

Predicting Continuance Intention of Personal Preventive Behavior after COVID-19: A Framework of Health Belief Model

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Abstract

This study aims to investigate the factors influencing preventive behavior among foreigners residing in Korea. Drawing upon the Health Belief Model (HBM), this study seeks to gain insights into the decision-making processes underlying preventive behavior within this specific population. A comprehensive online survey was conducted among 364 foreigners. An analysis revealed that perceived barriers and perceived benefits played crucial roles as mediators, mediating the relationship between the examined factors and preventive behavior. The insights gained from this study have implications for public health interventions and self-preventive product businesses aiming to promote and sustain self-preventive behavior practices among foreigners residing in Korea, even after all COVID-19 restrictions have been lifted.

Keywords: Health Belief Model, Preventive Behavior, Social Influence, Self-Efficacy, Perceived Mask-Wearing Anxiety, Perceived Barriers, Perceived Ben

1. INTRODUCTION

The COVID-19 pandemic has profoundly reshaped our daily routines, with mask-wearing emerging as an essential practice. Self-preventive behavior has become ingrained in the daily habits of individuals worldwide, symbolizing our collective response to the challenges posed by the pandemic. Korean citizens have exhibited high compliance with mask-wearing mandates, as reported by the international Gallup Poll [1], with 90% of

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Koreans stating that they wear masks when going out [2]. In the survey conducted in October 2022, a substantial majority of respondents, approximately 80%, expressed the belief that individuals should continue self-preventive behavior in public spaces, such as restaurants, bars, and cafes. Furthermore, 73% of the participants answered that mask usage should persist in public transportation settings. These survey findings offer valuable insights into the prevailing attitudes and perceptions regarding the ongoing necessity of preventive behavior in specific public contexts in Korea.

Research on self-preventive behavior remains important in 2023 due to several reasons supported by prior research. Firstly, studies have consistently demonstrated the effectiveness of mask-wearing in reducing the transmission of respiratory viruses, including COVID-19 [3]. However, the long-term sustainability of self-preventive behaviors and the factors that influence continuance intention are still relatively understudied [4]. Understanding these factors is crucial to ensure that individuals continue practicing this preventive behavior beyond the acute phase of the pandemic.

Furthermore, studying self-preventive behavior in specific populations, such as foreign consumers in Korea, can offer unique perspectives and insights. By examining these factors within the context of foreign consumers in Korea, this research can contribute to a more comprehensive understanding of the factors influencing self-preventive behavior continuance in diverse populations. According to updated statistics foreigners residing in Korea now make up over 3.1% of the whole population. As of June 2022, there are 2,012,862 foreigners in Korea [5]. According to a prior study, foreign consumers residing in Korea represent a unique population with diverse cultural backgrounds, experiences, and perspectives, which may significantly influence their intention to continue self-preventive behavior [6,7]. Most importantly, understanding the perceptions, beliefs, and experiences of foreign consumers regarding self-preventive behavior can contribute to a more comprehensive understanding of the factors that influence their continuance intention [8,9]. Investigating the impact of acculturation and integration processes on self-preventive behavior continuance among foreign consumers can shed light on how individuals navigate cultural transitions and incorporate preventive behaviors into their daily lives [10,11]. According to a recent interview with Dr. Brian Lamb of the Allegheny Health Network, mask-wearing decreases the risk of spreading viral diseases, but once masking was stopped we saw the return of influenza and other respiratory diseases [12].

To address the research gap, the present study employed the integrated HBM framework, specifically examining perceived benefits, perceived barriers of self-preventive behavior, and self-efficacy, to understand the mediating role of public health beliefs in self-preventive behavior continuance. Furthermore, by comprehensively investigating the impact of social influence, this research aims to shed light on the psychological and sociocultural mechanisms driving individuals' decisions to continue self-preventive behavior. The findings will contribute to public health knowledge and provide guidance to policymakers, healthcare providers, self-preventive equipment producers, and the general public, aiding in the development of evidence-based interventions to promote sustained self-preventive behavior and mitigate the spread of infectious diseases.

2. THEORETICAL BACKGROUND AND HYPOTHESESE DEVELOPMENT

2.1 Theoretical Background: Health Belief Model (HBM)

The Health Belief Model (HBM) is a framework that has been one of the most widely used conceptual frameworks in health behavior research, both to explain change and maintenance of health-related behaviors

and as a guiding framework for interventions [13]. The HBM comprises the following key constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy to engage in a behavior, and cues to action [13].

