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Perceptions of seasonal influenza and pneumococcal vaccines among older Chinese adults

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Conflict of interest

The author declares no conflict of interest in this study.

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ABSTRACT

Background and objectives: Seasonal influenza can lead to pneumonia. In Hong Kong, deaths from pneumonia increased steadily from 2001 to 2015, and pneumonia was the second most common cause of death between 2012 and 2015. The seasonal influenza vaccine and pneumococcal vaccine have been clinically proven as effective measures against these two diseases among older adults, who are at particularly high risk. Despite the availability of vaccine subsidies, however, more than 60% of older adults in Hong Kong remain unvaccinated against pneumococcal diseases and seasonal influenza. The objective of this study was to investigate the perceptions and barriers associated with the seasonal influenza and pneumococcal vaccinations among older adults in Hong Kong.

Research design and methods: A qualitative approach of individual semistructured interviews was adopted; 40 adults aged 65 years and older were interviewed between September and November 2016.

Results: The intersecting influences of belief of vaccines as harmful; low perceived risk of contracting the diseases; negative rumors about the vaccines; lack of promotion by healthcare providers; the perceived risk posed by the vaccinating locations; and the preference of using traditional Chinese medicine were discovered to prevent the participants from receiving the two vaccinations.

Discussion and implications: Perceptions and cultural factors should be considered in future vaccination promotion among older adults. This study found that, in particular, the participants' cultural associations and stereotypes of hospitals and clinics and healthcare providers' lack of perceived need to vaccinate older adults contributed to low vaccine acceptance among the participants.

Keywords: Critical medical anthropology, four social-level analysis, seasonal influenza vaccine, pneumococcal vaccine, Hong Kong.

INTRODUCTION

Seasonal influenza can lead to pneumonia (Campigotto & Mubareka, 2015), which was the second most common cause of death in Hong Kong between 2012 and 2015 (Centre for Health Protection, 2016), with its deaths kept rising between 2001 and 2015 (Centre for Health Protection, 2016). Older adults are at high risk of severe complications and even death from pneumococcal diseases (Stupka, Mortensen, Anzueto, & Restrepo, 2009), and they comprised 94% of the 7,502 cases of pneumonia mortality in 2014 Hong Kong (Hong Kong Information Services Department, 2015).

“Left influenza and right pneumococcal” (林永和醫生, 2012), which means receiving the seasonal influenza vaccine on the left arm and the pneumococcal vaccine on the right arm at the same time, is a slogan used in Hong Kong to encourage obtaining both seasonal influenza and pneumococcal vaccinations. In Hong Kong, however, only 39% of older adults aged over 65 were vaccinated against seasonal influenza, and 34% were vaccinated against pneumococcal diseases in 2015 (Hong Kong Information Services Department, 2015). These figures are much lower than overseas countries such as the United States with the seasonal influenza vaccination and pneumococcal vaccination coverage as 71.5% and 61.3% respectively for older adults in 2013-2014 season (Williams et al., 2016), and England with the seasonal influenza vaccination and pneumococcal vaccination coverage as 72.7% (Public Health England, 2015) and 69.8% for older adults in 2014-2015 season (Public Health England, 2015).

A past study in Hong Kong concluded that receiving both these vaccinations reduced older adults' odds of mortality by 35% and reduced their odds of suffering from stroke and cardiovascular morbidity by 33% and 48%, respectively (The Sun, 2011). Hence, older adults are advised to receive both the seasonal influenza and pneumococcal vaccinations to reduce

morbidity and hospital stay length resulting from the infection (Li, Gubbins, & Chen, 2015). However, financial barrier, poor vaccine and disease-related knowledge, and low perceived vulnerability and severity of diseases can prevent people from receiving vaccinations (Hou et al., 2014). In contrast, patient reminders and recall system (Jacobson Vann, Jacobson, Coyne-Beasley, Asafu-Adjei, & Szilagyi, 2018) and promotion from healthcare providers (Chan et al., 2015; Lu et al., 2018) can be important motivators of having vaccination.

