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Prevalence and correlates of influenza vaccination among non-institutionalized elderly people: An exploratory cross-sectional survey

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ABSTRACT

Background: Worldwide pandemics of influenza virus caused extensive morbidity and mortality around the world and influenza vaccination is the most effective method for preventing influenza virus infection and its potentially severe complications. A large proportion of the Hong Kong elderly population has not undergone influenza vaccination. An exploration of the correlates will provide significant information to help identify ways of improving vaccination uptake among Chinese elderly people.
Objectives: To explore the prevalence and correlates of influenza vaccination Hong Kong Chinese elderly people aged 65 or above. To investigate any differences in attitudes toward influenza vaccination among Hong Kong elderly people with different levels of cognitive and physical functioning.
Design: An exploratory cross-sectional survey with two objective assessments was employed. Settings: Fifteen elderly centers in Hong Kong Special Administrative Region. Participants: A total of 816 Hong Kong Chinese elderly participants were recruited.
Methods: Face-to-face interviews were adopted to explore the demographic characteristics, perceptions, health status, knowledge, and resources of, and the influence of disease outbreaks on, influenza vaccination. Two objective validated instruments, the Chinese Mini-Mental State Examination (CMMSE) and the Barthel Index-Modified Chinese Version (MCBI) were used to assess the cognitive status and physical functioning of the participants.
Results: Approximately two in three individuals (62.4%) had undergone influenza vaccination. Lower cognitive and physical functioning scores were found among the non-vaccinated participants. Multivariate logistic regression analyzes revealed the significant correlates associated with influenza vaccination to be consideration of vaccination in the subsequent years (aOR = 7.877; $p < 0.001$); consideration of vaccination if all people aged 65 or above were eligible to receive free vaccination (aOR = 3.024; $p = 0.002$); the belief that there is a need to receive influenza vaccination following the Severe Acute Respiratory Syndrome (SARS) and avian influenza (aOR = 2.413; $p = 0.001$); receiving advice from nursing staff of elderly centers (aOR = 7.161; $p < 0.001$); the medical staff of elderly centers (aOR = 3.771; $p < 0.001$) or family members or friends (aOR = 3.023; $p = 0.001$).
Conclusions: The prevalence of elderly Chinese people undergoing influenza vaccination remains suboptimal. The government can promote vaccination by educating the public

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about the advantages, by publicizing locations where vaccinations are available, and having nursing, other medical staff, family and friends encourage elderly people to be vaccinated. A high vaccination coverage rate must be ensured to achieve international goals.

What is already known about the topic?

- A substantial amount of international evidence has found the following factors to be linked with influenza vaccination: perceived good health, perceived efficacy and safety of vaccination, previous experience of vaccination, recommendations by healthcare professionals, the side-effect profile of vaccination and the perceived risk of influenza.

What this paper adds

- A combination of subjective and objective explorative methods was used to examine the correlates of influenza vaccine among non-institutionalized Hong Kong Chinese elderly people aged 65 or above.
- Lower cognitive and physical functioning scores were found among the non-vaccinated participants.
- The correlates found to be associated with influenza vaccination include a consideration of vaccination in consequent years and free vaccination; the impact of the severe acute respiratory syndrome (SARS) and Avian influenza outbreaks; and advice from healthcare professionals in elderly centers and from family members or friends.

1. Introduction

Influenza is a major cause of morbidity and mortality in the industrialized world (Harper et al., 2004) and is the third leading cause of death from infectious disease after AIDS. Most of the deaths that are currently associated with influenza occur among elderly people aged 65 or above (World Health Organization, 2004a). Data from a nationally representative Chinese cohort of 169,871 men and women aged 40 years and older in China show that influenza has an age-standardized mortality rate of 43.9 per 100,000 person-years and is the fourth leading cause of death in the country (He et al., 2005).

Vaccination is the principal means of preventing influenza and reducing the impact of an epidemic (Centers for Disease Control and Prevention, 2005). It is particularly recommended that the elderly people be vaccinated, due to the ability of vaccination to reduce influenza-related morbidity and mortality rates (Egede and Zheng, 2003). Influenza vaccination can also reduce the healthcare costs (Fitzner et al., 2001) and productivity losses associated with the disease (World Health Organization, 2004b). The World Health Organization recommends annual influenza vaccinations on a priority basis for the elderly groups at high risk of serious complications (World Health Organization, 2005).

Improvements in socio-economic conditions, public health services, and medical technology have all helped to increase the life expectancy of people in Hong Kong. However, census data show that the percentage of the population who are aged 65 or above will increase from 11% in 2001 to 24% in 2031, which is a net increase of 1.35 million (Census and Statistics Department, 2001). This increase will result in an enormous expansion of the high-risk elderly group. Since the Severe Acute Respiratory Syndrome (SARS) and Avian influenza outbreaks in 2003–2004, the Hong Kong government has encouraged the elderly people to undergo influenza vaccination. Since 1998, it has provided free influenza immunization to the institutional elderly people, but not to those who are not institutionalized (Department of Health, 2004). Among the former, the vaccination rate is reported to be more than 87% (Department of Health, 2007), whereas among the latter it is only 32.2% (Lau et al., 2006). Among the non-institutionalized population as a whole, it is a mere 2.3% (Hui, 2004). This shows that a large proportion of Hong Kong's population does not undergo influenza vaccination.

2. Literature review

A review of the literature reveals that in the past few decades much attention has been focused on influenza vaccination research among Caucasian groups (Kamal et al., 2003; Nexoe et al., 1999; Rehmet et al., 2002), but there is limited information on vaccination among non-Caucasian groups such as Chinese populations (Hui et al., 2006). An exploration of the factors that are related to influenza vaccination among such populations will help to identify ways to improve the vaccination rate among the Chinese elderly people. Previous studies have found that the important correlates of vaccination in the elderly people include perceived good health (Evans and Watson, 2003), a history of chronic illness (Mok et al., 2006), perceived efficacy of vaccination (Lau et al., 2007), previous experience of vaccination (Mok et al., 2006; Telford and Rogers, 2003), recommendations by healthcare professionals (Evans and Watson, 2003; Zimmerman et al., 2003b), and the side-effect profile of vaccination and perceived susceptibility to influenza (Mok et al., 2006; Telford and Rogers, 2003).

Empirical evidence also indicates that having been a hospital outpatient in the past 12 months is significantly related to a higher vaccination rate among the elderly people (Evans and Watson, 2003). Other studies have found that the influenza vaccination rate increases in inpatient settings (Lawson et al., 2000) and that more frequent contact with the healthcare system is a powerful indicator of being vaccinated (Pena-Rey et al., 2004).

The majority of studies on the attitudes of the elderly people toward influenza vaccination have a qualitative (Telford and Rogers, 2003) or self-reported quantitative design (Damiani et al., 2007). A number of researchers,