Furthermore Rosenstock, Strecher, and Becker (1988) [14] discussed the integration of social learning theory with the Health Belief Model to enhance its explanatory power in understanding health behaviors. It provided a contemporary perspective on the model and explored the role of social influence, observational learning, and social support in shaping health beliefs and behaviors [14]. HBM has since expanded and evolved [15, 16]. and has been used in preventative vaccination research [17] and to explain behavior amidst COVID-19 [18].

2.2 Hypotheses Development

2.2.1 Effect of Social Influence on Perceived Benefits and Perceived Barriers

Social influence refers to the phenomenon where an individual's behaviors, opinions, or beliefs change as a result of their network ties, often becoming more similar to those with whom they are connected [19]. In the context of the present study, previous research has provided evidence of the influence of social pressure on self-preventive behavior [20]. When individuals observe that few or no other people around them are wearing masks, they are more likely to feel uncomfortable or out of place wearing one [21]. In examining the role of social and behavioral factors in the spread of COVID-19, Bavel et al. (2020) found that individuals' compliance with preventive measures was influenced by their adherence to social norms and the behavior of their social network members [22]. Similarly, Everett et al. (2020) investigated the impact of social norms on mask-wearing behavior and discovered that individuals were more likely to wear masks when they perceived strong social norms supporting mask usage within their communities [23]. In a study conducted among a Chinese population, Zhang et al. (2021) revealed that individuals were more inclined to wear masks when they observed others wearing masks and perceived a high level of social approval for mask-wearing [6].

Based on these studies, the following hypotheses are put forward:

Hypothesis 1a: Social influence has a negative effect on perceived barriers of self-preventive behavior

Hypothesis 1b: Social influence positively effects on perceived benefits of self-preventive behavior

2.2.2 Effect of Self-efficacy on Perceived Benefits and Perceived Barriers

Self-efficacy denotes a self-confidence regarding the possession of the required skills to complete a task; it is people's judgment of their capabilities to organize and execute courses of action required to attain designated types of performances [24]. Based on Bandura's concept of self-efficacy, it is the clue that this personal belief remains the main basis and a direct element of an individual's behavior and actions [25]. In the context of self-preventive behavior continuance, self-efficacy may play a crucial role in individuals' intentions to persist in self-preventive behavior. When individuals have a high level of self-efficacy regarding self-preventive behavior, they are more likely to believe in their ability to overcome barriers and successfully engage in this behavior [2]. Moreover, individuals with higher self-efficacy may perceive the benefits of self-preventive more strongly and have a greater sense of control over their health outcomes, leading to a higher intention to continue self-preventive behavior [14].

Hypothesis 2a: Self-efficacy will have a negative effect on perceived barriers of self-preventive behavior

Hypothesis 2b: Self-efficacy will have a positive influence on perceived benefits of self-preventive behavior

2.2.3 Effect of Perceived Self-Preventive Behavior Anxiety on Perceived Benefits and Perceived Barriers

Over the last two decades, researchers have documented the different psychological responses people have, such as fear, anxiety, depression, loss, guilt, irritability, having a sense of isolation, and stigmatization, when there is an infectious disease outbreak [3, 26]. Researchers can now look at the psychological responses related to panic buying seen in multiple countries during the COVID-19 outbreak [26]. Regarding the present study, existing research suggests that the COVID-19 pandemic has significantly impacted individuals' attitudes and behaviors towards self-preventive behavior [20]. Moreover, according to several studies identified frequent exposure to social media/news relating to COVID-19 as a cause of anxiety and stress symptoms [27, 28]. In addition, individuals experiencing higher levels of anxiety may perceive a greater risk of contracting the virus and may engage in health-protective behaviors, such as continued mask-wearing, in order to alleviate their anxiety [29].

Thus, the following hypotheses are formulated:

Hypothesis 3a: Perceived self-preventive behavior anxiety has positive connection with perceived barriers of self-preventive behavior

Hypothesis 3b: Perceived self-preventive behavior anxiety has positive connection with perceived benefits of self-preventive behavior

