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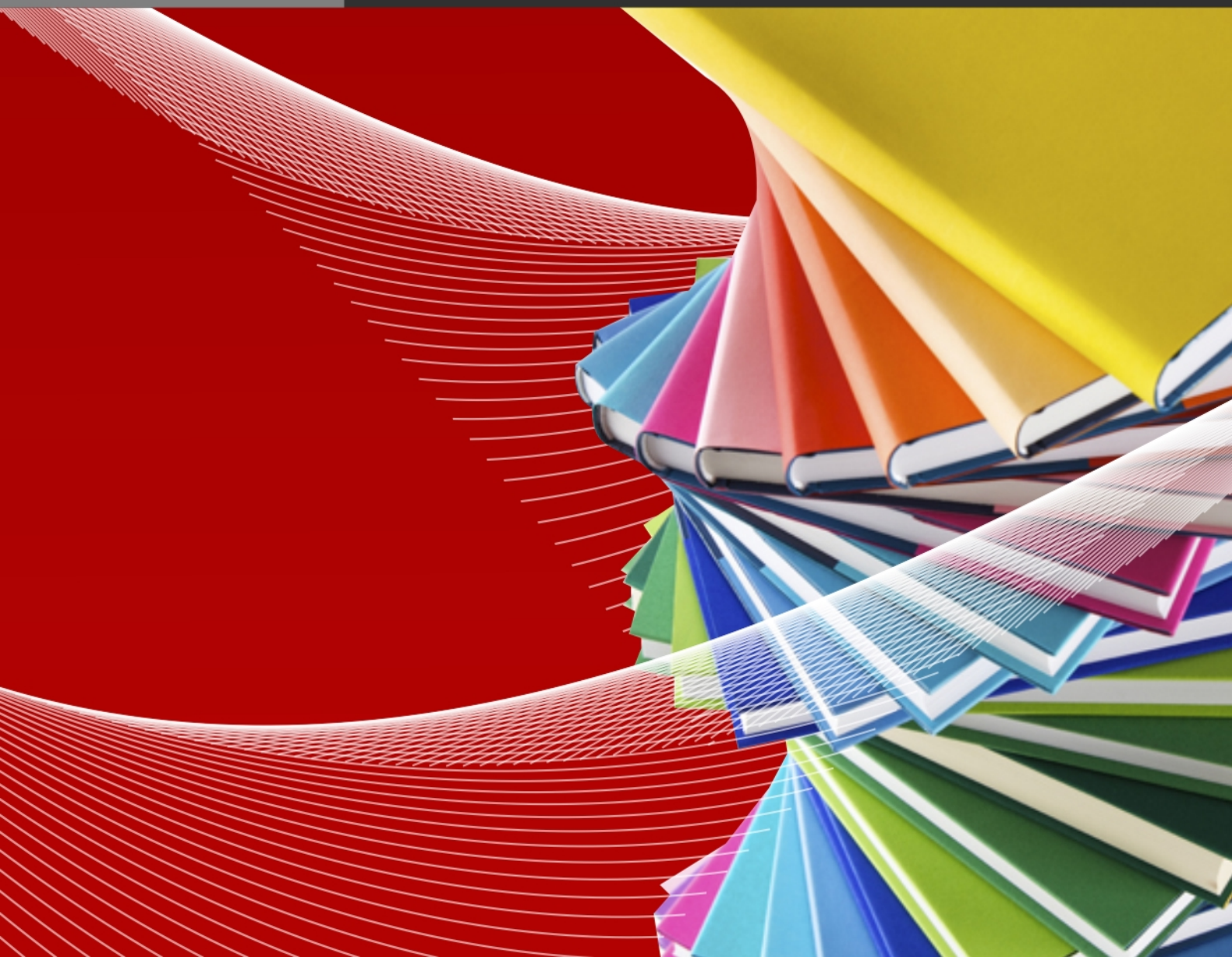

Factors Influence Chinese People to Delay Seeking Medical Check for Influenza-Like Symptoms

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Abstract

The present study examined whether the health belief model (HBM) constructs, personality of anxiety and attitudes toward self-care related to delay in seeking medical check for influenza-like symptoms among 164 Chinese people (79 men and 85 women). The results showed that about 40% of participants would tend to delay for more than three days when they had suspected themselves being infected with influenza. As hypothesized, correlation analysis revealed that the extent of delay was positively correlated to perceived barriers, and negatively correlated to general health value and perceived benefits. What is more, a positive correlation between the extent of delay and anxiety was found. The findings suggest that health education programs and intervention should aim at changing people's general health values as well as specific perception of the benefits and barriers in seeking medical check. Furthermore, health intervention should pay more attention to minimize people's level of anxiety by increasing their cognition and trust in medical check.

