



The Nexus between Environmental Factors and Behaviour Change in the Upper East Region of Ghana: The Mediating Role of Marketing Strategies

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ABSTRACT

This study aimed to explore the mediating role of marketing strategies in the relationship between environmental factors and behavior change in healthcare utilisation. A cross-sectional survey design was conducted using a random sampling technique to select 474 healthcare workers from six Health Directorates across Municipalities and Districts in the Upper East Region of Ghana. The target population from which the sample size was determined was 1980. The theories that guided this study were the Health Belief Model and the Theory of Planned Planned Behaviour. A structured questionnaire was designed using a five-point Likert scale and administered to the respondents. The data was collected over three months from February to April. A Structural Equation Model (SEM) with AMOS was employed to analyse the data. Findings revealed that marketing strategies mediate the relationship between environmental factors and behaviour change. The predicted hypotheses were found to be positive and significant. The study highlights the importance of marketing strategies in disseminating health-related information, which influences positive behaviour change toward healthcare utilisation. The study found that marketing strategies play a crucial role in disseminating health information and promoting behaviour change. The mediating role of marketing strategies in the relationship between environmental factors and behaviour change was established. All hypotheses were confirmed, demonstrating the key role of marketing strategies in improving health outcomes through behaviour modification. It is recommended that healthcare facility managers consider incorporating marketing strategies into their strategic plans to optimise outcomes.

Keywords: Behaviour Change, Environmental Factors, Marketing Strategies, Mediation

I. INTRODUCTION

Health systems within sub-Saharan Africa face significant challenges, and the importance of prioritizing healthcare delivery has been emphasized (Akukwe, 2006). Improving health facility delivery across the divide, particularly for mothers, interventions should prioritize addressing the disparities that exist in areas such as maternal education, women's empowerment, access to healthcare services, and the rural-urban divide (Doctor et al., 2018). Despite the effectiveness of interventions in raising awareness and inspiring good intentions to adopt healthy habits, they often fail to lead to lasting changes in behavior. While people may initially adopt new habits, these changes are typically short-lived and do not become sustainable over time (Wood & Neal, 2016). The World Health Organization (WHO) acknowledges that health and well-being are crucial components of achieving the United Nations' Sustainable Development Goals (SDGs) by 2030 (Pinho, 2023). Aside from this, the Sustainable Development Goals aim to guarantee healthy lifestyles and promote well-being by encouraging healthy habits and lifestyles (Macassa, 2023). To achieve this, both developed and developing nations must prioritize healthcare delivery. For instance, a comprehensive health reform implemented in Sri Lanka aimed to provide a unified and integrated healthcare system that covers all categories of people and ensures equitable access to quality healthcare services for all citizens.

India's constitution has made it obligatory to ensure that all citizens have access to healthcare. Because of that, the state has taken the responsibility of organising and coordinating healthcare services to ensure effective delivery and availability to all citizens (Tikkanen et al., 2020). Nigeria's National Health Policy, however, has not been able to uniformly implement such policy due to factors such as politics, history, and socioeconomic conditions. That notwithstanding, there are ongoing efforts to address these disparities to improve healthcare outcomes (Anuradha & Sheriff, 2019). Ghana's attempt to develop a healthcare system dates back to 1999 when WHO led the Ministry of Health to embark on holistic experimentation of maternal and child health in the Kassena Nanakana in the Upper East region of Ghana (Awoono et al., 2013) to roll out safe healthcare services to the people.

Effective healthcare systems involve patients as the final users, and education is crucial to change public behavior towards healthcare services. Research has shown that publicly disclosing performance data may not have a significant impact on healthcare consumers' behaviour and that healthcare purchasing decisions are not influenced by

treatment outcomes. Instead, behavior change is fostered by removing out-of-pocket medical expenses and adopting health-promoting behaviors (Ansah et al., 2009; Kesavayuth et al., 2020).

In Ghana, investing in the health sector is crucial to improving citizens' health, and significant efforts have been made to enhance hospital resources and introduce a National Health Insurance Scheme. However, despite these efforts, disparities still exist, and marginalized populations continue to face barriers to accessing healthcare (Van Der Wielen et al., 2018). Social capital and cultural views also play a significant role in shaping healthcare-seeking behaviors, with people using traditional medicine due to dissatisfaction with Western medicine (Gyasi et al., 2016). Furthermore, the locus of control predicts health behaviors, including social capital and health-related habits (Kesavayuth et al., 2020).

Behavior modification is a crucial process for achieving long-lasting health practices, reducing chronic illnesses, and enhancing well-being. It involves intentional changes to one's actions, whether individual, organisational, or community-level, and is closely linked to healthcare (Barley and Lawson, 2016; Van Achterberg et al., 2011). Modest behavioral adjustments can significantly improve medical therapy outcomes, such as taking medications as prescribed and maintaining a healthy weight (Johnson and May, 2015). Environmental factors also play a significant role in shaping behavior, with both internal (organisational elements) and external (social and environmental elements) factors influencing the healthcare environment (Mosadeghrad, 2014). Understanding the impact of environmental factors on healthcare use is a critical policy concern, as academics and decision-makers seek to optimize healthcare services (Campos & Reich, 2019).

The effectiveness of behavior change programs is a topic of ongoing debate, with many conflicting opinions on the best approaches. However, it is clear that individualized interventions targeting specific behavior risk factors, particularly for vulnerable populations, have limited impact on underlying health outcomes. To achieve significant behavior transformation and promote overall well-being, a deeper understanding of human motivation and the complex interplay of social and economic environmental forces is necessary. Additionally, prioritizing health literacy as a central strategy in policy initiatives is crucial for addressing health disparities and strengthening universal healthcare coverage (Amoah & Phillips, 2018).

Healthcare marketing strategies can play a key role in influencing behavior and promoting health education. Mass media campaigns, social media, and internal marketing can all be effective tools for reaching large audiences and promoting health messages. For example, internal marketing can encourage staff to take the initiative and proactively provide care to patients, while also improving patient satisfaction and loyalty (Fortenberry & McGoldrick, 2016; Iliopoulos & Priporas, 2011). By leveraging these marketing strategies, healthcare providers can deliver tailored solutions that add value to their customers and promote overall well-being.