Significance

Efforts to prevent seasonal influenza and pneumococcal diseases should be considered a critical part of public healthcare for aging societies (Hong Kong Medical Association, 2014). More than 60% of the older adults in Hong Kong remained unvaccinated against seasonal influenza and pneumococcal diseases, despite the Hong Kong Government's implementation of the Elderly Vaccination Subsidy Scheme (EVSS), which subsidizes the older adults aged 65 or above with HK\$160 (US\$21) for the seasonal influenza vaccine and HK\$190 (US\$24) for the pneumococcal vaccine received from private practice doctors (Centre for Health Protection, 2014) at the study time. As the subsidies of EVSS may not be able to fully cover the vaccination fee in some clinics, therefore, the government's Elderly Health Care Voucher (EHCV) Scheme, which provides monetary vouchers of HK\$2000 (US\$256) annually to the older adults aged 65 years or above, can be used to cover the fees of vaccination (Health Care Voucher, 2015). Public healthcare and private healthcare are the two pillars making the medical system of Hong Kong. As primary care, including adult vaccination, is mostly provided by the private health sectors (Chan, 2015), the government's EVSS and EHCV can alleviate the financial barrier for the older adults to use vaccination service. This implies other nonfinancial considerations explain the low vaccination rate among the older adults. **This article, therefore, investigates the other**

nonfinancial aspects that prevent the older adults in Hong Kong from receiving the two vaccinations.

Theoretical orientation

The health belief model (HBM) and theory of planned behavior (TPB) are two popular theories used to study vaccination behaviors (Cheung & Mak, 2016; Subramaniam, Baker, Zelicoff, & Elliott, 2016). The HBM and TPB focus on the micro factors that cause health behaviors. However, the macrolevel factors such as environmental, social, and cultural factors on behavioral influence is lacking in HBM and TPB. Critical medical anthropology (CMA) suggests a more holistic model that a person's health behavior is influenced by the interaction of factors at the individual (the individual's experience), microsocial (interaction between healthcare providers and the individual), intermediate-social (health policy and administration), and macrosocial (plural medical systems and corporate and state factors) levels (Baer, Singer, & Susser, 1997). Based on the CMA framework, this article argues that older adults' vaccination behaviors are influenced by the interaction of these four levels and between microculture and macrosocial structures. Microsphere analysis is necessary for identifying the existing practices and experiences of individuals, but noting the macrosphere is also critical for unearthing the beliefs that perpetuate these practices and experiences, because the production and reproduction of macrosocial structures depend on microlevel interactions. The CMA framework, therefore, is used to identify a comprehensive explanation of the reluctance to obtain the seasonal influenza and pneumococcal vaccinations among older adults in Hong Kong. Indeed, studies on Influenza A(H1N1) and human papillomavirus vaccination behavior in other social groups have revealed intersecting social and cultural factors that prevent people from obtaining vaccinations (Siu, 2012; Siu, 2013). Based on these past studies, it was proposed in this study that intersecting

social and cultural factors discouraged older adults from obtaining the two vaccinations. Identification of these perceptions and possible barriers is critical for developing socially and culturally responsive vaccination promotion strategies, which in turn may reduce the social cost and disease burden of seasonal influenza and pneumococcal diseases in societies with large aging populations.

DESIGN AND METHODS

This study adopted a qualitative research approach. Semistructured in-depth individual interviews were conducted with 40 adults aged 65 and older who were Hong Kong residents between September and November 2016.

Ethical considerations

Ethical approval was obtained from the Human Subjects Ethics Subcommittee at The Hong Kong Polytechnic University prior to the study. Each participant was informed about the procedures of the study before their interview. Written consent was obtained.

Data collection

Forty adults aged 65 years and older were recruited. The participants were selected by purposive sampling with the following criteria: 1) Hong Kong citizens, 2) aged 65 years or older, 3) eligible to participate in the EVSS, 4) never received the pneumococcal vaccine, 5) not received the seasonal influenza vaccine in the previous 5 years, and 6) able to communicate in Cantonese Chinese with satisfactory cognition.

The older adults aged 65 years and older were selected, because they are eligible recipients in the EVSS for both the seasonal influenza and pneumococcal vaccinations (Centre for Health Protection, 2017). This could facilitate the investigation of non-price-related factors. Sampling the participants who are Hong Kong citizens ensured them to have long social exposure to the

Hong Kong environment. Referenced from a past study that notes the dropping out from the immunization program for one year is to be considered as inactive in immunization (Cortese et al., 2004), those older adults who had not received the seasonal influenza vaccination in the previous 5 years were considered as the drop-outs. Prior to the interviews, the cognitive ability of the participants was assessed by the combination of two cognitive tests – the Abbreviated Mental Test Score (Young, Meagher, & MacLulich, 2011) and The General Practitioner Assessment of Cognition (GPCOG, 2016) – to ensure they did not have dementia and/or delirium, which are common conditions suffered by older adults (Young, Meagher, & MacLulich, 2011) that can affect the interview quality.

The participants were recruited from four senior citizens' centers located in Wong Tai Sin, Sham Shui Po, Kwun Tong, and Kowloon City. These four districts have the highest populations of people 65 years and older in Hong Kong (Census and Statistics Department, 2011). Recruitment posters were posted on the notice boards of the **sampled centers**. Center managers were informed of the sampling criteria and assisted in participant recruitment. The author then reconfirmed the participants were eligible for the study. To warrant interview consistency, the participants were interviewed individually by the author between September and November 2016. All interviews were conducted in Cantonese, the mother tongue of the participants and the author, to facilitate the interactions.