Factors Influence Chinese People to Delay Seeking Medical Check for Influenza-Like Symptoms

According to Macao Centre for Disease Control and Prevention, about 14 % to 34% adults found a doctor for influenza-like symptoms in Macao in 2008 (Macao Health Bureau, 2008). The data showed that influenza was quite prevalent and it could have significant influences on the health system regarding its prevention or treatment. Mok, Yeung and Chan (2006) revealed that influenza can affect anyone at any age, and infection can induce some serious outcomes such as pneumonia and death if no proper treatment is available on time. In addition, the virus which causes influenza can be transmitted to other person easily because of the high density of population in Macao where are 18.9 thousand people per square kilometer (Macao Statistics and Census Service, 2008). More importantly, influenza symptoms can be the indicator for some severe illnesses such as cancer (Andersen, Cacioppo & Roberts, 1995). Even though influenza symptoms seem as non-life-threatening, its impacts cannot be underestimated, and an early action of care seeking is important.

There is a popular proverb that states "good health is over wealth". Good physical health is desirable and all people would like to enjoy it, and hence, seeking medical care in order to protect oneself from illnesses should be the proper way to do (Akande & Owoyemi, 2009). Most people know that the longer the duration of an illness, the more harmful to our health. If we can seek medical care and get the illness cured earlier, we can prevent it from becoming a severe one no matter if it is a life-threatening or a minor one, and thus the probability of being worsened and the risk of death can be reduced (Andersen et al., 1995). However, why do many people not seek medical care immediately even though they have observed their own obvious symptoms like influenza? Health belief model was used to understand this phenomenon in the current study.

Delay in medical care seeking for serious illness symptoms was investigated by

researchers in the past. For example, Ristvedt and Trinkhaus (2005) stated that many people delayed seeking medical care when they had the symptoms of cancer, such as head and neck cancer (Tromp, Brouha, De leeuw, Hordijk & Winnubst, 2004), as well as breast cancer (Friedman et al., 2006; Timko, 1987), in which a range of 26% to 84% of participants had delay behavior. In addition, Mesfin et al. (2005) studied the delay or care seeking behavior of patients with tuberculosis and they claimed that tuberculosis could be controlled if the patients had an earlier detection. On the contrary, if they delayed to diagnose and to seek treatment, it would be worsened, and the chance of transmitting it to others would increase. Moreover, Meyer-Weitz, Reddy, Van Den Borne, Kok, and Pietersen (2000a) found that almost half of their participants waited for longer than seven days between noticing sexual transmitted disease (STD) symptoms and having medical diagnosis. In fact, early detection and medical care for STD could prevent human immunodeficiency virus (HIV) infection. In a similar study, Meyer-Wietz et al. (2000b) suggested that early medical care was a successful way for reducing deterioration of a disease. Indeed, delay behavior was considered as a critical problem whether for physical health or mental health, Andersen et al. (1995) found that there was a positive correlation between the extent of delay and the rate of morbidity and mortality, and the more number of days from noticing symptoms to seeking medical check, the greater danger to one's life. In spite of these, many people would tend to delay medical seeking even though there were some symptoms which indicated illness had appeared in their body.

Health Belief Model and Chinese people's delay in seeking medical care

Although there were quite a number of studies examining the factors which might influence people to seek medical care for serious illness symptoms, we have only little knowledge about the reasons of delaying to seek medical care for some minor illnesses symptoms such as influenza. What's more, only a few of studies applying the health belief

model (HBM; Rosenstock, as cited in Lin, Simoni & Zemon, 2005) to examine the medical care seeking behavior among Chinese people in Hong Kong (e.g., Lai & Cheng, 2004; Mok et al., 2006), and there was little information related to this in Macao. The HBM suggests that whether people practice health behavior is influenced by four factors, which are perceived vulnerability, perceived seriousness, perceived benefits, and perceived barriers. In 1988, Rosenstock, Strecher and Becker added the concept of health value and perceived self-efficacy into HBM in order to enhance the predictability of performing health-related behavior (as cited in Lin et al., 2005; Petro-Nustus & Mikhail, 2002). However, previous research only focused on the four original HBM components in the health belief model which are perceived vulnerability, perceived seriousness, perceived benefits and perceived barriers, particular in Chinese's health behavior (Lai & Cheng, 2004; Mok et al., 2006; Norman & Brain, 2005) and had ignored the two newly added HBM components included general health value and perceived self-efficacy. Better understanding of all aspects related to health behavior can advance the health educations and interventions in the future. Hence, the aim of this study was to explore how these psychological factors (i.e. general health value, perceived vulnerability, perceived seriousness, perceived benefits and barriers, as well as perceived self-efficacy) influence people's medical check delay for influenza-like symptoms.

General health value. General health value is the individuals' belief which about the importance of health. In a previous study, general health value was viewed as similar to health motivation, which meant that the level a person interest in and concern about the health (Rosenstock, Strecher & Becker, as cited in Petro-Nustus & Mikhail, 2002).

Costa, Jessor and Donovan (1989) found that health value was positively correlated to health care behavior. It meant that if people have a higher degree of concern about their health, they would do more health care behavior. Similarly, Rosengard et al. (2001) revealed that people who placed more importance on their health, they would be more likely to

participate health-related behavior such as condom use. Moreover, people would have more understanding about health or some diseases since there was more motivation for them to acquire the knowledge if they viewed health as a very important aspect in their life (Moorman & Matulich, 1993).