This study, therefore, aims to investigate the extent to which marketing strategies mediate environmental factors and behavioral change. The rest of this write-up is made up of the theoretical foundations that underpin the study, methods, results and discussions, conclusions, and recommendations.

1.1 Statement of the Problem

Despite large investments made in the health sector, access to and utilization of healthcare services continue to differ, especially for the country's poorest citizens (Boachie and Ramu, 2016). Cultural beliefs and customs that impact the decision to seek medical attention, as well as environmental elements that mold personal habits, all contribute to the worsening of this phenomenon (Gyasi et al., 2016). The relationship between demographic factors, socioeconomic status (SES), and healthcare options among older adults in sub-Saharan Africa remains poorly understood, despite the well-established link between SES and health services utilisation. Specifically, existing research has highlighted the varying healthcare utilisation patterns among married women and men, with married women being less likely to access formal and traditional healthcare (Gyasi & Phillips, 2020). Moreover, evidence suggests that SES plays a crucial role in explaining levels and types of healthcare use in countries such as Ghana (Gyasi et al., 2018). However, there is a lack of research exploring the specific associations between older adults' SES, demography, and use of different healthcare options in sub-Saharan Africa. This knowledge gap is particularly concerning given the dearth of policies or regulations supporting healthcare access, coverage, and quality in these regions, which can hinder efforts to promote health utilization and behavior change.

Furthermore, a lack of knowledge about the intricate interactions between social and economic environmental factors and behavior modification initiatives negatively impacts their efficacy (Nargler & LoRusso, 2017). It is against this backdrop that this paper seeks to explore how marketing strategies can be employed as a vehicle to disseminate health-related information that will influence behaviour change for better health outcomes.

1.2 Research Objective

The study's main objective is to examine how marketing strategies mediate the relationship between environmental factors and behaviour change toward healthcare utilization

II. LITERATURE REVIEW

2.1 Theoretical Review and Hypotheses Development

2.1.1 The Health Belief Model (HBM)

Developed in the 1950s by Andersen, the HBM was widely used to examine the link between health behaviour and the use of healthcare services (Beyera et al., 2022). These authors opine that employing an appropriate health behaviour theory and/or model as a study framework will result in identifying appropriate factors in healthcare delivery. According to the HBM, a person's desire to participate or not in health-promoting behaviour can be explained by their perceptions of the advantages and disadvantages of taking action, their self-efficacy, and their beliefs about health issues.

The model has been used extensively in research to address health-related issues. For instance, Bish et al. (2011) and Kan & Zhang, (2018) used it in their studies on the demographic and psychological aspects linked to influenza vaccination uptake. Results from their study revealed that social influence plays a major role in vaccination decisions, with individuals more likely to get vaccinated if they believe others expect them to do so. Also, the study found that people who obtain information about vaccination from official health sources are more likely to be vaccinated compared to those who rely on unofficial sources. Furthermore, the study found a strong correlation between past behaviour and vaccination intentions, with individuals who have previously been vaccinated against seasonal influenza being more likely to accept a pandemic influenza vaccine.

2.1.2 The Theory of Planned Behaviour (TPB)

Ajzen's (2020) TPB has been widely applied to predict and modify behaviour. The logic of the model posits that attitudes towards a behaviour, perceived social norms regarding that behaviour, and one's perceived ability to control the behaviour are strong predictors of an individual's intentions to perform the behaviour. Shmueli (2021) employed this theory to investigate how people's intentions to accept a future COVID-19 vaccine are influenced by their attitudes, social norms, and perceived control. The study found that several factors, including gender, education level, prior flu experience, perceived benefits of vaccination, perceived severity of the disease, cues to action, social norms, and self-efficacy, significantly influence adults' willingness to receive a COVID-19 vaccine. These traits significantly influence people's intentions to receive the vaccination.

The application of the two theories resonates well with the current study which attempts to examine how marketing strategies can be employed as a tool to influence the interaction between environmental factors and behaviour changes in the light of healthcare utilization.

2.2 Empirical Review

2.2.1 Environmental Factors and Behaviour Change

The Health Belief Model of Healthcare Service Utilisation has been employed to assess healthcare utilization. For instance, enabling factors have been found to influence healthcare use (Babitsch et al., 2012). Over the last decade, mHealth has emerged as a crucial element of eHealth, allowing for the creation of mobile applications that can effectively reach a variety of populations, meet particular healthcare needs in a range of settings, and produce a variety of results (Fiordelli et al., 2013). It has been shown that communication and organization were found to be significant impediments to healthcare usage at the Primary Care (PC) and Hospital System (HS) levels (Boothroyd et al., 2015). Contrary to this assertion, Mwangi (2015), in a study on marketing strategies and the performance of private hospitals in Nairobi County, found that there was a nexus between marketing strategies and the performance of organisation in a private hospital in Nairobi, Kenya. The author suggested that marketing strategies should be developed in line with environmental factors. Medical Marketing has seen a surge in popularity, particularly in the form of direct-to-consumer (DTC) advertisements for prescription pharmaceuticals and health services in the United States of America (Schwarz & Woloshin, 2019).

Language, illness awareness, perceived need, and prior experiences were all individual-level factors that affected the use of healthcare (Artuso et al., 2013; Clarke et al., 2017). For example, a study by Manzoor et al. (2019) revealed that the provision of healthcare services such as diagnostic tests, laboratory services, and prenatal care significantly improves patient satisfaction. Also, the quality of the personal interaction between healthcare providers and patients plays a significant role in determining patient satisfaction (Batbaatar et al., 2017). Investing in tailored on-the-job training for healthcare workers is a vital strategy to enhance their knowledge and skills, thereby enabling

them to provide patient-centered care and improve patient satisfaction (Asamrew et al., 2020). It is observed that these tend to influence individuals to seek healthcare services.