An interview question guide (see Appendix 1) was used to ensure the interview discussions remained focused. Although the question guide was developed after referencing the literature regarding vaccination perceptions and barriers (Chan et al., 2013; Cheung & Mak, 2016; Subramaniam, Baker, Zelicoff, & Elliott, 2016), the author adopted an inductive approach with a blank mind without any assumption in the data collection procedure. The questions addressed

microlevel and macrolevel factors influencing vaccination decision-making processes among older adults. The questions were open-ended to offer participants flexibility to express their views and experiences (Bernard, 2012).

To protect the participants' confidentiality, each interview was either conducted in a private room at the author's institution or at a location convenient for the participant. Each interview lasted 1.5 to 2 hours and was audio-recorded with the participant's consent. To compensate them for their time, each participant was given a supermarket cash coupon worth HK\$100 upon completion of the interview.

Data analysis

Analysis was conducted concurrently with the interview series to determine whether data saturation had been reached (Green & Thorogood, 2004). Interviews were transcribed verbatim, and the interview transcripts were subsequently translated from Chinese into English. Back-translation was performed by a bilingual student assistant to ensure that the translated transcripts did not distort the participants' original statements. When back-translated interview transcripts showed discrepancies from the participants' original statements, the author performed retranslation. The transcripts were then reback-translated to affirm the integrity of the translations.

The author analyzed the interview transcripts line by line using an inductive coding process to identify the participants' cognitive and behavioral patterns (Liamputtong & Ezzy, 2005). The raw interview texts were read thoroughly for content familiarization and then reread to determine the predominant themes (Thomas, 2006). Interview transcripts were segmented into meaning units, labelled, and then categorized (Thomas, 2006). Upper-level categories were identified based on the research questions, and in vivo coding was conducted (Thomas, 2006). Recurrent

categories were highlighted. Through repeated examination and comparison, overlapping codes and categories were consolidated into greater themes (Thomas, 2006). The codes, categories, and themes derived from the data, along with supporting interview quotes, were documented in a coding table (Green & Thorogood, 2004). Data saturation was achieved, as there were no new themes emerged from the data (Liamputtong and Ezzy, 2005).

Rigor and data reliability

The data collection and analysis procedures of this study conformed to the guidelines of the Consolidated Criteria for Reporting Qualitative Research (Tong, Sainsbury, & Craig, 2007). The rigor of the study followed the criteria of Lincoln and Guba (1985). Interview quotations from the participants were included in the coding table to ensure the codes were grounded in the interview data, and cross-checking between the interview quotations, themes, and categories was enabled throughout the analysis. Because data collection and analysis were conducted by a single researcher, the author conducted a recoding process 1 month after the initial coding as a cross-analysis to reaffirm the codes and enhance the trustworthiness of the coded data.

RESULTS

The participants' characteristics

The 40 participants' ages ranged from 65 to 85 at the time of the study, and they comprised 27 women and 13 men. All the participants were born and grown up in Hong Kong. Most of the participants were retired, although six were working part-time, and one was working flexible hours. Most participants had received some education: 20 had been to primary school, 13 had received a junior secondary school education, and one had received a university education. The remaining six participants had received no formal education. **All participants had more than one chronic conditions.** All participants had hypertension, 24 had diabetes mellitus, 17 had coronary

heart disease, 14 had gout, 9 had liver diseases, and 8 had chronic renal diseases. All the participants were receiving regular follow-up treatment for their conditions at public and/or private healthcare providers. Through the EVSS, all the participants were eligible to receive monetary subsidies from the government for the seasonal influenza and pneumococcal vaccines.

Barriers to receiving seasonal influenza and pneumococcal vaccinations

Data analysis within the CMA framework revealed complex intersections of factors at the four social levels.