2.2.3 Effect of Perceived Benefits and Perceived Barriers on Self-Preventive Behavior Continuance Intention

Morris W. Hochbaum, who contributed to the development of the HBM, defined perceived barriers as "the person's belief in the existence of factors that could prevent successful performance of the recommended behavior" [30]. Hochbaum emphasized that these barriers are based on the individual's perception of potential difficulties or negative aspects associated with engaging in the recommended behavior. Perceived benefits are defined as "the individual's opinion of the effectiveness and advantages of the advised action" [14]. It refers to an individual's subjective assessment of the positive outcomes, advantages, or advantages they believe will result from adopting or engaging in a specific health behavior. The perception of benefits within the HBM is a key component in shaping individuals' motivations and intentions to engage in health-related behaviors. As mentioned by Wang et al. (2021) [31] in a previous study, originating from the Health Belief Model, the construct of perceived benefits refers to a person's belief in potential beneficial aspects of a health-related action to reduce the threat or seriousness of illness or disease. As Rosenstock, Strecher, & Becker, 1988 [14] mentioned according to the Health Belief Model, perceived benefits and barriers work together to determine the occurrence of a given action. In some cases, perceived barriers offset parts of benefits, and in others, the benefits outweigh barriers. Although it has been proven that mask wearing contributes to slowing down the transmission of the disease, some disadvantageous factors, such as unreasonable prices and side effects such as breathing difficulties as well as hindrances to communication, cannot be neglected [31]. People's understanding and awareness of the benefits that face masks offer in controlling and preventing the transmission of infectious viral diseases is termed perceived benefits of face masks [32]. People compare the performance of face masks with conventional preventive methods and decide according to the effectiveness of face masks as a social health measure [33]. They perceive that wearing face masks minimizes the spread of the virus from infected to healthy individuals in public gatherings [34]. Thus, the following hypotheses are formulated:

Hypothesis 4: Perceived barriers of self-preventive behavior has negative relationship with self-preventive

behavior continuance

Hypothesis 6: Perceived benefits of self-preventive behavior has positive relation with self-preventive behavior continuance

Based on the previous studies, Figure 1 presented research model of this study.

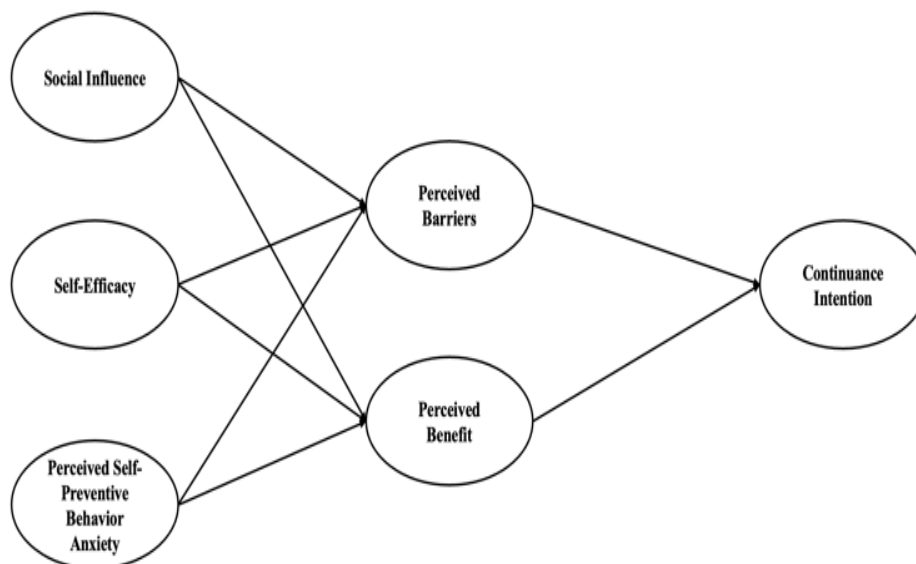


Figure 1. Research Model

3. METHOD

3.1 Measurement Development

This study employed an online survey to gather data on the intention of self-preventive behavior continuance among foreigners residing in Korea. A self-administrated online questionnaire was used that employed a convenience sampling method to collect data from foreigners who lived in Korea in a time period more than a year, specifically, people of the MZ generation were targeted. Generally, sampling was focused on expats and people accomplishing their studies in South Korea. Survey was conducted between April 24 and June 4, 2023. The questionnaire consisted of a series of items that participants were required to rate on a 5-point Likert scale, indicating the level of relevance to their experiences and beliefs.

The survey design commenced with an exploration of factors derived from the Health Belief Model (HBM), specifically focusing on participants' perspectives regarding the perceived benefits and perceived barriers of self-preventive behavior, using eight items from previous research [35]. Subsequently, four items related to self-efficacy were extracted from previous research [25]. Items indicating perceived self-preventive behavior anxiety (4 items) were selected from a prior study [31]. Furthermore, four items were selected to measure social influence [36]. The subsequent section of the questionnaire delved into participants' attitudes toward the intention to continue wearing masks [4, 34]. Lastly, the survey concluded with a series of demographic questions aimed at gathering background information about the participants.