2.3 Behaviour Change

Theories of behavior change and supporting research emphasise the intricate process of adopting and maintaining healthy habits. These theories identify key factors that influence behavioural transformations, which include an individual's beliefs about health, past actions, intentions, social pressures, sense of control, and the environment in which the behaviour occurs (Barley & Lawson, 2016)). Behaviour change is influenced by the creation and dissemination of interventions via the Internet and short message services (SMS) (Webb et al., 2010). A thorough analysis of research indicates that the greatest chance of achieving meaningful practice improvements is with interventions focused on relationship reinforcement and normative rebuilding (Johnson & May, 2015). The most successful strategies, however, are those that modify the expectations and norms of the peer group through educational outreach and those that strengthen these altered norms (Johnson and May, 2015). Given the discussions above, the following have been hypothesized:

H1: Environmental factors positively and significantly influence behaviour change.

H2: There is a positive relationship between environmental factors and marketing strategies.

2.4 Marketing Strategies, Environmental Factors, and Behaviour Change

Marketing Communication plays a significant role in creating and maintaining well-being. (Liang and Scammon, 2011). Marketing Communication has been applied to modify health-related behaviours and to influence individuals to adopt a positive attitude towards health behaviour (Dias & Agante, 2011). Through education and training, healthcare personnel can modify behaviour within the framework of collaborative team-based methods (Chauhan et al., 2017). Hoek and Jones (2011) argue that social marketers ought to work in tandem with public health researchers to recognise and address the environmental factors that influence risky behaviour and establish an atmosphere that will support the success of subsequent treatments. The authors support their claim with the idea that the first steps required to create a supportive milieu should be seen as prerequisites for complete and free choice rather than as limitations reducing voluntary behaviour. Furthermore, a study by Al-Dmour et al., (2020), revealed that social media can be a useful strategy for raising public health awareness by reaching specific demographics with succinct messaging.

Social Media sites like Facebook, Twitter, and many more can be used to generate and disseminate knowledge and information on interventions and dangers related to health and disease, as well as about healthy lifestyles (Porumbescu, 2016). The successful use of online interventions has received a significant boost by incorporating various communication methods, with the use of Short Message Service (SMS) or text messages as an effective means of engaging participants in health behaviours (Webb et al., 2010). Sadagheyani and Tatari (2020) posit that social media is a tool that can be used to gain access to people's health experiences and professional health information, as well as to manage depression, provide emotional support, create communities, grow and strengthen offline networks and interactions, express oneself and one's identity, and build and maintain relationships.

Mass Media Campaigns are often utilised to disseminate messages to a wide audience by leveraging existing media platforms, such as radio, television, and newspapers. As a result, exposure to these signals is typically passive and frequently at odds with elements like ubiquitous product promotion, strong societal norms, and addiction- or habit-driven behaviour (Wakefield et al., 2010). Public health campaigns using mass media and distributing health-related products have been successful in reducing illness and mortality rates by influencing people's behaviours (Robinson et al., 2014). Thus, combining mass media outreach with the distribution of affordable health-related products through various communication channels is an effective way to encourage healthy behaviours; they asserted (Robinson et al., 2014).

Social Marketing plays a key role in influencing behaviour change. Social marketing shifts its focus from individual-level changes in both the health and environmental domains to a broader systems perspective, which aims at driving widespread behavioral changes that impact society as a whole (Domegan, 2021). From the above discussions, it is proposed that:

H3: Marketing strategies directly and significantly influence behaviour change.

H4: Marketing strategies mediate the relationship between environmental factors and behaviour change.

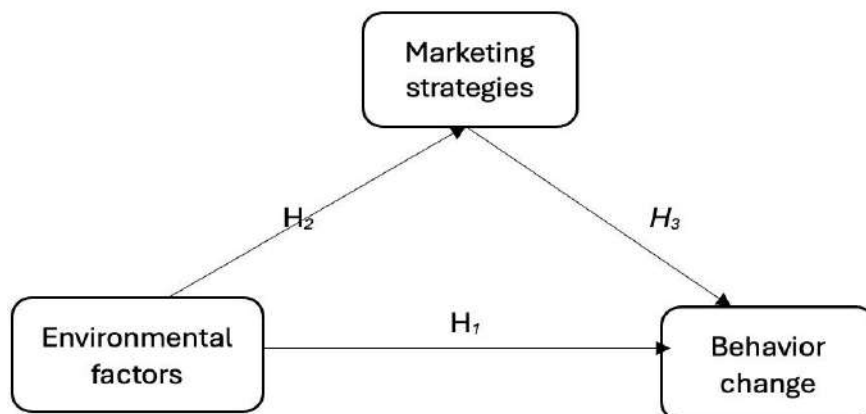


Figure 1
Conceptual Model

III. METHODOLOGY

3.1 Research Design

This study employed a cross-sectional descriptive research design as it enables the researcher to gather information on how respondents perceive, believe, and their attitudes and opinions on a particular phenomenon (Edmonds & Kennedy, 2016). A simple random sampling technique was employed to select a representative group of 474 Healthcare Workers from hospitals and clinics across six Health Directorates in the Upper East Region of Ghana, which included Municipalities and Districts. The selection was based on a list of Healthcare facilities in the region. This method ensures that each element of the population has an equal chance of being selected, thereby reducing bias and ensuring representativeness (Mweshi & Sakyi, 2020).

3.2 Target Population and Sample Size Determination

The target population consists of all health workers from the selected municipalities and districts. At the time of data collection, there were a total of 1980 health workers in this population. Krejcie and Morgan's (1970) formula, which is a widely used method for calculating the sample size for a given population was used to determine the sample size.

Formula:
$$\frac{x^2 N p (1-p)}{e^2 (N-1) + x^2 p (1-p)} \quad (1)$$

Where:
 n = sample size
 N = population size
 e = acceptable sampling error
 x^2 = Chi – square of degree of freedom of 1 and 95% Confidence interval (CI) = 3.841
 p = Proportion of Population = 0.5

The target population is 1980 and the acceptable sampling error is 0.05 (5%). Hence, equation (1) becomes.

$$n = \frac{3.841 * (1980)(0.5)(1 - 0.5)}{(0.05)^2(1980 - 1) + 3.841 * 0.5(1 - 0.5)} \quad (2)$$