Perceived vulnerability. Clarke, Lovegrove, Williams and Machperson (2000) defined perceived vulnerability as an individual's subjective perception of the chance to develop a diseases and the probability of being harmed. This factor had a great influence on decision making of taking some health actions (Ravert & Zimet, 2009). Raver and Zimet (2009) suggested that some people had an innate invulnerable perception especially for adolescents; they would not accept vaccine for HIV because they believed that this risk would not happen to them.

Similarly, if people always held an optimistic attitude about their health, they would perceive that they were less likely to develop some health problems, and therefore, there was little chance for them to practice health promoting behaviors (Clarke et al., 2000), such as regular breast self-examination and mammographic screenings for breast cancer (Petro-Nustus, & Mikhail, 2002). On the contrary, Kenagy and Hsieh (2005) proposed that if people had perceived that they had a higher susceptibility to a disease, they would decrease their health compromising behaviors because they believed that they would have disease easily and fear of the outcome of that disease. Also, Mok et al. (2006) found that Chinese adults were more likely to receive vaccination if they believed that they were more vulnerable to influenza.

Perceived seriousness. Al-Hassan and Omran (2005) said that perceived seriousness is a personal perception about the severity of the outcomes of getting an illness. They revealed that if individuals viewed the symptoms of an illness was serious and could threaten their life; they would have a greater tendency to seek medical care in order to reduce the threat. Also,

this perception of threat would have more importance on health care seeking behaviors when those behaviors aimed at reducing specific threats (Brewer et al., 2007). For example, people would be aware of having a need to take some actions for influenza symptoms such as seeking medical check or having vaccination if they considered that the symptoms were severe and could interfere to their daily life (Mok et al., 2006). In a study, Mok et al. (2006) found that Chinese adults would have more motivation to receive vaccination if they believed that getting influenza could deteriorate their health and even lead to death. However, if people treated influenza as common phenomenon, there would not have enough motivation to drive them to seek medical check.

Perceived benefits. Perceived benefit was defined as an individual's belief about the good outcome after adopting a specific health behavior (Kenagy & Hsieh, 2005). It is difficult for people to engage in health-related behavior if they perceived that there was not any beneficial outcome.

James, Campbell and Hudson (2002) found that perceived benefits was positively correlated to the rate of colonoscopy and it played an important role in detecting behavior. In fact, most behaviors have its benefits and costs, when people decide whether to perform a health behavior or not, they would evaluate the benefits and costs. For instance, woman would tend to practice breast self-examination (BSE) regularly if she believed that the benefits of practicing BSE exceed the barriers of practicing BSE (Petro-Nustus & Mikhail, 2002). In addition, perceived benefit was also related to preventive behavior such as taking the vaccine. For instance, Chinese people were found to be more likely to be vaccinated for influenza if they perceived that there were more benefits of taking this preventive behavior (Lai & Cheng, 2004; Mok et al., 2006).

Perceived barriers. Contrary to perceived benefits, perceived barrier is the perceived costs of executing the health action. Al-Hassan and Omran (2005) found that patients with

myocardial infarction who perceived more costs than benefits would delay to seek health care, and they always believed that seeking health care was time consuming or inconvenient (Clarke et al., 2000). Moreover, women were reluctant to receive breast cancer screening because they felt embarrassed, and thus, the feeling of shame would be a main barrier for them (Egbert & Parrott, 2001). Hence, perceived barriers were a strong predictor for health care behavior especially for some preventive behaviors (Clarke et al., 2000; James et al., 2002; Norman & Brain, 2005). As for taking vaccine for influenza, Lai and Cheng (2004) found that their Chinese participants would have stronger intention to take this preventive behavior when they perceived that there were fewer barriers of being vaccinated such as mild undesirable consequences.

Perceived self-efficacy. It is a personal perception about the belief of one's ability to perform a particular behavior (Bandura, 1982). Jackson, Tucker and Herman (2007) claimed that if people perceived that they had a higher level of self-efficacy, they were more likely to engage in a desirable health-related behavior. It was because that people tended to perform a behavior successfully if they believed that they would be able to do; they were more likely to give up if they believed that they were incapable of this behavior (AbuSabha & Achterberg, 1997). Although perceived self-efficacy might always explain a specific behavior, generalized self-efficacy scale was used to assess this perception in this study. If people who were high in this stable sense of personal capability to deal successfully with a variety of situations, they would tend to perform well in some specific situations (Bandura, 1982).

To summarize the components of the HBM in this study: People tend to delay or not seeking medical check for influenza-like symptoms if they do not concern much about their health, believe that they are invulnerable to influenza and consider that there is no severe outcome after getting influenza. Also, the beliefs that they are unable to practice health behavior such as seeking medical check as well as perceptions of fewer benefits and more

barriers to those behaviors would lead to delay. Therefore, the relevant hypotheses are made and shown as following.

Hypothesis 1: The lower general health values, the longer extent of delay.