3.2 Data Collection and Sample Characteristics

A total of 364 participants completed the questionnaire, providing valuable insights for this study. The demographic data shows that participants were fairly distributed by gender, where 56% were female, and 44% were male. Employment status and education were normally scattered, where 43% were indicated as students and 45% of respondents acquiring bachelor`s degree. The majority of respondents where from Asia (27,19%), followed by 22,80% respondents from Europe. The highest age range was 20-29 years (59%). The most frequently used platform was found to be Instagram totaling 35.7% and followed by Tiktok 13.18%.

4. RESULTS

4.1 Measurement Model

To test the measurement model, the exploratory factor analysis and confirmatory factor analysis were performed. An exploratory factor analysis (EFA) was conducted on the dataset comprising $n = 364$ participants. The analysis was performed to identify the underlying factor structure of the measurement instrument. Items with factor loadings below the threshold of 0.4, as recommended by Stevens (1992) [37], were considered for removal. Factors were retained if their eigenvalues exceeded 1.0, indicating their significance in explaining the variance. The factor loadings ranged from 0.580 to 0.939, demonstrating satisfactory item convergent validity. Higher factor loadings indicate a stronger association between the observed variables and the latent constructs they represent, aligning with the findings of Hair J.F. et al. (2019) [38]. Following the previous studies, CFI, TLI, GFI, IFI value should higher than 0.8, which indicated the measurement model is acceptable [38]. The results of the CFA demonstrated a satisfactory level of fit based on the overall fit indices ($\chi^2 = 649.036$, $df = 215$, $\chi^2/df = 3.019$, $p < 0.00$, CFI = 0.882, TLI = 0.861, RMSEA = 0.075, GFI = 0.866, IFI = 0.883, NFI = 0.835, AGFI = 0.828). These indices collectively indicate a good fit between the hypothesized model and the observed data. Based on the results of CFA, the value of factor loading ranged from 0.532 to 0.939, which were above the acceptable value 0.5 and the standard error range from 0.042 to 0.092 [38]. Furthermore, all average variance extracted (AVE) values and composite reliability (CR) values exceeded the recommended thresholds of 0.5 and 0.7, respectively, thereby providing support for convergent validity (see Table 3). The AVE values signify that more than half of the variance in the observed indicators is accounted for by their corresponding latent constructs. Additionally, the CR values indicate high internal consistency reliability within each construct.

Moreover, the square roots of the AVE values (diagonal values) for each construct were found to be greater than the correlation coefficients between the constructs. This finding demonstrates the presence of discriminant validity, as it indicates that the constructs are distinct from one another. These results affirm the robustness of the factor structure established through the EFA and validate the measurement instrument utilized in the study.

Table 1. Reliability, Convergent Validity and Discriminant Validity

	SI	SE	PMA	PBA	PBE	CI	CR	AVE
SI	0.738						0.825	0.545
SE	0.199	0.716					0.800	0.512
PMA	0.44	-0.149	0.744				0.832	0.554
PBA	-0.234	0.008	0.126	0.751			0.837	0.564

PBE	0.440	0.498	0.016	-0.425	0.731		0.770	0.534
CI	0.442	0.095	0.253	-0.274	0.307	0.755	0.836	0.570

Notes:

SI=Social influence, PBA=Perceived Barriers, SE=Self-efficacy, PMA= Perceived self-preventive behavior anxiety, PBE=Perceived Benefits, CI=Continuance intention; AVE= Average Variances extracted, CR=Composite reliability
 Model Fit: $\chi^2=649.035$; $df=215$; $\chi^2/df=3.019$; $p<0.00$; CFI = .882; TLI = .861; RMSEA = .075; GFI = .866; IFI = .883; NFI = .835; AGFI= .828

4.2 Structural Model

This research employed structural equation modeling to test Hypotheses 1a-4b. The results of the structural equation modeling (SEM), as presented in Table 2, demonstrate a satisfactory level of fit based on the overall fit indices ($\chi^2= 740.641$, $p < 0.00$, $df=219$, $\chi^2/df=3.382$ CFI = 0.858, TLI = 0.836, RMSEA = 0.081, GFI = 0.849, AGFI= 0.810). The analysis examined eight direct relationships, out of which five hypotheses were supported. The results of study presented as followed.