$n = 474$

3.3 Sampling Technique and Data Collection

A simple random technique was employed to select the respondents for the study. A structured questionnaire was designed using a five-point Likert scale and administered to the respondents. The questionnaire was crafted based on reviewed literature to assess environmental factors and behaviour change. Questions items for the environmental factors construct were adapted from (Ngwenya et al., 2020) to measure the influence of environmental factors on behaviour change in responding to healthcare utilization. Again, marketing strategies were operationalized as mass communication, social marketing, mass media campaigns, and social media, and based on these, seven items were adapted from prior literature (Morris & Clarkson, 2009). Behaviour change was conceptualised as a complex array of factors, including an individual's attitudes towards health, past behaviors, future intentions, social influences, sense of self-efficacy, and the environmental context in which the behaviour takes place (Barley & Lawson, 2016), and six questions items were used for its measurement. The author personally administered the questionnaires to the

respondents who were given an average of two weeks to allow them sufficient time to complete them conveniently, given their busy work schedules. After collecting and cleaning the data, Structural Equation Modeling (SEM) with AMOS was used to do the analysis

IV. FINDINGS & DISCUSSION

4.1 Model Assessment

The model consisted of three latent variables; two exogenous variables (environmental factors), an endogenous variable (behaviour change), and a mediator variable (marketing strategies). Marketing strategies served as the mediator variable mediating the relationship between environmental factors and behaviour change. The minimum value for outer loading is 0.708 or 0.7 (Haire et al., 2017). Hulland (1999) posits that in exploratory research, a minimum figure of 0.4 is acceptable. Interestingly, the loadings satisfied both arguments. The constructs that did not load well on the latent variables were removed leaving those that meet the minimum criteria of 0.6 or 0.7 (see Table 1).

4.2 Common Method Bias

To ensure that the method employed to gather the data does not influence the outcome of the analysis, Common Method bias (CMB) otherwise known as Common Method Variance (CMV) was performed. Common Method Bias (CMB) are inaccuracies that may arise when researchers attempt to measure the relationship between two variables (Podsakoff et al. (2012)). The study findings tend to be compromised if CMV is not checked. The Harman one-factor test was employed to make sure there was no concern for CMV. Consequently, the principal axis extraction approach is used to aggregate all the components into a single common factor without rotation (Podsakoff et al. (2012)). When the total variation in a single factor is less than 50%, the impact of correcting for multiple comparisons (CMB) on the data is likely to be minimal. This current study recorded a figure of 13.751 as a single factor extraction; a figure below the threshold of 50%. Once this was achieved, further analysis could be carried out.

4.3 Measurement Model

The essence of the measurement model is to shed light on constructs loaded on the latent variables. Testing for reliability and validity at this stage is vital to pave the way to test the suggested hypotheses. Two critical criteria to look at when evaluating the convergent validity of a reflective construct are the Average Variance Extracted (AVE) and the Outer Loadings of the constructs (Haire et al., 2017). An appropriate value for AVE should be greater than 0.5 (Fornell & Larcker, 1981). The AVE for the latent variables meets the accepted threshold of 0.5 except for one whose value fell marginally to 0.489 (see Table 2).

The usual and accepted value for outer loadings is 0.708 or 0.7 (Haire et al., 2017). Hulland (1999) states however that, an AVE of 0.4 or above is deemed appropriate for exploratory research. In the current study, the outer loadings ranged from 0.63 to 0.84. This indicates proof of convergent validity (Haire et al., 2017).

Cronbach's Alpha (CA) and Composite Reliability (CR) are used to measure internal consistency. Internal consistency describes how items or markers within a scale are distinct from one another, yet together, measure the same underlying concept (Haire et al., 2014). According to Haire et al. (2017), a CA value greater or equal to 0.7 is acceptable. In this paper, a CA value above the accepted threshold was recorded for all three variables for this study (see Table 1).

Table 1*Factor loadings, Composite Reliability, and Average Variance Extracted*

Constructs	Items	Loadings	C R	AVE
Marketing Strategies (MT)	MT1: educational marketing.	0.75	0.990	0.62
	MT2: social media develops people's interest in healthcare.	0.68		
	MT3: social media creates desire.	0.76		
	MT4: healthcare advertisement encourages patients to respond to healthcare services.	0.64		
	MT5: strong branding of healthcare messages reinforces healthcare education.	0.67		
	MT6: healthcare personnel are responsive to patients.	0.66		
	MT7: social marketing influences patient's attitudes.	0.65		
Environmental factors (EF)	EF1: transparency and accountability.	0.63	0.748	0.489
	EF2: accessibility to health services.	0.68		
	EF3: availability of healthcare personnel.	0.78		
Behavioural Change (BC)	BC1: adherence to a medication plan.	0.75	0.970	0.572
	BC2: patient's disclosure of issues around non-adherence of	0.84		
	BC3: half medication	0.73		
	BC4: patronise over-the-counter drug store	0.76		
	BC5: believe traditional medicine	0.69		

4.4 Discriminant Validity

This is established when a model construct correctly depicts a distinct occurrence that no other concept can adequately explain (Haire & Alamer, 2022). Discriminant validity is a measurement of how effectively each factor or component in a model is connected to its intended construct and not to other constructs. Discriminant validity is established when there is no link between two different factors and the findings of a validity test (Sekaran & Bougie, 2019b). To prove, therefore, the establishment of discriminant validity in a research study, the square root of the Average Variance Extracted (AVE) values for each latent factor should be significantly greater than the correlation coefficients between pairs of factors (Fornel and Larcker, 1981). Further, AVE less than 0.5 is acceptable when CR is greater than AVE (Fornel & Larcker, 1981). Thus, the correlation coefficient values found in the row and column that correspond to each latent variable should be less than the square root of the factor's Average Variance Extracted (AVE) value. This confirms the distinct contribution that every construct contributes to the overall model. The AVE for this study is shown in Table 2.

Table 2*Discriminant Validity*

	EF	MT	BC
EF	0.699		
MT	0.344	0.787	
BC	0.431	0.596	0.756

*Notes: EF = environmental factors, MT = marketing strategies, BC = behavioural change.