Individual level

Belief of vaccines as harmful

Belief was a substantial barrier preventing the participants from receiving the two vaccines. All the participants perceived the two vaccines as “unnatural,” “extra,” “external” to the body, and, therefore, harmful to their health:

I think being natural is the best for my health. I do not think normal people need to have external things to keep up their health, just as you do not need to take extra vitamins [supplement] if you are in normal health. Taking extra vitamins is not good to your health, just like having the extra vaccination would be harmful to my health. All vaccines are unnatural, and you can never know what kinds of chemicals are inside these man-made things. [P3, female, aged 77, retired, secondary 2 educated]

Besides, the participants commonly perceived that vaccination was bodily “invasive” based on their past vaccination experience:

Vaccines are not good because they are too strong and invasive. They can give you a fever and make you feel uncomfortable. When I got vaccination when I was young, vaccines make me sick; I will get a fever and pain from them. I think the vaccines are too strong for

me; they disturb my body and make me sick. It is ridiculous to get vaccinated. What is the purpose of making myself sick when I am actually fine? ...For some vaccinations that were done when I was a child, I had no choice to refuse because they were required by the government. We had the “jab card” [vaccination record] from the government. However, for the optional ones I will not get them because they are not compulsory. [P5, female, aged 75, part-time office support, primary school educated]

Low perceived risk of contracting the diseases

Thirty-seven participants had a low sense of need to receive the two vaccinations. Their low perceived risk of seasonal influenza and pneumococcal diseases was due to their beliefs that these two infections were not major causes of mortality:

I think the danger of flu [influenza] and lung inflammation [pneumonia] is very low. The healthcare in Hong Kong is so advanced, and I do not think flu and lung inflammation can kill. They are easily treatable, and you can recover easily after seeing doctors. Everyone gets the flu and a cough every year. If those conditions can kill, many people would have already died. [P13, female, aged 68, retired, primary school educated]

Thirty-one participants believed that they were in good health and that only people in bad health must receive the two vaccinations:

I am in good health. Although I have high blood pressure [hypertension] and sugar urine disease [diabetes], they are under good control and I see my doctor in every 2 months. I am not one of those who refuses to take drugs. I am quite obedient to take drugs and so I think my condition is good. Therefore, I think a little flu or cough will not kill me. Sometimes it is good to get the flu, because it can train your body. [P21, female, aged 70, retired, secondary 1 educated]

The male respondents in particular exhibited weak perceptions of need for vaccination. All the male participants expressed that vaccinations were mainly for weak people; they did not perceive a personal need for vaccination because they perceived themselves as strong:

I think only the weak people need the vaccines, such as those who are very old, who have many diseases, women, and children. They are weaker in health, so they are more in need of the vaccines. I am a man, so I think I should leave the vaccines for these weaker people. As a man, I should leave these resources for the weak. If others knew that I got the vaccines, they may tease me that I am weak. [P15, male, aged 66, retired, secondary 3 educated]

Negative rumors about the vaccines

Rumors about the vaccines circulating among the older adults prevented 18 participants from receiving the two vaccinations. This participant recounted one common rumor she had heard from her friends:

I dare not get the vaccines because my friends told me that they can lead to becoming “elderly dull” [dementia] sooner. Being “elderly dull” is very scary; just look at the professor [Professor Charles K. Kao, Nobel Laureate in Physics 2009] and you realize that “elderly dull” is really a burden for the families. If the vaccines can make me become “elderly dull,” I will refuse, definitely. [P4, female, aged 78, retired, primary school educated]

Microsocial level

Lack of promotion by healthcare providers

Lack of vaccine promotion by healthcare providers was another factor that prevented the participants from receiving the vaccinations. Thirty-one participants indicated that their

healthcare providers did not mention the two vaccines during routine follow-up treatment or acute visits. This influenced how the participants perceived their need for vaccination:

No doctors or nurses ever mentioned the two vaccines to me. They just focused on my high blood pressure [hypertension] and my heart. I think my high blood pressure and my heart are more important. If the vaccines were important, I think the doctors and nurses would have mentioned them to me. If they do not mention them, then the vaccines cannot be very important. It will not be a big deal if I do not get vaccinated. [P18, female, aged 76, retired, primary school educated]

Although a few participants had asked their healthcare providers about the need for vaccination, the unenthusiastic attitude of the healthcare providers prevented the participants from seeking more information:

Doctors and nurses do not care much. I asked them once about these vaccines, but it seems that they did not want to bother much. They just asked me to read the poster [about the seasonal influenza vaccine and pneumococcal vaccine] and then hurried me to leave the [consultation] room. However, my eyes are bad and I could not read the small letters on the poster. Therefore, I did not think about the vaccination again. [P11, female, aged 66, retired, secondary 1 educated]

Intermediate-social level

Perceived risk posed by the vaccinating locations

Thirty-four participants were reluctant to receive the two vaccinations because of the perceived risk in the vaccination locations. Because health institution policy in Hong Kong requires that the vaccinations only be administered in clinics or hospitals, the participants regarded the vaccination procedure as putting them at greater risk of infection exposure:

I am not motivated to get vaccinations because I have to go to a clinic to get them. I have to wait in the clinic with other patients who are coughing and sneezing. It is too risky because it is a place full of bacteria and viruses, and it is not worth it for me to wait in the clinic because I am not sick. I may get infected while I am waiting for the vaccine. Then what is the point of me getting vaccinated? Because I will have already gotten infected before I can get vaccinated. [P20, female, aged 70, part-time salesperson, primary school educated]