Hypothesis 2: The lower level of perceived vulnerability, the longer extent of delay.

Hypothesis 3: The lower level of perceived seriousness, the longer extent of delay.

Hypothesis 4: The fewer benefits the people perceive, the longer extent of delay.

Hypothesis 5: The more barriers the people perceive, the longer extent of delay.

Hypothesis 6: The lower level of perceived self-efficacy, the longer extent of delay.

Personality and Attitudes

In order to provide a comprehensive picture of delay behavior, personality trait of anxiety and an additional contributor of attitude toward self-care were also investigated.

Trait anxiety. Millar (1997) stated that the association between the factors in the HBM and health behavior was too rational, and the effect of emotion was ignored. Negative emotions like anxiety can interrupt people's normal functioning such as decision-making and perception of health (Stark & House, 2000). Hirai et al. (2008) defined anxiety as a personality type of having unpleasant or negative feeling about the consequence of uncertain events. Although there were few studies were shown that anxiety was positively related to delay behavior (e.g. Kincey, Mandal & Sinha, 2003), other researchers suggested that the higher level of anxiety could prompt people to seek some medical care for obvious symptoms because they feared that the symptoms were an indicator of serious disease, and wanted to cure it earlier (e.g. Hirai et al., 2008). What's more, anxiety could motivate people to stop practicing health-compromising behavior such as smoking (Koblitz et al., 2009). Hence, the following hypothesis could be made.

Hypothesis 7: The lower level of anxiety the people have, the longer extent of delay.

Attitude toward self-care. Self-care was defined as the behaviors related to health

promotion and prevention, and also symptom evaluation; it is one of the methods to deal with health problems and is undertaken by the people themselves (Leyva-Flores, Kageyama, & Erviti-Erice, 2001). Therefore, attitude toward self-care is the positive or negative beliefs or evaluations about those self-care behaviors.

In fact, attitude could have a strong impact on behavior, if people have positive attitudes toward a behavior; they are more likely to transfer those attitudes to actual behavior (Ajzen, Timko & White, 1982). Reis (2001) found that people who had a negative attitude toward self-care would not attempt to perform self-care behavior for common cold; they only relied on the medical treatment and believed that self-care have little effect on curing this illness. It seems that those holding a negative attitude toward self-care would seek medical check generally and the extent of delay might be decreased. However, both self-care and medical care are important to resolve health problem effectively, especially for chronic disease such as diabetes (Leyva-Flores et al., 2001). Høy, Wagner and Hall (2007) suggested that self-care was one of the useful methods to improve individual's health. People who would like to engage in self-care behavior were more likely to be aware of their bodily change due to illnesses and then to seek medical care early; therefore, positive attitude toward self-care might also decrease the extent of delay. According to the previous studies, the relationship between attitude toward self-care and delay behavior was not confirmed; therefore, the current study would explore this relationship.

Method

Participants and Procedure

In the current study, the potential respondents were recruited in the busier area of Macau Peninsula (i.e. Iao Hon, Fai Chi Kei, Rua do Campo and the Central area) and also in campus (i.e. university, high school and adult educational center). All respondents were individually approached by a trained interviewer and were informed that the purpose of this

study and assured that their answers were kept anonymous and strictly confidential. They were told that their answers and their personal information were not individually disclosed to anyone, and the data was only used by the researchers in statistical analysis, all the completed questionnaires were destroyed after finishing the study. In addition, participation was voluntary and no monetary reward was given. Then they were asked to complete the questionnaire personally if they would like to participate. However, the trained interviewers would read each item in the questionnaire for those who were illiterate and help them to fill it out. If the respondents did not want to participant in this study, their preferences would be respected. There were 98 people (33%) among 297 potential respondents refused to participate in this study. Then 35 people (11.8%), who had signed the consent form to indicate their agreement of participation, did not finish the questionnaire.

A total of 164 Macao residents who were Macao identity card holders were recruited in this study eventually. Their ages ranged from 16 to 63 years old (mean=31.8; SD= 11.87) which included the group of late adolescence, young adulthood and middle adulthood, 79 respondents (48.2%) were male and 85 (51.8%) were female. In this sample, a total of 36.6 % respondents reported that senior high school as the highest complete education level, and followed by junior high school (29.9%) and bachelor degree (22%). More than half of them (57.9%) were not married. Also, 42 respondents (25.6%) were unemployed, and most of them (72%) reported that their household income was less than MOP$25,000. The summary of demographic characteristics of respondents was shown in Table 1.

Insert Table 1 about here

Materials

The questionnaire was composed of eight psychological variables, the extent of delay

(length of time from noticing influenza-like symptoms to seeking medical check) and demographics. All scales in the questionnaire were English versions except the one of generalized self-efficacy scale. Therefore, the original scales were first translated from English into Chinese by the author, and the meaning of each translated sentence would keep close to the original versions. Then they were back-translated into English by another person who was fluent in English in order to check for accuracy of the items in the translated versions and to consider the equivalent of the two English versions.