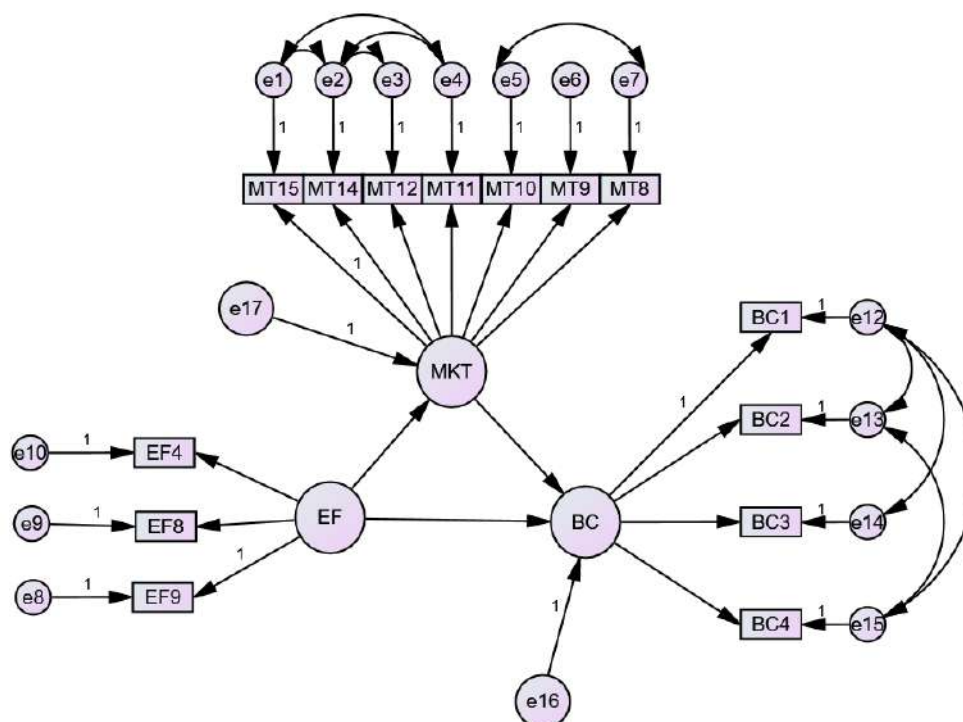


Figure 2
Structural Model

4.5 Model Fit Indices

The analysis of the data was carried out using structural equation modeling (SEM). SEM makes it possible to measure the relationship among the constructs. As shown in Table 3, chi-square difference (χ^2/df) = 3.049; RMR = 0.029; GFI = 0.944; AGFI = 0.909; NFI = 0.933; CFI = 0.954; RMSEA = 0.066; Pclose = 0.007; TLI = 0.935. According to Haire et al. (2010), and Hooper et al. (2008), these figures satisfy the accepted thresholds. The model fit indices are illustrated in Table 3.

Table 3
Model Fit Indices

Index	Value	Threshold
CMIN	198.153	
DF	65	
CMIN/DF	3.049	1 – 3
RMR	0.029	< 0.08
GFI	0.944	> 0.9
AGFI	0.909	> 0.9
NFI	0.933	> 0.9
CFI	0.954	> 0.9
RMSEA	0.066	< 0.06
PClose	0.007	> 0.05
TLI	0.935	

Once the model fit indices satisfy the necessary criteria, an evaluation of the structural model is conducted.

Path Coefficients

Maximum likelihood estimates were used to determine the direction and strengths of the dependents and independent variables. Consequently, the correlation between variables was strong and significant. The relationships between the environmental factors (EF) and marketing strategies (MKT) were ($\beta = 0.214$; $p = 0.000$), environmental



factors (EF) and behaviour change (BC) ($\beta = 0.287$; $p = 0.000$), marketing strategies (MKT) to behaviour change (BC) was ($\beta = 0.821$; $p = 0.000$). Thus, all the predicted hypotheses were supported (see Table 4).

Table 4

Path Coefficients

			Beta	S.E.	C R	P value	Decision
MKT	<---	EF	0.214	0.034	6.337	0.000	Supported
BC	<---	EF	0.287	0.048	5.997	0.000	Supported
BC	<---	MKT	0.821	0.104	7.901	0.000	Supported

Notes: $p < 0.005$

Standardized regression coefficients: This indicates the relative strengths of the relationship between variables. Thus, the relationship between the variables and their relative strengths is significant: EF ---> MKT ($\beta = 0.41$); EF ---> BC ($\beta = 0.35$); and MKT --->BC ($\beta = 0.53$).

4.6 Mediation Analysis

The study sought to test the mediating role of marketing strategies in the relationship between environmental factors and behaviour change. To achieve this, bootstrapping was performed to ascertain the indirect effect of environmental factors on behaviour change through marketing strategies. The result was ($\beta = 0.176$; $p = 0.000$). Also, the direct effect was found to be significant ($\beta = 0.287$, $p = 0.000$) as shown in Table 5. The findings indicate that environmental factors, which are partly mediated by marketing strategies, have a considerable impact on behaviour change. In particular, there is a non-zero mediating impact since the mediation model's boundaries exceed zero. This implies that the impact of environmental factors on behaviour change is transmitted through marketing strategies, which are crucial but not exclusive.

Table 5

Mediation Results

Relationship	Direct Effect	Indirect Effect	CI	P-value	Decision
EF --> MKT --> BC	0.287 (0.000)	0.176	LB UB 0.109 0.271	0.000	Partial Mediation

* CI: Confidence interval; LB: Lower boundary; UB: Upper boundary

4.7 Discussion

The purpose of this study was to examine the link between environmental factors and behaviour change via marketing strategies. The provision of a healthcare system that meets the aspirations of the citizenry is very critical as it is a sure way to ensure their well-being. The forces that operate within the system tend to encourage the patronage of the available health service or ignore it for other alternatives. Putting in measures that encourage healthcare utilization is therefore welcomed. This study aimed to investigate the mediation role of marketing strategies in the relationship between environmental factors and behaviour change. Three main variables were identified viz environmental factors (independent variable), behaviour change (dependent variable), and marketing strategies (mediator).

The analysis of the data via Structural Equation Modeling with AMOS revealed an acceptable model fit index. All figures met the minimum threshold, thus indicating reliable data and hence results from the analysis. The measurement model proved satisfactory as both validity and reliability and discriminant validity were assured. The factor loadings of the variables indicate the impact they had on the overall outcome of the study, particularly, in establishing the mediating role of marketing strategies between environmental factors and behaviour change. It is evident therefore to say that, given the right environment where health workers have access to the right information and regulatory framework, the right calibre of health personnel, and the required number of personnel deployed to the health facilities, a huge impact can be made on patients with the resultant behaviour modification towards healthcare utilization (Adu-Gyamfi & Brenya, 2016; Mosadeghrad, 2014)

Four hypotheses were suggested based on the literature and the relationship between predicting variables and the outcome were analysed. The predicted hypotheses were found to be positive and significant and were also supported. Marketing strategies mediate the relationship between environmental factors and behaviour change.

