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Attitudes of Parents Towards the use of H1N1 Vaccination in Saudi Arabia

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In late March 2009 in Mexico, an outbreak of a respiratory illness later shown to be caused by a novel influenza A virus of swine origin (H1N1) was reported. By the end of December 2009, there were approximately 15,850 confirmed cases and 124 deaths caused by this virus in Saudi Arabia. During such outbreaks, it is important that the concerns, knowledge, attitudes, and behavioral reactions of the public be studied in order to improve communication efforts by public health officials and clinicians to address the outbreak and to prevent further spread of the disease. Therefore, the aim of this study was to identify the attitudes of multi-nationality parents in Saudi Arabia towards swine influenza vaccinations. Of the 900 survey sheets that were distributed in thirteen provinces of Saudi Arabia, 469 (52.1%) were completed. Of the total respondents, 122 (26%) were Saudi, 288 (61.4%) did not indicate their nationalities, and 59 (12.6%) were other Arab nationalities [Jordanian (n = 36), Egyptian (n = 23)]. Of the total respondents, 422 (90%) believed that swine influenza vaccinations are likely unsafe due to possible side effects, whereas 47 (10%) believed that anti-influenza vaccinations are important. In a multivariate analysis, the following factors were found to be important for vaccination support: a) male gender, b) a non-Arab nationality, and c) recognition that influenza vaccination is likely to prove effective ($P \leq 0.01$). Appreciation of the risk of influenza and the absence of viable alternatives to vaccination were also statistically important factors ($P \leq 0.05$). In conclusion, the factors that influence the acceptance rates of vaccination that were identified in this study should be taken into account when attempts are made to increase public acceptance of influenza vaccinations in Saudi Arabia and elsewhere.

Key words: Attitude; Influenza A virus; H1N1; Saudi Arabia; Vaccination.

Influenza is an ancient disease that is caused by influenza virus strain A, B, or C, and strain A is the dominant strain that infects humans. Influenza viruses are known to be both unstable and unpredictable due to the ease with which they

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mutate. They frequently result in outbreaks of acute febrile respiratory illness, notably in the winter and autumn, thereby contributing to flu season. The virus can also spread swiftly across geographical borders to cause pandemic infections. Novel strains of the virus occasionally emerge, often following the rearrangement or exchange of genetic material between influenza viruses from various organisms, including humans, animals, or birds. Such genetic restructuring occurs in nature and this allows viruses to cause widespread disease, especially among immunologically suppressed patients.

In the previous century, three major pandemics occurred in the years, 1918, 1957, and 1968. The 1918 pandemic was the most devastating and it resulted in the deaths of approximately 30–40 million people worldwide. The two subsequent pandemics were more mild, with the deaths of approximately 1 million people associated with each. In 2003, the appearance of a new subtype of avian influenza A virus (H5N1) caused 438 cases and 262 deaths in 15 countries. In March 2009, another novel influenza virus A strain (H1N1) was found in Mexico and the USA. By the end of April 2009, the World Health Organization (WHO) declared that the H1N1 virus represented a major "public health emergency of international concern." Consequently, the WHO raised the pandemic alert level to 6 on June 11, 2009, and a new influenza pandemic was deemed underway[1,2].

Originally, the H1N1 virus caused respiratory disease in pigs, with nasal secretions, a bark-like cough, decreased appetite, and listless behavior exhibited by infected pigs. Essentially the same symptoms are observed in humans that are infected with the H1N1 virus. As of October 2009, more than 414,000 cases and approximately 5,000 flu-related deaths have been reported by the WHO in 195 countries worldwide. The actual number of cases is likely to be much higher, since laboratory facilities required for confirmation of a diagnosis are limited. Furthermore, in many countries, patients that present flu-like symptoms are no longer tested for H1N1. However, by October 2009, 10 out of 11 member countries in the WHO Southeast Asia region reported 41,513 cases involving H1N1 virus infections and 573 deaths due to this disease. The three hardest hit countries in this region include: Thailand (26,465 cases and 165 deaths), India (11,068 cases and 351 deaths), and Indonesia (1,097 cases and 10 deaths)[1]. Thus, the H1N1 virus has been responsible for considerable human suffering while also adversely affecting health services and the general economies of countries worldwide[3,4].

