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Use of face masks in a primary care outpatient setting in Hong Kong: Knowledge, attitudes and practices

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SUMMARY

Objectives: To assess if a knowledge gap exists in the correct use of face masks, and to explore the correlations between knowledge, attitudes and practices regarding the use of face masks among outpatients and their caregivers in an outpatient clinic in Hong Kong.
Study design: Cross-sectional study.

Methods: Outpatients and their caregivers who were present at an outpatient setting in Hong Kong were invited to participate in this survey. All participants were asked to complete a self-administered closed-ended questionnaire about their knowledge, attitudes and practices regarding the use of face masks. Data were described using descriptive statistics and correlation coefficients.

Results: Among the 399 respondents, 52% knew the correct steps in wearing a face mask, and their attitudes toward face masks were generally positive. Further analyses showed that respondents were more likely to wear a face mask at a clinic than in a public place or at home. Moreover, respondents were more likely to wear a face mask to protect others against influenza-like illness (ILI) than for self-protection. There was low to moderate correlation between attitudes and practices (correlation coefficient 0.26, $P < 0.05$).

Conclusions: This study identified a knowledge gap in the correct use of face masks among outpatients and their caregivers; attitudes and practices regarding the use of face masks were generally positive, but correlation was not high. It is recommended that public health education campaigns should tailor efficient programmes to combat ILI transmission among outpatient clinic populations by improving knowledge about the correct use of face masks.

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Introduction

In light of the recent severe acute respiratory syndrome (SARS) and H1N1 epidemics, the World Health Organization (WHO) has advocated for the use of non-pharmaceutical public health

interventions as the global supplies of vaccines and antiviral agents are limited and not easily accessible.¹ Face masks have been a popular public health intervention used for self-protection against influenza-like illness (ILI), and to prevent transmission between sick and healthy individuals. Many

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countries such as the USA, Australia and France have already included the use of face masks in their pandemic plans.^{2,3}

Influenza is primarily spread through person-to-person contact via large droplets produced by breathing, talking, coughing or sneezing. As a result, a face mask works by providing a physical barrier against the potentially infectious droplets. Recent studies have concluded that the use of face masks reduces the reproduction number of the virus, which could help delay or possibly contain an influenza pandemic.⁴ In 2010, Aiello *et al.* found that there was a 10–50% reduction in the spread of ILI due to the use of face masks and hand hygiene.⁵ These conclusions were all drawn from the fact that the face masks were worn correctly. WHO states that wearing a mask incorrectly may actually increase, rather than decrease, the rate of transmission.⁶

The correct use of face masks is particularly important in Hong Kong as the use of face masks is prevalent. Studies have found that 88.8% of participants wore face masks when they had ILI, and 21.5% reported wearing face masks regularly in public.⁷ A study by Lau *et al.* found that the Hong Kong public were likely to adopt self-protective behaviors such as using face masks in public places.⁸ Lau *et al.* concluded that in the event of a future respiratory illness outbreak, the Hong Kong public would be likely to adopt self-protective behaviors which may help to contain the spread of the virus in the community.⁹ Several studies in Hong Kong and elsewhere have investigated the prevalence of facemask use.^{8–10} However, no studies have investigated the correct use of face masks either in Hong Kong or internationally.

It is important to assess whether there is a knowledge gap in the correct use of face masks, as incorrect practice may hinder their effectiveness. The Hong Kong outpatient setting was chosen as the study population because previous case studies have indicated that healthcare settings are a major source of ILI infection.⁹ Hospital waiting areas are prime areas for the transmission of airborne infections, because many people are gathered in a confined area, some of whom may have medical conditions that make them vulnerable to infection. Relative to the general population, those who are in an outpatient clinic may experience higher levels of exposure to ILI and, therefore, it is important for both outpatients and their caregivers to wear face masks in order to prevent transmission and for self-protection. The results of this study will help in tailoring a more efficient programme to combat ILI transmission in primary care outpatient settings. This study aimed to assess if a knowledge gap exists in the use of face masks for both subjects seeking medical consultation and their caregivers in an outpatient setting in Hong Kong, and to explore correlations between knowledge, attitudes and practices regarding the use of face masks.

Methods

This study was conducted at the Family Medicine Training Centre, Prince of Wales Hospital in Hong Kong, and was approved by the Research Committee of the Chinese University of Hong Kong. The study began in mid-April 2011 and ended in mid-May 2011. Power analysis was conducted with a 95% confidence interval (CI) and a 5% margin of error to

estimate the required sample size. As no data on the prevalence of correct use of face masks could be found, the assumed prevalence was set at the recommended level of 50%. As a result, a total of 383 subjects were required. For inclusion in the survey, respondents had to be either an outpatient or a caregiver of an outpatient at the clinic. A systematic sampling approach was adopted to recruit outpatients and caregivers at the clinic by excluding every fourth outpatient/caregiver. As a result, 75% of the study subjects were invited to participate in the questionnaire survey.

The questionnaire was initially written in English and was translated into Chinese. Informed consent was obtained for every completed survey. A pilot questionnaire was pre-tested for 3 days at the same clinic. Informal interviews were conducted with the 76 respondents. These steps were taken to ensure the validity of the questions and proper comprehension. As a result, two questions were omitted from the final survey due to ambiguity, and the procedural question was amended by including pictures to aid understanding.

The final closed-ended questionnaire consisted of 33 items (Appendix 1, see online supplementary material). There were 5 items assessing knowledge, 19 items addressing attitudes and 6 items concerning practices. Another 3 items were used to collect data about demographics and medical history. The procedure for correct use of face masks was composed of a 3-part question addressing where the face mask covers, where the wire should be placed and which side should face the front. Knowledge items were adapted from guidelines recommended by the Centre for Health Protection¹⁰ and the Centers for Disease Control and Prevention.¹¹ Attitudes were rated on a five-point Likert scale and based on the Health Belief Model. The Likert scale was later collapsed into 3 categories for analysis. Questions concerning practices were based on the use of face masks in public places, at the clinic and at home, and whether the face mask was used for self-protection or to protect others.

Data were described using frequency and mean scores. Regarding knowledge, a score of 1 was given for each correct answer and 0 was given for each incorrect answer. Therefore, the range was 0–5. Attitude scores were calculated by giving –1 for negative attitudes, 0 for undecided and 1 for attitudes favoring face masks. The scores ranged from –19 to 19. Finally, practice scores were calculated by giving a score of 0 for those who did not wear a face mask, a score of 1 for those who sometimes wore a face mask, and a score of 2 for those who answered that they always wore a face mask. The maximum score was 12 and the minimum score was 0. Pearson's correlation coefficient was used to examine the relationship between knowledge, attitudes and practices. A *P*-value <0.05 was considered to indicate significance. Statistical analysis was conducted using Statistical Package for the Social Sciences Version 17.0 (SPSS Inc., Chicago, IL, USA).

Results

Descriptions of sociodemographics

In total, 560 outpatients and caregivers were invited to participate in the survey. Of these, 399 completed the survey,

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