The extent of delay. One statement (i.e. "How long would it take you to seek for a medical check if you doubt yourself being infected with influenza?") was asked for a general estimation of one's delay in seeking medical help. However, to increase the validity and reliability of the estimation, we used seven items to measure people's length of time from noticing seven different influenza-like symptoms (i.e. moderate to high fever, aching muscle, headache, severe fatigue, non-productive cough, runny nose and sore throat) to seeking medical check. One sample question was "How long did you have a symptom of runny nose before you sought medical check generally?" There were five response categories for participants to answer these statements, which were "less than 1 day = 1", "1-3 days = 2", "3-5 days = 3", "5-7 days = 4, "longer than 7 days = 5". The average score of these seven items was calculated to represent the "extent of delay". A higher number indicated a longer extent of delay than a lower number. In the present study, the reliability of this scale was .89.

General health value. The health motivation subscale from the Osteoporosis Health Belief Scale (OHBS; Kim, Horan, Gendler & Patel, as cited in Johnson, McLeod, Kennedy & McLeod, 2008) was used to assess people's general health value, the original Cronbach alpha was .82. One study found that people who had higher health motivation would practice more health behaviors to prevent osteoporosis such as calcium intake (Lee & Lai, 2006). In the present study, participants were asked to show their agreement with this 5-item subscale by

using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). One sample item was "Maintaining good health is extremely important to me". A higher score meant a higher general health value, and the reliability of this scale was .71.

Perceived vulnerability. The perceived susceptibility to osteoporosis subscale from OHBS (Kim, Horan, Gendler & Patel, as cited in Johnson et al., 2008) was used to measure people's perception about the vulnerability of getting influenza; the original Cronbach alpha was .90. Johnson et al. (2008) believed that perceived susceptibility had the effect on motivating people to seek health behavior. Therefore, this scale had been revised to assess people's perceived vulnerability to influenza. One sample item was "There is a good possibility that I will get influenza". A 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree) was used to assess these five items. A higher score indicated a higher level of perceived vulnerability, the reliability of this scale was .88.

Perceived seriousness. Five items were used to measure participants' perception about seriousness of influenza, and they were adopted from a previous survey (Mok et al., 2006), which was based on the health belief model. A sample question was "The flu can be a bad disease", and the original Cronbach alpha was .62. Mok et al. (2006) found that their participants would more likely to obtain a flu shot if they believed that there were some serious outcomes after getting influenza. A 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree) was used. A higher score indicated a higher level of perceived seriousness. The reliability of this scale was .76.

Perceived benefits. Four items were used to measure the perceived benefits of seeking medical check for influenza-like symptoms. The scale was made up of three revised items from perceived benefits of obtaining a flu shot scale (Mok et al., 2006), with one sample item was "Seeking medical check early can prevent me from getting a more severe case of the influenza", the original Cronbach alpha was .77, and one newly created item (i.e. seeking

medical check early can prevent transmitting the virus to other people). Preventing to transmit the virus to other people was one of the benefits of seeking diagnosis and treatment (Mesfin et al., 2005). A 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree) was used. A higher score indicated more benefits the people perceived. The reliability of this scale was .72.

Perceived barriers. Six items were used to measure perceived barriers of seeking medical check for influenza-like symptoms. Three revised items were based on the perceived barriers to obtaining a flu shot scale in the previous study (Mok et al., 2006), for example, "The process of medical check is painful", and the original Cronbach alpha was .86. In addition, there were three newly created items which were believed to be the potential barriers of seeking medical check. One sample item was "Seeking medical check is inconvenient". A 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree) was used. A higher score indicated more barriers the people perceived. The reliability of this scale was .78.

Perceived self-efficacy. A 10-item scale from Generalized Self-Efficacy Scale (GSE; Schwarzer, Mueller & Greenglass, 1998) was used to assess participants' perceived self-efficacy. A sample item was, "I can always manage to solve difficult problems if I try hard enough". Also, the Chinese version of this scale was available and the original Cornbach alpha was .86 (Zhang & Schwarzer, as cited in Wu, Tang & Kwok, 2004). Wu et al. (2004) found that Chinese women with chronic illnesses would have more psychological distress if they had a lower level of perceived self-efficacy, and it might impede them to practice some health behaviors. In the present study, participants were asked to show their agreement by using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A higher score indicated a higher level of perceived self-efficacy, and the reliability of this scale was .83.

Trait anxiety. Eleven items were selected from the Spielberger Trait Anxiety Inventory to measure participants' anxiety (Spielberger, Sydeman, Owen & Marsh, as cited in Barrow, 2007). There are two dimensions in the State-Trait Anxiety Inventory which are state anxiety and trait anxiety, and each of those can be divided into anxiety present and anxiety absent (Spielberger & Sydeman, 1994). In the present study, only Trait Anxiety Present Inventory was used because it was used to assess the general tendencies of different people while encountering with uncertain events. A sample item was "I worry too much over something that really doesn't matter". In a previous study, the Cornbach alpha of this scale was .86 (Raikkonen, Matthews, Flory, Owen & Gump, 1999). A 4-point Likert scale was used from 1 (almost never) to 4 (almost always). A higher score indicated a higher level of anxiety. However, there were two items (i.e. "I feel satisfied with me" and "I make decision easily") which needed to be excluded in this study because of the inconsistent meaning and low correlation with other items. And the final reliability of this scale was .85.