Table 2. Direct paths for structural model

Hypothesis	Paths	Standard coefficients	P-value	Results
H1a	PBA→CI	-0.186	0.002	Accepted
H1b	PBE→CI	0.279	***	Accepted
H2a	SI→PBA	-0.267	***	Accepted
H2b	SI→PBE	0.387	***	Accepted
H3a	SE→PBA	0.024	0.696	Rejected
H3b	SE→PBE	0.425	***	Accepted
H4	PBA→CI	0.120	0.054	Rejected
H5	PBE→CI	0.075	0.178	Rejected

Notes: *** $p<0.001$; ** $p<0.01$; * $p<0.05$

SI=Social influence, PBA=Perceived Barriers, SE=Self-efficacy, PMA= Perceived self-preventive behavior anxiety, PBE=Perceived Benefits, CI=Continuance intention

Model Fit: $\chi^2=740.641$; $df=219$; $\chi^2/df=3.382$; $p<0.00$; CFI = .858; TLI = .836; RMSEA = .081; GFI = .849; AGFI= .810

5. DISCUSSION

Consistent with the findings, it can be inferred that individuals who are highly influenced by their family or important social groups tend to perceive fewer barriers in engaging in self-preventive behavior. Perceived benefits and perceived barriers demonstrated a valuable mediating role, having a significant connection with both continuance intention and independent variables. There are significant theoretical and managerial implications stemming from this study. This research builds upon prior studies by integrating several key factors, including perceived self-preventive behavior anxiety, self-efficacy, social influence from the Health Belief Model (HBM) such as perceived barriers, perceived benefits, and self-efficacy, to predict the continuance intention of self-preventive behavior. The findings of this study contribute to the body of literature by validating and expanding upon existing theories and models, thus advancing our comprehension of the factors influencing self-preventive behavior among foreign consumers residing in Korea [6,7,8].

The findings of this study hold significant managerial implications for policy makers, healthcare

professionals, and self-preventive behavior equipment producing companies, as they provide valuable insights into addressing public concerns surrounding self-preventive behavior. By considering the study results, these stakeholders can develop effective strategies and interventions to promote self-preventive behavior and effectively respond to the evolving needs and expectations of the general public. This research contributes to the existing body of literature and offers practical implications for various stakeholders involved in public health and consumer behavior domains.

6. CONCLUSION

Self-preventive behavior continuance can significantly contribute to controlling the current COVID-19 situation even though the restrictions have been lifted. Even though previous studies tried to identify the public's concerns and refusal factors of self-preventive behavior, there were no sufficient studies which tried to identify factors that could lead to continuance intention of this behavior. This study is an attempt to identify public's real thoughts on self-preventive behavior, to find out to what extent they feel burdened by this behavior and to identify which factors will keep individual motivated to self-preventive behavior continuance. Findings can bring insights to all related parties concerning the self-preventive barriers and general problems underlying anti-mask opinions. By accessing the findings of this study public health institutions and mask producing companies can find very useful solutions on how to create pro mask-wearing campaigns or what is the most efficient way to approach their costumers while knowing insights into the psychological and sociocultural determinants of self-preventive behaviors. This study presented that not only the external factors can be the motivator or demotivator, but with the help of Health Belief Model we can see that individual's emotional state, and psychological health have also a great impact on the behavior. Therefore, this study's suggestion to health care officials, policymakers and mask producing businesses is to keep on mind that by accessing the psychological beliefs, in case of this study foreign costumers residing in Korea they can find the solutions of stabilizing their sales and encouraging the public to sustain a safe society by continuing to wear masks. As this study also demonstrated the impact of perceived mask-wearing anxiety on decision making, policy makers and marketers can use it as an instrument for sharing awareness through social media and campaigns.

Lastly, limitations and further direction are discussed. This study has several limitations. First, the findings of this study, which focused on a sample in South Korea may not be generalized. Future studies can extend the proposed model to other countries. Second, only opinions and attitudes of the general public were examined, not health care professionals. It would be valuable research if doctor's, health care policymakers' perceptions were examined in future. Third, only foreigners residing in Seoul, South Korea were surveyed limiting the generalizability of findings to the entire population or other regions. Thus, future research could target a broader audience. This paper specifically targeted individuals belonging to the MZ generation, resulting in a participant age range of 20-44 years. However, it is important to note that teenagers and the elderly population were not included in the survey. To obtain more generalized results, future research could expand the participant pool to encompass individuals of all age groups. Finally, the proposed research model used only 3 key components of the Health Belief Model Theory, which are perceived barriers, perceived benefits, and self-efficacy. By focusing solely on perceived barriers, perceived benefits, and self-efficacy, other important constructs of the HBM may have been overlooked. The HBM encompasses additional factors such as perceived susceptibility, perceived severity, and cues to action, which contribute to individuals' health-related decision-making and behaviors. By not including these elements in the research model, the study may not fully capture the complexity and richness of the HBM framework. Therefore, future research could consider incorporating

a more comprehensive set of HBM constructs to provide a more holistic understanding of the factors influencing self-preventive behavior continuance intention.

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