The influence of environmental factors on behaviour change is a well-established phenomenon, which demonstrates that contextual and situational factors can significantly impact an individual's decision-making and

behavioural outcomes (Fiordelli et al., 2013). To make it more effective marketing strategies should be incorporated and aligned with environmental factors that directly influence behaviour (Mwangi, 2015).

Social marketing activities should be intensified alongside public health to address environmental issues that affect risky behaviours (Jones & Hoek, 2011). Social media platforms, including Facebook and Twitter, offer a valuable opportunity to disseminate evidence-based information on health interventions, disease awareness, and healthy lifestyle practices to large audiences, thereby promoting informed decision-making and behaviour change (Porumbescu, 2016).

The perceived ability of mass media as a marketing strategy, coupled with effective educational and promotional campaigns has the potency of influencing behaviour change. Besides that, the gradual penetration of the various social media handles used among the populace can be leveraged to disseminate health-related information and education. Mass media campaigns frequently use well-known media outlets to spread their messages to a large audience, including radio, television, and newspapers (Robbinson et al., 2014; Wakefield et al., 2010)

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

The study has demonstrated the significance of marketing strategies in promoting health-related information and behavior change. The correlations between the variables were found to be significant. Particularly, all the hypotheses were supported. The mediation role of marketing strategies was established, indicating the crucial role it plays in modifying behaviour change positively for better health outcomes.

5.2 Recommendations

The integration of marketing strategies in health promotion and education is essential in modifying behaviour towards healthcare utilization. Therefore, healthcare facility managers are encouraged to as a matter of policy incorporate marketing strategies into their health promotional policies to effectively disseminate health-related information to patients. In particular, healthcare providers, especially those at the frontline, receive training and education on the importance of marketing strategies in promoting healthcare information. This will enable them to effectively communicate with patients and provide personalised healthcare services. Further, healthcare providers should create patient-targeted marketing strategies that are tailored to their cultural and language backgrounds, as well as their health needs and preferences. The use of various communication channels and social media should be employed to reach identified groups of patients with specialised care.

REFERENCES

- Adua, E., Frimpong, K., Li, X., & Wang, W. (2017). Emerging issues in public health: a perspective on Ghana's healthcare expenditure, policies, and outcomes. *EPMA Journal*, 8, 197-206.
- Adu-Gyamfi, S., & Brenya, E. (2016). Nursing in Ghana: A search for Florence nightingale in an African City. *International Scholarly Research Notices*, 2016(1), 9754845.
- Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human behavior and emerging technologies*, 2(4), 314-324.
- Ajzen, I. 1991. The theory of planned behaviour. *Organisational Behavior and Human Decision Processes* 50 (2):179-211.
- Akukwe, C. (2006). Health care delivery in Africa: An overview of the issues, choices, challenges and opportunities. *African Renaissance*, 3(4), 13-19.
- Al-Dmour, H., Salman, A., Abuhashesh, M., & Al-Dmour, R. (2020). Influence of social media platforms on public health protection against the COVID-19 pandemic via the mediating effects of public health awareness and behavioral changes: integrated model. *Journal of medical Internet research*, 22(8), e19996.
- Amoah, P. A., & Phillips, D. R. (2018). Health literacy and health: rethinking the strategies for universal health coverage in Ghana. *Public health*, 159, 40-49. <https://doi.org/10.1016/j.puhe.2018.03.002>
- Ananga, M. K., Agbefu, R. K., Doku, P. N., Manu, A., Alangea, D. O., & Ganle, J. K. (2023). The influence of social capital in the utilisation of sexual reproductive health services among the youth in Ghana. A community-based cross-sectional study. *PLOS Global Public Health*, 3(10), e0001225.
- Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: does it matter? *Journal of health and social behavior*, 1-10.

