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TITLE:
Acceptability of A/H1N1 vaccination during pandemic phase of influenza A/H1N1 in Hong Kong: population based cross sectional survey

ABSTRACT:
Objective To investigate the intention of the Hong Kong general population to take up vaccination against influenza A/H1N1. Setting Cross sectional population based anonymous survey. Participants Random sample of 301 adults interviewed by telephone (response rate 80%). Main outcome measure Intention to take up vaccination against influenza A/H1N1 under five hypothetical scenarios: vaccination is free; vaccination per dosage costs less than $HK100 (£8; €9; $13), $HK101-200, or more than $HK200; and no data are available on the efficacy and safety of the vaccine. Results 45% (n=135) of the participants reported that they would be highly likely take up vaccination if it was free. When vaccination incurred a cost, however, the prevalence of uptake decreased: 36% (n=108) would take up vaccination if it cost less than $HK100, 24% (n=72) if it cost $HK101-200, and 15% (n=45) if it cost more than $HK200; and in absence of proved efficacy and safety decreased to 5% (n=14). Moreover, 32% (n=95) considered universal A/H1N1 vaccination unnecessary. Overall, 39% (n=117) of participants believed that A/H1N1 vaccination would prevent the virus being contracted; 63% (n=189) erroneously believed that efficacy of the vaccine had been confirmed by clinical trials, and 16% (n=49) believed that it is necessary for everyone in Hong Kong to take up vaccination against influenza A/H1N1.
Conclusions The uptake of vaccination against influenza A/H1N1 by the general population of Hong Kong is unlikely to be high and would be sensitive to personal cost. Evidence about safety and efficacy is critical in determining the prevalence of uptake of vaccination.

Introduction:
The earliest confirmed case of influenza A/H1N1 (swine flu) in 2009 was reported in Mexico on 23 April,1 and the World Health Organization declared the disease to be a pandemic on 11 June.2 As of 13 September 2009 the virus has spread to over 170 countries, territories, and areas, and is estimated to have caused over 3486 deaths.3 The mortality from A/H1N1 appears moderate, although the virus does seem to be more infectious than seasonal influenza4 and children are particularly susceptible.5 On 20 September, 22 054 cases of influenza A/H1N1 and 15 associated deaths were confirmed in Hong Kong.6 The government has now suspended the testing of suspected cases. The development of A/H1N1 vaccines would be one of the most effective ways to control the pandemic.7 Many governments have announced large scale plans for vaccination against influenza A/H1N1. On 19 June 2009 the government of Hong Kong passed legislation to purchase five million doses of influenza A/H1N1 vaccine and indicated that a large scale vaccination campaign would be launched at the end of the year,8
9 with an acknowledgement that the vaccine might not have gone through complete clinical trials. The government announced that the vaccine would be provided to a high risk group of two million people, including healthcare workers, people aged more than 65, children aged 6 months to 6 years, and those with particular health conditions, along with 500 000 people who would voluntarily pay for the service.10 The tender was unsuccessful and a new round of bidding was initiated. The cost of vaccination has not yet been agreed. The market price for seasonal influenza vaccination in Hong Kong is around US$20-25 (£13-16; €14-17).
A recent study reported that 48% of healthcare workers in Hong Kong were willing to accept vaccination at the prepandemic phase of the influenza A/H1N1 epidemic and that the perceived risk of contracting the virus and history of vaccination against seasonal influenza were associated with the willingness to take up vaccination, whereas fear of side effects and doubts about vaccine efficacy were major reasons for unwillingness.11
The uptake of seasonal influenza vaccination in Hong Kong during September 2006 to April 2007 among community dwelling older people aged 65 or more was 35% and it was lower among pregnant women (4%), children aged 6-23 months (9%), those with chronic diseases (23%), and adults in the general population (15%).12 We investigated the intention of taking up vaccination against influenza A/H1N1 under five hypothetical scenarios including cost and availability of clinical evidence on the vaccine.

