nutrition and Health Sciences*, 7(2), 1-9.
- Ogunniyi, A., Ogunbanjo, A., & Ugochukwu, S. (2024). Cultural considerations in health communication: Implications for cardiovascular disease prevention in Nigeria. *African Journal of Health Communication*, 9(1), 10-20. <https://doi.org/10.4236/ajhc.2024.01002>
- Okeke, T. N., Emechebe, S. O., & Chukwuemeka, A. I. (2021). Impact of cultural tailoring on behaviour change communication interventions in Nigeria. *Journal of Health Communication*, 26(4), 253-261.
- Osuagwu, U. L., Okwuosa, C. I., & Obinna, A. (2022). Adherence to physical activity guidelines among adults in Lagos, Nigeria: A Transtheoretical Model perspective. *BMC Public Health*, 22(1), 1100.
- Prochaska, J. O., & DiClemente, C. C. (2019). The transtheoretical model of behavior change: A primer for health promotion. *Health Education & Behavior*, 46(4), 570-578.
- Robinson, T. N., Banda, J. A., Hale, L., Lu, A. S., Fleming-Milici, F., Calvert, S. L., & Wartella, E. (2018). Ecological approaches to obesity prevention: A systematic review of the literature. *International Journal of Behavioral Nutrition and Physical Activity*, 15(1), 1-12.
- Roth, G. A., Mensah, G. A., & Fuster, V. (2023). The global burden of cardiovascular diseases and risk factors: Global Burden of Disease Study 2019. *European Heart Journal*, 44(10), 946-957. <https://doi.org/10.1093/eurheartj/ehac355>
- Sallis, J. F., Owen, N., & Fisher, E. B. (2021). Ecological models of health behavior. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior: Theory, research, and practice* (pp. 5-26). Jossey-Bass.
- Sanni, A. I., & Nwankwo, C. (2023). Audience segmentation in behavior change communication: Insights from Nigeria's rural health campaigns. *Journal of Media and Communication Studies*, 15(3), 210-222.
- Smedley, B. D., Stith, A. Y., & Nelson, A. R. (2016). The effectiveness of the Transtheoretical Model in smoking cessation programs: A systematic review. *Tobacco Control*, 25(1), 83-89.
- World Health Organization. (2021). *Cardiovascular diseases (CVDs)*. <https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-cvds>