Clinics and hospitals had symbolic, often “unlucky,” meanings for the participants. They commonly perceived that only sick and dying people visit clinics and hospitals. Hence, as healthy people, the participants were reluctant to visit these places:

It is not good to go to clinics or hospitals. Of course, if necessary, you still have to go. Otherwise, it is better to avoid going to these places. These places are unlucky and can bring you misfortune. The people who need to go to clinics and hospitals are sick or are dying. Negative forces accumulate in these places. If you go to these places, you may absorb these negative forces, and may experience misfortune afterwards. I am not young now, so the bad forces can affect me much. Therefore, I will not consider the vaccinations, because I do not want to go to these unlucky places. [P27, male, aged 72, retired, primary school educated]

Macrosocial level

Preference of using Traditional Chinese Medicine (TCM)

The participants’ trust in TCM, which is a complementary and alternative medicine (CAM) in Hong Kong, was found to demotivate them from receiving the two vaccinations. The belief that TCM is a natural approach to health protection and maintenance motivated thirty-six

participants to use TCM against seasonal influenza and pneumococcal diseases instead of receiving the two vaccinations:

Chinese medicine [TCM] is a lot milder than western medicine [biomedicine]. Western medicine is too strong and forceful, and the drugs are all artificial chemicals. It is not good to take vaccines because they are chemicals. Chinese medicines are all herbs, so they are more natural. I prefer taking Chinese medicine to keep up my health instead of vaccines.

[P2, female, aged 69, retired, primary school educated]

The participants also adhered to the belief that TCM involves a more robust concept of preventive health practices than biomedicine:

You have to strengthen your body from the root to prevent yourself from getting infected. Western medicine [biomedicine] does not have this concept. The doctors just ask you to get enough sleep, to have a balanced diet, to exercise more, and to receive vaccinations. It can never deal with your foundational health. Chinese medicine is very good in prevention, because it can strengthen your root and foundational health. If your root is good enough, you do not need to get any vaccinations. I always see my Chinese medicine doctor [TCM practitioner] to maintain my health. You do not need to be sick to go to a Chinese medicine doctor. If you can keep up your foundational health with Chinese medicine, why do you still need to get vaccinations? [P11, female, aged 66, retired, secondary 1 educated]

DISCUSSION AND IMPLICATIONS

The framework of CMA (Baer, Singer, & Susser, 1997) notes that health behaviors should be understood as resulting from an interaction between four social levels: the individual, microsocial, intermediate-social, and macrosocial. This framework was applied in the present study, and the combined influences of factors at these four levels prevented the participants from

receiving the seasonal influenza and pneumococcal vaccinations. The underpinning structural processes and institutional practices at the macrolevels (intermediate-social and macrosocial levels) influenced the participants' microlevel experiences (individual and microsocal levels), and, simultaneously, the microspheres reinforced the macrosocial structures.

Hong Kong is a medically pluralistic society wherein TCM as the most popular form of CAM exists alongside mainstream biomedicine (Cheung, Buckley, & Watanabe, 2017). CAM concepts are embedded in and fulfill a community's cultural belief system (Strathern & Stewart, 2010). TCM, which originated from the traditional Chinese cultural belief system, was remarkable barrier for the participants to receive the vaccinations. Traditional Chinese cultural beliefs shaped participants' perceptions of the vaccines. Perceiving the vaccines as "invasive," "strong," "forceful," and "unnatural," the participants were more inclined to follow the "milder" and more "natural" preventive approach of TCM. Biomedicine was embedded in the participants' perception as an invasion, whereas TCM was perceived as the most culturally compatible health maintenance option aligning with their cultural beliefs. Hence, the participants resisted receiving the two vaccinations, especially the two vaccines are not compulsory in government policy. Many Chinese believe that biomedicine is weak in health maintenance compared with TCM (Quan, Lai, Johnson, Verhoef, & Musto, 2008). This belief explains the preference of the participants for TCM over vaccinations as protection against influenza and pneumococcal diseases. Thus, the macrosocial cultural beliefs and values system influenced the participants' perceptions and behaviors at the individual social level.