- Ansah, E. K., Narh-Bana, S., Asiamah, S., Dzordzordzi, V., Biantey, K., Dickson, K., ... & Whitty, C. J. M. (2009). Correction: Effect of Removing Direct Payment for Health Care on Utilisation and Health Outcomes in Ghanaian Children: A Randomised Controlled Trial. *PLoS medicine*, 6(2), e1000033.
- Anuradha, S., & Sheriff, D. S. (2019). Health care delivery in India-SWOT analyses. *Int Arch Public Health Community Med*, 3(2), 1-7.
- Artuso, S., Cargo, M., Brown, A., & Daniel, M. (2013). Factors influencing health care utilisation among Aboriginal cardiac patients in central Australia: a qualitative study. *BMC health services research*, 13, 1-13. doi.org/10.1186/1472-6963-13-83
- Asamrew, N., Endris, A. A., & Tadesse, M. (2020). Level of patient satisfaction with inpatient services and its determinants: a study of a specialized hospital in Ethiopia. *Journal of environmental and public health*, 2020(1), 2473469.
- Awoonor-Williams, J. K., Bawah, A. A., Nyongator, F. K., Asuru, R., Oduro, A., Ofosu, A., & Phillips, J. F. (2013). The Ghana essential health interventions program: a plausibility trial of the impact of health systems strengthening on maternal & child survival. *BMC health services research*, 13 Suppl 2(Suppl 2), S3. <https://doi.org/10.1186/1472-6963-13-S2-S3>
- Babitsch, B., Gohl, D., & von Lengerke, T. (2012). Re-revisiting Andersen's Behavioral Model of Health Services Use: a systematic review of studies from 1998-2011. *Psycho-social medicine*, 9, Doc11.
- Barley, E., & Lawson, V. (2016). Using health psychology to help patients: theories of behaviour change. *British journal of nursing*, 25(16), 924-927.
- Batbaatar, E., Dorjdagva, J., Luvsannyam, A., Savino, M. M., & Amenta, P. (2017). Determinants of patient satisfaction: a systematic review. *Perspectives in public health*, 137(2), 89-101.
- Beyera, G. K., O'Brien, J., & Campbell, S. (2022). Choosing a health behaviour theory or model for related research projects: A narrative review. *Journal of Research in Nursing*, 27(5), 436-446.
- Bish, A., Yardley, L., Nicoll, A., & Michie, S. (2011). Factors associated with uptake of vaccination against pandemic influenza: a systematic review. *Vaccine*, 29(38), 6472-6484.
- Boachie, M. K., & Ramu, K. (2016). Effect of public health expenditure on health status in Ghana. *International Journal of Health*, 4(1), 6-11.
- Bombard, Y., Baker, G. R., Orlando, E., Fancott, C., Bhatia, P., Casalino, S., ... & Pomey, M. P. (2018). Engaging patients to improve quality of care: a systematic review. *Implementation Science*, 13, 1-22.
- Boothroyd, R. A., Evans, M. E., Chen, H. J., Boustead, R., & Blanch, A. K. (2015). An exploratory study of conflict and its management in systems of care for children with mental, emotional, or behavioral problems and their families. *The Journal of Behavioral Health Services & Research*, 42, 310-323.
- Campos, P. A., & Reich, M. R. (2019). Political analysis for health policy implementation. *Health Systems & Reform*, 5(3), 224-235.
- Chauhan, B. F., Jeyaraman, M., Mann, A. S., Lys, J., Skidmore, B., Sibley, K. M., ... & Zarychanski, R. (2017). Behavior change interventions and policies influencing primary healthcare professionals' practice—an overview of reviews. *Implementation Science*, 12, 1-16.
- Chiu, K., Thow, A. M., & Bero, L. (2022). "Never waste a good crisis": Opportunities and constraints from the COVID-19 pandemic on pharmacists' scope of practice. *Research in Social and Administrative Pharmacy*, 18(9), 3638-3648.
- Clarke, J. L., Bourn, S., Skoufalos, A., Beck, E. H., & Castillo, D. J. (2017). An innovative approach to health care delivery for patients with chronic conditions. *Population health management*, 20(1), 23-30.
- Davidson, K. W., & Scholz, U. (2020). Understanding and predicting health behaviour change: a contemporary view through the lenses of meta-reviews. *Health psychology review*, 14(1), 1-5.
- Dias, M., and L. Agante. 2011. "Can Advergaming Boost Children's Healthier Eating Habits? A Comparison Between Healthy and Non-Healthy Food." *Journal of Consumer Behaviour* 10 (3):152-160. <https://doi.org/10.1002/cb.359>
- Doctor, H. V., Nkhana-Salimu, S., & Abdulsalam-Anibilowo, M. (2018). Health facility delivery in sub-Saharan Africa: successes, challenges, and implications for the 2030 development agenda. *BMC public health*, 18, 1-12.
- Domegan, C. (2021). Social marketing and behavioural change in a systems setting. *Current Opinion in Environmental Science & Health*, 23, 100275.
- Edmonds, W. A., & Kennedy, T. D. (2016). *An applied guide to research designs: Quantitative, qualitative, and mixed methods*. Sage Publications.

- Filip, R., Gheorghita Puscaselu, R., Anchidin-Norocel, L., Dimian, M., & Savage, W. K. (2022). Global challenges to public health care systems during the COVID-19 pandemic: a review of pandemic measures and problems. *Journal of personalized medicine*, 12(8), 1295.
- Fiordelli, M., Diviani, N., & Schulz, P. J. (2013). Mapping mHealth research: a decade of evolution. *Journal of medical Internet research*, 15(5), e2430. <https://doi.org/10.2196/jmir.2430>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50.
- Fortenberry Jr, J. L., & McGoldrick, P. J. (2016). Internal marketing: A pathway for healthcare facilities to improve the patient experience. *International Journal of Healthcare Management*, 9(1), 28-33.
- Gyasi, R. M., & Phillips, D. R. (2020). Demography, socioeconomic status and health services utilisation among older Ghanaians: Implications for health policy. *Ageing International*, 45(1), 50-71.
- Gyasi, R. M., Asante, F., Abass, K., Yeboah, J. Y., Adu-Gyamfi, S., & Amoah, P. A. (2016). Do health beliefs explain traditional medical therapies utilisation? Evidence from Ghana. *Cogent Social Sciences*, 2(1), 1209995.
- Gyasi, R., Buor, D., Adu-Gyamfi, S., Adjei, P. O. W., & Amoah, P. A. (2018). Sociocultural hegemony, gendered identity, and use of traditional and complementary medicine in Ghana. *Women & health*, 58(5), 598-615.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis: A Global Perspective, 7th Edition*. New Jersey: Pearson Educational Inc.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (3rd ed.). Sage Publishing.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. *Journal of the academy of marketing science*, 45, 616-632.
- Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027.
- Hair, Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106-121.
- Haldane, V., Chuah, F. L., Srivastava, A., Singh, S. R., Koh, G. C., Seng, C. K., & Legido-Quigley, H. (2019). Community participation in health services development, implementation, and evaluation: A systematic review of empowerment, health, community, and process outcomes. *PloS one*, 14(5), e0216112.
- Hoek, J., & Jones, S. C. (2011). Regulation, public health, and social marketing: a behaviour change trinity. *Journal of Social Marketing*, 1(1), 32-44.
- Hooper, D., Coughlan, J., & Mullen, M. (2008, September). Evaluating the model fit a synthesis of the structural equation modeling literature. In *7th European Conference on research methodology for business and management studies* (Vol. 2008, pp. 195-200).
- Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal*, 20(2), 195-204.
- Iliopoulos, E., & Priporas, C. V. (2011). The effect of internal marketing on job satisfaction in health services: a pilot study in public hospitals in Northern Greece. *BMC health services research*, 11, 1-8.
- Johnson, M. J., & May, C. R. (2015). Promoting professional behaviour change in healthcare: what interventions work, and why? A theory-led overview of systematic reviews. *BMJ open*, 5(9), e008592.
- Kan, T., & Zhang, J. (2018). Factors influencing seasonal influenza vaccination behaviour among elderly people: a systematic review. *Public health*, 156, 67-78.
- Kelly, M. P., & Barker, M. (2016). Why is changing health-related behaviour so difficult? *Public health*, 136, 109-116.
- Kesavayuth, D., Poyago-Theotoky, J., Tran, D. B. & Zikos, V. (2020). Locus of control, health, and healthcare utilization. *Economic Modelling*, 86, 227-238.
- Kondilis, E., Tarantilis, F., & Benos, A. (2021). Essential public healthcare services utilization and excess non-COVID-19 mortality in Greece. *Public Health*, 198, 85-88.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.
- Laverack, G. (2017). The challenge of behaviour change and health promotion. *Challenges*, 8(2), 25.
- Liang, B., and D. Scammon. 2011. "E-Word-of-Mouth on Health Social Networking Sites: An Opportunity for Tailored Health Communication." *Journal of Consumer Behaviour* 10 (6):322-331.
- Macassa, G. (2021). Can sustainable health behaviour contribute to ensure healthy lives and wellbeing for all at all ages (SDG 3)? A viewpoint. *Journal of Public Health Research*, 10(3), jphr-2021.