Outcome measures and data analysis ::: Methods:

The questionnaire items were modified from those that had been used in some of the studies on avian flu 21
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27 and a study on influenza A/H1N1.23 Participants were asked sequentially about intentions to take up vaccination against influenza A/H1N1 under five hypothetical scenarios: vaccination is free; vaccination per dosage costs less than $HK100, $HK101-200, or more than $HK200; and clinical data are lacking on vaccine efficacy and safety. Response categories included unlikely (certainly not, mostly not), unsure, and highly likely (mostly and definitely). As a reference, the median family income in Hong Kong in 2006 was around $HK17 250.28
Participants were asked whether clinical evidence on the safety and efficacy of the influenza A/H1N1 vaccine was currently available. Other questions were related to knowledge about different modes of transmissions of the virus and perceptions related to the virus and its vaccine.
We tabulated the distributions of several variables. Analyses were carried out in SPSS version 16.0.

Perceptions towards vaccination against influenza A/H1N1 ::: Results:
Intentions—When the participants were asked about their intention to take up free vaccination against influenza A/H1N1, 45% (n=135) thought it highly likely (that is, mostly or certainly) and 55% (n=166) thought it unlikely or were unsure (mostly not, certainly not, or unsure). The prevalence of intention (highly likely to take up the vaccine), however, decreased with increasing cost in the hypothetical scenarios where a charge was levied for vaccination: 36% (n=108) were highly likely to take up vaccination for less than $HK100, 24% (n=72) for $HK101-200, and 15% (n=45) for more than $HK200. In the absence of data on efficacy and safety the prevalence decreased to 5% (n=14; table 1).
Positive and negative attitudes—39% (n=117) of participants believed that vaccination would be effective at preventing influenza A/H1N1, 63% (n=189) erroneously believed that efficacy of influenza A/H1N1 vaccine had been confirmed by clinical trials, and 16% (n=49) believed that it is necessary for everyone in Hong Kong to take up vaccination against influenza A/H1N1 (49%, n=146, not quite necessary and 32%, n=95, completely unnecessary; table 2). Overall, 27% (n=81) of the participants believed vaccination against influenza A/H1N1 would be inconvenient and 16% (n=49) believed that it would cause quite a lot of side effects or that side effects would be very severe (table 2).

Knowledge and perceptions about influenza A/H1N1 ::: Results:
Knowledge—51% (n=153) of the participants gave correct responses to all three questions on modes of transmission through droplets, bodily contact with infected people, and touching objects contaminated with the A/H1N1 virus (table 2).
Perceived severity—30% (n=90) of the participants erroneously believed that the fatality associated with A/H1N1 among adults exceeded 1%; 14% (n=41) believed that A/H1N1 results in severe and irreversible damage to the body among adults; 13% (n=37) believed that more than 10 deaths related to A/H1N1 infection would occur in Hong Kong, and 40% (n=118) believed that there are quite a lot or many hidden H1N1 cases of influenza A/H1N1 in the local community (table 2). Compared with seasonal flu, less than half of the participants believed that A/H1N1 would result in a higher fatality rate (36%, n=108), higher infectivity (42%, n=126), and more severe bodily damage (33%, n=95; table 2).
Risk perception—Around 10% of the participants considered themselves (10%, n=31), their family members (10%, n=30), or the general public (12%, n=35) to have a high or very high chance of contracting A/H1N1 in the next year, and 28% perceived a high (high, very high, or certain) chance of having a large scale outbreak of influenza A/H1N1 in the coming year (table 2).

Conclusions ::: Discussion:
Participants did not consider universal vaccination against A/H1N1 to be necessary. Efficacy and safety data are needed to enhance uptake. Cost is important although our study suggests that most of the population would not take up vaccination against A/H1N1. As the A/H1N1 vaccine is new and major plans regarding the vaccine have been made in many countries, further research is warranted. Further studies should also monitor the level and factors predicting intentions towards A/H1N1 vaccination longitudinally in different risk groups as well as in the general population. International comparisons are also warranted. Such studies would improve the understanding of vaccination against different types of influenza related diseases.