The intermediate-social level of Hong Kong health institutions' vaccination policy violates traditional Chinese cultural values, thus demotivating participants from receiving the vaccinations. Although both the EVSS and EHCV were implemented to remove financial

barriers for the older adults in receiving the two vaccinations, all vaccinations must be administered in clinics and hospitals. Clinics and hospitals carried “misfortune” and “unlucky” symbolic implications, which were embedded in the participants’ cultural reality. Besides, the negative symbolic meanings attached to clinics and hospitals were also embedded in the participants’ social reality. The participants widely perceived clinics and hospitals as dangerous and contagious zones wherein they might contract viruses and bacteria. This social reality reinforced the negative cultural stereotypes about hospitals and clinics. The current vaccination policy failed to address the participants’ social and cultural concerns, and, thus, they were deterred from receiving the two vaccinations. A vaccination policy that addresses older adults’ cultural concerns should be developed to foster higher acceptance of vaccinations; for example, the health institutions can explore possibilities to cooperate with the elderly centers in delivering the vaccinations for the older adults to reduce their hesitancy.

Although studies have shown that making use of an acute visit to healthcare providers can result in greater vaccine uptake among older adults (Sabapathy, Strong, Myers, Li, & Quan, 2014), the interaction of the participants as patients with the healthcare providers at the microsocial level demonstrated the opposite. Although the participants were comorbid with chronic conditions that could make them more susceptible to the complications of seasonal influenza and pneumococcal diseases, they perceived themselves as “strong.” The idea of “seeing a doctor when getting sick” (ie. Seeking medical consultation only when being sick) was prevalent among the participants, who exhibited weak self-management sensibilities. If healthcare providers did not take initiative to promote the vaccinations, the participants had little incentive to receive the vaccinations. This finding echoes those of studies that have demonstrated

that the **people of Hong Kong** tend to confer healthcare responsibility to healthcare providers rather than themselves (Mercer et al., 2010). All the participants were under the care of public healthcare system. **The monetary cost of being sick was low** to them because the public healthcare system charged limited or even no additional money for treatment. In this social context, the participants lacked motivation to proactively protect their health and were unaware of the need to receive vaccinations.

Most participants had not been informed about the two vaccinations by their healthcare providers, and this influenced their perception of the need to be vaccinated. Healthcare providers are role models in authoritative positions and hold social power to influence people's health perceptions and behaviors. Patients from Chinese communities in particular tend to follow the instructions of healthcare providers (Wang et al., 2013). Also, healthcare providers' recommendation is remarkably associated with people's influenza vaccination (Lu et al., 2018). Therefore, lack of enthusiasm in promoting the two vaccinations may influence participants' motivation. Indeed, healthcare providers may doubt the usefulness of additional vaccinations for older adults (Eilers, Krabbe, & de Melker, 2015; Wilson, 2018). The perceptions of healthcare providers regarding the severity of an infectious disease are also crucial on their motivation to promote vaccinations among older adults (Eilers, Krabbe, & de Melker, 2015). The experiences of the participants, thus, exhibited healthcare providers' low acceptance of the need to vaccinate older adults, and reflected their low awareness of the potential severity of seasonal influenza and pneumococcal diseases for older adults. Hence, public health policy-makers should foster awareness among healthcare providers with regard to the critical nature of the two vaccinations for the elderly population. Healthcare providers are also suggested to proactively encourage the older adults to take the two vaccinations.

However, the intermediate-social level healthcare context in Hong Kong may explain why the healthcare providers are not enthusiastic in promoting the two vaccinations. The “dual-track” healthcare system encompasses both the public and private sectors. While the former provides “safety net for the whole community”, the latter offers “personalized choices and more accessible services to those who are willing and may afford to pay” (Hong Kong Information Services Department, 2013). The primary healthcare service, including vaccination, is mostly provided by the private sector (Chan, 2015). However, embedded distrust in private healthcare is prevailing (Mercer et al., 2010). Private practice doctors are stereotyped as business-oriented and profit-making, undermining people’s trust on them. This makes vaccination suggestion by these doctors to be interpreted with a suspicious commercial and business intention. On the other hand, the lack of family doctor system is also unfavorable for the building of trust between doctors and patients (Mercer et al., 2010), making preventive care and vaccination advice difficult for the healthcare providers. The intermediate-social level of health policy and system, thus, demotivates the healthcare providers in communicating with the older adults about vaccination at the micro-social level. Establishing a family doctor system may ease the difficulty in making vaccination suggestion among the healthcare providers.

At the individual level, the participants widely stereotyped seasonal influenza and pneumonia as “easily treatable.” They were unaware of the dangers of these two infections. This low awareness may have been related to how the participants understood and classified these two diseases according to their folk taxonomy, which refers to a folk classification system embedded in the local cultural belief system (Durkheim, 1915). Within Chinese populations’ folk taxonomy of diseases, influenza and pneumonia are often given the same status as common colds and coughs (Siu, 2012). Thus, based on their folk understanding, the participants underestimated the

danger of seasonal influenza and pneumonia. This underestimation of risk was reinforced by the macrolevel medical advancement in Hong Kong, contributing to the participants' low perceived needs to receive the two vaccinations.