- Manzoor, F., Wei, L., Hussain, A., Asif, M., & Shah, S. I. A. (2019). Patient satisfaction with health care services; an application of physician's behavior as a moderator. *International journal of environmental research and public health*, 16(18), 3318.
- Metcalfe, D., Diaz, A. J. R., Olufajo, O. A., Massa, M. S., Ketelaar, N. A., Flottorp, S. A., & Perry, D. C. (2018). Impact of the public release of performance data on the behaviour of healthcare consumers and Providers. *Cochrane Database of Systematic Reviews*, (9).
- Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science*, 6, 1-12.
- Mochari-Greenberger, H., & Pande, R. L. (2021). Behavioral health in America during the COVID-19 pandemic: Meeting increased needs through access to high-quality virtual care. *American Journal of Health Promotion*, 35(2), 312-317.
- Morris, Z. S., & Clarkson, P. J. (2009). Does social marketing provide a framework for changing healthcare practice? *Health policy*, 91(2), 135-141.
- Mosadeghrad, A. M. (2014). Factors Affecting Medical Service Quality. *Iranian journal of public health*, 43(2), 210–220.
- Mosadeghrad, A. M. (2014). Factors influencing healthcare service quality. *International journal of health policy and management*, 3(2), 77.
- Mwangi, S. M. (2015). *Marketing strategies and performance of private hospitals in Nairobi county* (Doctoral dissertation, University of Nairobi).
- Mweshi, G. K., & Sakyi, K. (2020). Application of sampling methods for the research design. *Archives of Business Review–Vol*, 8(11), 180-193.
- Nagler, R. H., & LoRusso, S. M. (2017). Conflicting information and message competition in health and risk messaging. In *Oxford research encyclopedia of communication*.
- Ngwenya, N., Nkosi, B., Mchunu, L. S., Ferguson, J., Seeley, J., & Doyle, A. M. (2020). Behavioural and socio-ecological factors that influence access and utilisation of health services by young people living in rural KwaZulu-Natal, South Africa: Implications for intervention. *PloS one*, 15(4), e0231080.
- Paul, E., Brown, G. W., & Ridde, V. (2020). COVID-19: time for a paradigm shift in the nexus between local, national, and global health. *BMJ Global Health*, 5(4), e002622.
- Pinho, M. (2023). The role of lifestyles in the commitment to the United Nations Sustainable Development Goal 3. An exploratory study. *International Journal of Health Governance*, 28(3), 267-283.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual review of psychology*, 63, 539-569.
- Porumbescu, G. A. (2016). Linking public sector social media and e-government websites used to trust in government. *Government Information Quarterly*, 33(2), 291-304.
- Robinson, M. N., Tansil, K. A., Elder, R. W., Soler, R. E., Labre, M. P., Mercer, S. L., ... & Community Preventive Services Task Force. (2014). Mass media health communication campaigns combined with health-related product distribution: a community guide systematic review. *American journal of preventive medicine*, 47(3), 360-371.
- Sadagheyani, H. E., & Tatari, F. (2020). Investigating the role of social media on mental health. *Mental health and social inclusion*, 25(1), 41-51.
- Schwartz, L. M., & Woloshin, S. (2019). Medical marketing in the United States, 1997-2016. *Jama*, 321(1), 80-96.
- Sekaran, U., & Bougie, R. (2016). *Research Methods for Business: A Skill Building Approach*. John Wiley & Sons.
- Shamasunder, S., Holmes, S. M., Goronga, T., Carrasco, H., Katz, E., Frankfurter, R., & Keshavjee, S. (2020). COVID-19 reveals weak health systems by design: Why we must re-make global health in this historic moment. *Global Public Health*, 15(7), 1083–1089.
- Shmueli, L. (2021). Predicting intention to receive the COVID-19 vaccine among the general population using the health belief model and the theory of planned behavior model. *BMC Public Health*, 21, 1-13. <https://doi.org/10.1186/s12889-021-10816-7>
- Tikkanen, R., Osborn, R., Mossialos, E., Djordjevic, A., & Wharton, G. A. (2020). International health care system profiles. *The Commonwealth Fund [Internet]*.
- Van Achterberg, T., Huisman-de Waal, G. G., Ketelaar, N. A., Oostendorp, R. A., Jacobs, J. E., & Wollersheim, H. C. (2011). How to promote healthy behaviours in patients? An overview of evidence for behaviour change techniques. *Health Promotion International*, 26(2), 148-162.
- Van Der Wielen, N., Channon, A. A., & Falkingham, J. (2018). Does insurance enrolment increase healthcare utilisation among rural-dwelling older adults? Evidence from the National Health Insurance Scheme in Ghana. *BMJ global health*, 3(1), e000590.



- Wakefield, M. A., Loken, B., & Hornik, R. C. (2010). Use of mass media campaigns to change health behaviour. *The Lancet*, 376(9748), 1261-1271.
- Webb, T., Joseph, J., Yardley, L., & Michie, S. (2010). Using the Internet to promote health behavior change: a systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy. *Journal of medical Internet research*, 12(1), e1376.
- Wood, W., & Neal, D. T. (2016). Healthy through habit: Interventions for initiating & maintaining health behavior change. *Behavioral Science & Policy*, 2(1), 71-83.