Attitude toward self-care. Because there was no validated instrument for attitudes toward self-care found, four items were newly created to measure people's attitude toward self-care based on a manual for health services researchers and the original internal consistency was high among these attitude items (Francis et al., 2004). One sample item was "Overall I think that self-care is good practice". Participants were asked to show their agreement with this 4-item scale by using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A higher score meant that there were more positive attitudes toward self-care. The reliability of this scale was .84.

Demographics. Participants were also asked to provide demographic information included age, gender (1=male; 2=female), level of education (0=None; 1=Primary School; 2=Junior High School; 3=Senior High School; 4=Bachelor Degree; 5=Master Degree or above), employment status (0=No; 1=Yes [includes part-time and full-time]), marital status

(0=Not married; 1=Married), and estimated household income per month (1= 0 – 4,999; 2= 5,000 – 9,999; 3=10,000 – 14,999; 4=15,000 – 19,999; 5=20,000 – 24,999; 6=25,000 – 29,999; 7=30,000 – 34,999; 8=35,000 – 39,999; 9=40,000 or above).

Results

All collected data were entered and analyzed into the Statistical Package for Social Sciences (version 17.0). As showed in Table 1, delay behavior was quite prevalent in Macau in general. There were about 40% of participants (N=63) who tended to delay for more than three days when they had suspected themselves being infected with influenza. However, there were still over 60% participants (N=101) who would seek for a medical check for about one to two days. Also, the summary of psychological characteristics of respondents was shown in Table 2.

Insert Table 2 about here

On the other hand, independent-samples t-test was conducted and the result showed that the extent of delay in influenza-like symptoms significantly differed between the group of married and the group of non-married ($t=3.023$, $p<.01$), people who were not married (mean=3.16) would tend to delay longer than those who were married (mean=2.74). However, there was no significant difference in employment status ($t=.042$, $p>.05$) and gender ($t=1.432$, $p>.05$). In addition, the result from one-way ANOVA indicated that there was no significant difference in educational level ($p>.05$).

Pearson correlation analyses were used to examine the association between the extent of delay in influenza-like symptoms and independent variables and demographics. As Table 3 revealed that, there were significant positive correlations between the extent of delay and both perceived barriers ($r=.23$, $p<.01$) and anxiety ($r=.30$, $p<.01$). Also, negative correlations

were found between the extent of delay and general health value ($r=-.28$, $p<.01$), perceived benefits ($r=-.32$, $p<.01$), age ($r=-.19$, $p<.05$), and marital status ($r=-.23$, $p<.01$). However, the extent of delay had no significant correlation to perceived vulnerability, perceived seriousness, perceived self-efficacy and attitude toward self-care.

Insert Table 3 about here

In order to examine which factors could significantly explain the variance of the extent of delay in influenza-like symptoms, a multiple regression analysis was employed. In the current study, the extent of delay was set as the dependent variable. Two demographics (i.e. age and marital status) which had showed significant correlation with the extent of delay in Pearson correlation analyses were entered into the first block of the model. Then, the six HBM constructs including general health value, perceived vulnerability, perceived seriousness, perceived benefits, perceived barriers and perceived self-efficacy, and attitude toward self-care were entered into the model as the second block, and the personality of anxiety was entered into the third block.

The result was summarized in Table 4 and it was shown that all the variables accounted for a total 25.3 % of the variance of the extent of delay. Block 1 significantly explained 5.5% of the variances of delay ($F(2,159) = 4.643$, $p<.05$), but both age and marital status did not significantly explain the variance of the extent of delay ($p>.05$). The six HBM constructs and attitude toward self-care in block 2 explained 17.3% variance of the extent of delay after controlling for the demographics ($F(7,152) = 4.876$, $p<.001$), general health value was a significant factor to the extent of delay in influenza-like symptoms ($beta = -.184$, $p<.05$), and perceived benefit was found to be a strongly significant factor ($beta=-.281$, $p<.001$). In addition, the personality of anxiety accounted for an additional 2.4% variance and it was a

significant factor to extent of delay (beta=.183, p<.05).

Insert Table 4 about here

Discussion

No matter for severe or minor illnesses, delay in seeking medical check can harm people's physical health. In spite of this, delay behavior of influenza-like symptoms is quite prevalent in Macao, and therefore, it is necessary for people to understand which factors relate to delay behavior in seeking medical check. The results of the present study implied that HBM constructs as general health value, perceived benefits and perceived barriers, and personality factor of trait anxiety could contribute to delay behavior.