Older adults often have low health literacy. At the individual level, the participants' social networks comprised their main source of information about the two vaccines. Rumors about the vaccines could easily be developed when the members in these social networks also held negative perceptions about the vaccines. These rumors reinforced the negative perceptions and embedded fears of the vaccines the participants held based on their understandings. Onset of dementia with greater age was also a widely held fear among the participants. These embedded fears interlocked and further deterred the participants from receiving the vaccinations.

Ideas based on masculine hegemony shaped the perceptions of the male participants toward the vaccinations and were prominent features of the men's reluctance to receive the two vaccinations. The traditional Chinese cultural expectation of men is strength. Receiving vaccinations was perceived as "weak" behavior and was not endorsed by the male participants. Men often use their health behaviors during daily interactions to negotiate social power and status, and these health practices can either undermine or promote health (Courtney, 2000; Verbrugge, 1989). Although men often recognize the existence of a hegemonic, cultural ideal of masculinity, individual men frequently define and experience their masculinity through facets of hegemonic masculinity that they have the capacity for (Annandale & Hunt, 2000). These behaviors often comprise culturally sanctioned means of distinguishing among men and between men and women and explain the association between masculinity and men's risky and unhealthy behaviors (Courtney, 2000; Verbrugge, 1989). Women tend to exhibit more acceptance toward preventive care, and preventive behavior stems from their domestic gender role as caregivers and

social supports (Annandale & Hunt, 2000). Public health policy-makers should thus be aware of the culturally constructed gender expectations in affecting men's seasonal influenza and pneumococcal vaccinations.

LIMITATIONS

This study was based on data from older adults sampled from four senior citizens' centers in Hong Kong. Older adults who did not use these senior citizens' centers were excluded in the sample. Additionally, not all the transcripts were member checked, because some participants either had poor eyesight or had received no formal education. To overcome this limitation, the author checked the accuracy of transcripts using the audio recordings of the interviews. Although having only one coder in the data analysis procedure could enhance analysis consistency, it also ran the risk of introducing author's bias in the analysis procedure. Therefore, the author conducted a recoding process 1 month after the initial coding as a cross-analysis to reaffirm the codes and enhance the trustworthiness of the coded data. Finally, only the older adults who did not get vaccinated of both vaccines were sampled; those older adults who have got vaccinated of the two vaccines were excluded. Further study on those who have got vaccinated can provide more information about vaccination motivations.

CONCLUSION

Clinical evidence demonstrates that seasonal influenza and pneumococcal vaccinations offer numerous benefits to older adults; however, for the participants, vaccination was not a straightforward decision. Interactions among the four social levels defined by critical medical anthropologists explain the vaccination barriers that influence older adults in Hong Kong. Holistic understanding of the interaction between microcultures and macrosocial structures can facilitate development of culturally sensitive vaccination promotion among older adults.

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Appendix 1. Interview question guide for the semi-structured in-depth interviews

- A. Participants' knowledge and risk perception of influenza and pneumonia
 - 1. What is your impression of influenza and pneumonia?
 - 2. How do you perceive the dangers of influenza and pneumonia?
 - 3. What can be the worst consequence(s) if having influenza and pneumonia?
 - 4. What do you think is your risk of being infected with influenza and pneumonia? Why?

- B. Participants' knowledge, acceptance, and perception of the seasonal influenza and pneumococcal vaccines
 - 1. From what sources have you heard about the seasonal influenza and pneumococcal vaccines?
 - 2. What is your impression of these two vaccines?
 - 3. Can these sources motivate and/or discourage you to consider receiving these two vaccinations? Why?
 - 4. What do you think about your need for getting vaccinated? Why?

- C. Participants' incentives of and barriers to receiving the seasonal influenza and pneumococcal vaccines
 - 1. What can motivate you to consider receiving the seasonal influenza and pneumococcal vaccinations?
 - 2. What can discourage you from considering to receive the seasonal influenza and pneumococcal vaccinations?

- D. Influence from social norms and participants' significant others on the incentives and barriers to receiving the seasonal influenza and pneumococcal vaccinations
 - 1. What do you think about the social atmosphere of Hong Kong with regard to the seasonal influenza and pneumococcal vaccination?
 - 2. In your opinion, how do society members view the seasonal influenza and pneumococcal vaccination?
 - 3. Can the social atmosphere and social members motivate and/or discourage you to receive the seasonal influenza and pneumococcal vaccine? Why?
 - 4. Is there any discussion about the seasonal influenza and pneumococcal vaccines in your social sphere?
 - 5. Who talks about the seasonal influenza and pneumococcal vaccines most in your social sphere?
 - 6. Who talks about the seasonal influenza and pneumococcal vaccines least in your social sphere?
 - 7. Can these people motivate and/or discourage you to receive the seasonal influenza and pneumococcal vaccine? Why?