HBM constructs and delay behavior

The results of this study supported that general health value and perceived benefits were negatively correlated to the extent of delay, and perceived barriers were positively correlated to the extent of delay. As hypothesized, people who tended to delay seeking medical check for influenza-like symptoms would have lower health value, and perceive fewer benefits and more barriers of medical care seeking. What is more, the findings highlighted the importance of general health value and perceived benefits in explaining the variance of extent of delay. It supported a previous finding that motivation was associated with practicing BSE (Petro-Nustus & Mikhail, 2002). It refers to less motivation in practicing health behavior to lower health value, which may result in longer extent of delay. Moreover, the results of the current study revealed that perceived benefits were the strongest factor for explaining the variances of the extent of delay. In addition, Petro-Nustus and Mikhail (2002) found that perceived benefits also significantly explained future intention. It can be supposed that perceiving to have good outcomes after performing health behaviors is very important

whether in explaining past behavior or in understanding future intention.

On the other hand, the results showed that perceived threats (vulnerability and seriousness) were not significantly correlated to the extent of delay, and it is inconsistent with the hypotheses. One plausible reason is that influenza is a common illness for most people, and hence, even though people have the perceptions of vulnerability, it may not independently motivate them to seek medical check. Also, the consequences of getting influenza may not be serious enough to influence people's medical seeking behavior. What is more, Schwarzer and Luszczynska (2008) found that perceived threat could associate with reducing health compromising behaviors if people are in a high risk group. For example, children, elderly people, and people with serious medical conditions are the highest risk group of developing a more severe consequence if getting influenza. Hence, perceived threat might not be significantly related to delay seeking medical check for the relatively healthy participants in this study.

Inconsistent with the hypothesis, perceived self-efficacy was also found to have no significant correlation to the extent of delay. Generalized self-efficacy scale is used to assess one's confidence in performing tasks generally (AbuSabha & Achterberg, 1997), but seeking medical check for influenza-like symptoms is a specific health related behavior. Even though Bandura (1982) suggested that perceptions of one's ability in performing general tasks is related to those in performing some specific situations, Luszczynska, Gutierrez-Dona and Schwarzer (2005) believed that general self-efficacy can describe people's ability only in performing less specific behavior. Therefore, because of the variability of self-efficacy (Bandura, as cited in Manne et al., 2006), generalized self-efficacy scale may not be used in this context of delay in medical care seeking for influenza symptoms, and thus further studies are suggested to use a more specific instrument.

Personality, attitudes, and delay behavior

In addition to the three constructs in HBM, the personality of anxiety could also contribute to the extent of delay. As Millar (1997) stated that affective factors would have an impact on behavioral choice, and the results of this study showed that people who have higher level of anxiety would tend to have longer extent of delay. Although there is significant relationship between anxiety and the extent of delay, it is contrary to the hypothesis. It may because that anxious people would always have the negative feelings about uncertain consequences and events (Hirai et al., 2008), and these negative feelings could impede people to perform health related behavior (Jones, O'Connor, Conner, McMillan & Ferguson, 2007). For example, people may try to avoid seeking medical check when they have high anxiety toward the effectiveness of medical check, the process of medical check, and the disease in nature. Thus, if people always think about those uncertainties, they may engage in delay behavior. On the contrary, Kiviniemi, Voss-Humke and Seifert (2007) found that people would have more motivation to practice health behavior if they have more positive emotion.

On the other hand, the relationship between attitude toward self-care and the extent of delay cannot be ascertained in this study. Although the results showed that attitude toward self-care was negatively correlated to the extent of delay ($r=-.131$), it was just marginally significant ($p=.095$). One plausible reason is that there is not a simple correlation between self-care behavior and the extent of delay, and also, self-care seems to be an independent behavior to delay behavior. Hence, people who delay in seeking medical check may not be influenced by performing or not performing self-care behavior. In addition, most participants have a highly positive attitude toward self-care (mean=4.21). In other words, this result implies that self-care behaviors are perceived as social desirable practices to do for everyone, thus, it may not have a great effect on this specific delay behavior.

There are several limitations in the present study. First, because it is a cross-sectional survey, the results cannot prove the causal relationship among the variables. Hence, further studies are needed to employ the longitudinal design in order to find the causality. Second, other health factors such as health history and health habit can also assist health care providers in understanding people's intention to seek medical care (Karoly, Ruehlman & Lanyon, 2005), but they are not assessed in this study, so further studies are needed to comprehensively consider these factors. Third, this study used a convenient sampling, so the results may not reflect the beliefs and behaviors of all the Macao residences. In spite of this, the representativeness had been increased after collecting the data in different places at different periods of time. Fourth, it should be aware that self-report might lead some biases such as social desirability; therefore, anonymity was assured to the participants in order to control this limitation.

The findings of this study can provide some practical implication to health services and government policies. Regarding general health value, education programs should aim at increasing people's sense of the importance of health and their knowledge of when to seek medical check. And regarding perceived barriers, financial assistance which is provided by government is helpful to reduce the extent of delay; moreover, the accessibility of health services and facilities are needed to concern (Drapalski, Milford, Goldberg, Brown & Dixon, 2008). Hence, it can be concluded that a good communication and cooperation between government and health services are important. Also, perceived benefits were found to be the strongest factor in explaining the variance of the extent of delay, and hence, both government and health services should pay more attention to promote the benefits of no medical delay and early check. Furthermore, although attitude toward self-care was not found to be significantly correlated to the extent of delay, those behaviors should be promoted because they can enhance one's health status (Høy, Wagner & Hall, 2007). In addition, while

promoting this kind of behaviors, health educators do not need to worry that self-care behaviors would lead people to delay. Besides, such health intervention programs should pay more attention to strengthen people's cognition about the processes of medical check and increase their trust in the effectiveness of medical check in order to reduce the negative feelings about uncertainty and minimize their level of anxiety.

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Table 1

Summary of demographic characteristics of participants (N=164)

		Frequency (N)	Percentage (%)
Gender	Male	79	48.2
	Female	85	51.8
Age	16-20	29	17.7
	21-40	93	56.7
	41-63	40	24.4
	Missing	2	1.2
Education level	None	0	0
	Primary School	15	9.1
	Junior High School	49	29.9
	Senior High School	60	36.6
	Bachelor Degree	36	22.0
	Master Degree or above	4	2.4
Employment status	No	42	25.6
	Yes	116	70.7
Marital status	Not Married	95	57.9
	Married	69	42.1
Household income	<25,000	118	72.0
	>25,000	42	25.6
	Missing	4	2.4
Length of time	<1 day	24	14.6
	1-2 days	77	47.0
	3-4 days	32	19.5
	5-7 days	19	11.6
	>7 days	12	7.3

Table 2

Descriptive Statistics

	Mean	SD	Minimum	Maximum	α
Extent of delay in influenza-like symptoms	2.98	.915	1.00	5.00	.89
General health value	3.61	.590	2.00	5.00	.71
Perceived vulnerability	2.45	.801	1.00	4.60	.88
Perceived seriousness	3.57	.663	1.40	5.00	.76
Perceived benefits	3.83	.569	1.00	4.50	.72
Perceived barriers	2.83	.708	1.50	5.00	.78
Perceived self-efficacy	3.51	.495	2.20	4.70	.83
Anxiety	2.24	.542	1.09	3.82	.85
Attitude toward self-care	4.21	.583	1.75	5.00	.84

Table 3

Means, Standard deviations, and intercorrelations among the extent of delay, HBM constructs, attitudes, personality and demographics. (N=164)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Extent of delay	--														
2. General health value	-.275**	--													
3. Perceived vulnerability	-.015	-.006	--												
4. Perceived seriousness	-.132	-.002	.216**	--											
5. Perceived benefits	-.320**	.161*	.071	.190*	--										
6. Perceived barriers	.227**	-.195*	.143	-.033	-.122	--									
7. Perceived self-efficacy	-.121	.252**	-.053	.032	.318**	.008	--								
8. Anxiety	.297**	-.087	.166*	.008	-.197	.359**	-.250**	--							
9. Attitude toward self-care	-.131	.361**	-.015	.123	.219**	.017	.199*	-.131	--						
10. Gender	-.112	-.046	.160*	.090	-.016	-.050	-.215**	.037	.130	--					
11. Age	-.187*	.230**	.053	.028	.000	.034	.060	-.193*	.100	.017	--				
12. Educational level	.120	.037	.035	.020	.028	-.072	.000	.037	.090	.002	-.242**	--			
13. Employment status	-.003	.110	.051	-.083	-.057	.081	.092	-.068	.100	--	.318**	.223**	--		
14. Marital status	-.231**	.226**	.011	-.029	.001	-.041	.119	-.256**	.110	--	.701**	-.144	--	--	
15. Household income	-.036	-.036	-.089	.131	.081	-.003	.054	-.169*	-.000	-.039	-.032	.051	-.020	.037	--

*p < 0.05, **p < 0.01 (two tailed).

Table 4

Results of regression using the Extent of delay in influenza-like symptom as the criterion (N=164).

Model	Beta (β)	t	R^2 change	F change	R^2
1. (Constant)			.055	4.643*	.055
Age	-.047	-.44			
Marital Status	-.200	-1.85			
2. (Constant)			.173	4.876****	.228
Age	-.034	-.34			
Marital Status	-.167	-1.65			
General health value	-.184	-2.24*			
Perceived vulnerability	.009	.12			
Perceived seriousness	-.076	-1.01			
Perceived benefit	-.281	-3.59****			
Perceived barrier	.143	1.90			
Perceived self-efficacy	.015	.20			
Attitude toward self-care	.026	.33			
3. (Constant)			.024	4.933**	.253
Age	-.013	-.13			
Marital Status	-.140	-1.39			
General health value	-.211	-2.57*			
Perceived vulnerability	-.011	-.15			
Perceived seriousness	-.080	-1.08			
Perceived benefit	-.262	-3.36***			
Perceived barrier	.078	.98			
Perceived self-efficacy	.054	.68			
Attitude toward self-care	.045	.57			
Anxiety	.183	2.22*			

Note: Beta (β) is the Standardized Coefficients Beta
*p< .05, **p < .01, ***p < .005, ****p<.001