- E. Perceptions of suitable persons in receiving the seasonal influenza and pneumococcal vaccinations
 - 1. Who should receive the seasonal influenza and pneumococcal vaccines? Why?
 - 2. Will you consider the seasonal influenza and pneumococcal vaccine is suitable for you? Why?

- F. Perceived benefits and negative influences of receiving the seasonal influenza and pneumococcal vaccinations
1. How do you think about the benefits of receiving the seasonal influenza and pneumococcal vaccine? (Probe in terms of physical health, social, and cultural impacts)
 2. How do you think about the negative influences of receiving the seasonal influenza and pneumococcal vaccines? (Probe in terms of physical health, social, and cultural impacts)
- G. Strategy of “left influenza and right pneumococcal”
1. Have you ever heard about this slogan? From what sources?
 2. What is the meaning of the slogan?
 3. How do you think if this slogan can motivate you to do the seasonal influenza and pneumococcal vaccinations?
 4. How do you think about the benefits and harms if doing these two vaccinations together at one time?
 5. How do you think about the benefits and harms if doing these two vaccinations separately at different time?
- H. Demographic data of the participants
1. Sex
 2. Age
 3. Educational level
 4. Occupation status
 5. Chronic conditions

Appendix 2. Demographics of the participants

Informant code	Gender	Age	Education level	Occupation	Chronic condition(s)
P1	F	82	Primary school	Retired	H, DM, R, G
P2	F	69	Primary school	Retired	H, DM, G
P3	F	77	Secondary school (S.2)	Retired	H, C, L
P4	F	78	Primary school	Retired	H, G, R
P5	F	75	Primary school	Office support (part-time)	H, DM, C
P6	F	73	Primary school	Retired	H, DM, C, L
P7	F	79	Primary school	Retired	H, G
P8	F	75	Primary school	Retired	H, DM, C
P9	F	70	Primary school	Food catering (part-time)	H, DM, G
P10	F	68	Primary school	Retired	H, DM, C, L
P11	F	66	Secondary school (S.1)	Retired	H, DM
P12	F	70	Primary school	Retired	H, DM, C, R
P13	F	68	Primary school	Retired	H, DM, C
P14	F	71	Primary school	Retired	H, L, R
P15	M	66	Secondary school (S.3)	Retired	H, DM, C
P16	F	72	Primary school	Food catering (part-time)	H, DM, G
P17	F	68	Primary school	Retired	H, C, G
P18	F	76	Primary school	Retired	H, C, G, R
P19	F	74	Primary school	Retired	H, C, G
P20	F	70	Primary school	Sales and retailing (part-time)	H, DM

P21	F	70	Secondary school (S.1)	Retired	H, G
P22	F	66	Secondary school (S.3)	Administration (part-time)	H, DM, L
P23	M	65	Secondary school (S.3)	Retired	H, C
P24	M	68	Secondary school (S.3)	Retired	H, C
P25	M	68	Secondary school (S.3)	Retired	H, DM
P26	M	65	Secondary school (S.4)	Insurance (flexible work hours)	H, DM, G
P27	M	72	Primary school	Retired	H, L
P28	M	67	University	Retired	H, C
P29	M	68	Secondary school (S.3)	Retired	H, DM, L
P30	M	67	Secondary school (S.3)	Retired	H, DM
P31	M	66	Secondary school (S.3)	Administration (part-time)	H, DM
P32	M	85	Primary school	Retired	H, DM, C
P33	M	84	Primary school	Retired	H, DM, C
P34	M	72	Secondary school (S.1)	Retired	H, DM, C
P35	F	80	No formal education	Retired	H, DM
P36	F	77	No formal education	Retired	H, G, L
P37	F	79	No formal education	Retired	H, G, R
P38	F	80	No formal education	Retired	H, DM
P39	F	81	No formal education	Retired	H, G, R
P40	F	79	No formal education	Retired	H, L, R

Note

Primary school education in Hong Kong has 6 years, and is equivalent to grade 1 to grade 6 of the US system. Secondary school education in Hong Kong has 7 years at the time of the participants, and is equivalent to grade 7 (S.1 in Hong Kong) to grade 13 (S.7 in Hong Kong) of the US system.

Keys

H – hypertension (40)

DM – diabetes mellitus (24)

C – coronary heart disease (17)

G – gout (14)

L – liver disease (9)

R – chronic renal disease (8)