During the 2009 pandemic, the number of cases of H1N1 influenza infection in Saudi Arabia was similar to that of other regions worldwide. Most patients presented with respiratory symptoms and mortality rates were low for patients with pre-existing ailments. In addition, fatal cases usually showed multi-organ involvement[5,6]. According to the Saudi Ministry of Health, the number of laboratory-confirmed cases in Saudi Arabia (as of December 2009) was 15,850, and these resulted in 124 deaths[7,8]. In the Middle East, the highest numbers of influenza A (H1N1) virus cases have been reported in Saudi Arabia. Specifically, clinical features of the H1N1 virus were observed in patients who were hospitalized between July 2009 and June 2010 in a tertiary care hospital in Khamis Mushyt, Saudi Arabia. The presence of the viral infection was subsequently confirmed by RT-PCR. In one case involving a young immunocompetent man that was infected with H1N1 during the 2010-2011 flu season, progressive shortness of breath and the rapid development of multi-organ dysfunction were reported, including pancytopenia. In November 2012, Saudi health authorities reported eight cases of H1N1 infection at a mental hospital in Riyadh. The infected patients were administered the Tamiflu vaccine. An additional 27 patients, including four nurses, that were suspected of harboring the H1N1 virus were also quarantined. The latter H1N1 outbreak in the Kingdom was not immediately disclosed in order to avoid panic among Hajj pilgrims, since the first reported case involved a Filipino nurse who had recently arrived from the Philippines[9-12].

Exposure to the 2009 H1N1 flu virus has been found to occur in households, communities, and occupational settings, while transmission is thought to have occurred through droplet exposure on mucosal surfaces through indirect contact via 1) hand transfer, 2) respiratory secretions from infectious patients, 3) contaminated surfaces, and

4) the inhalation of small particle aerosols in the area surrounding infected individuals. The Centers for Disease Control and Prevention (CDC) has provided important and up-to-date information to both the public and healthcare professionals regarding outbreaks of H1N1 in humans. In addition, interim CDC guidance for clinicians and public health professionals has been provided upon case identification and the need for infection control and care of patients who have been confirmed or suspected to have contracted swine flu. The risk of infection has been reduced in healthcare settings by the provision that masks, respirators, and other prevention approaches are used by healthcare providers as appropriate[13-15] (Swine Flu" Resources for Dental Professionals n.d.)[16]. However, vaccination is an intervention that can effectively prevent the transmission of the H1N1 virus to/from healthcare personnel.

The 2009 influenza pandemic affected most countries of the world within a short time span, although the pattern of illness associated with this pandemic did not significantly differ from that of seasonal influenza infections[1]. As a result, a shift has occurred regarding the strategies used to monitor and effectively treat this disease. For example, it has been considered essential to focus on the development and production of an effective vaccine to control the potential side effects that could arise from any further mutation of the existing virus, and this approach is considered to have saved many lives worldwide[3].

In 2009, the Saudi government, in coordination with the ministers of health and education, launched a swine flu vaccination campaign. This campaign involved all of the provinces of the Kingdom, with priority given to the vaccination of kindergarten and elementary school children and teachers, followed by more senior students and people with special needs[17-21]. However, this campaign was met with resistance and non-compliance in some regions despite the potential life-saving effects of the vaccine. Thus, the aim of the current study was to identify public attitudes towards swine flu vaccination programs among parents in Saudi Arabia, and to use this information to better address public concerns regarding vaccination with the goal of increasing public acceptance of an influenza vaccine.

MATERIALS AND METHODS

A total of 900 surveys sheets were distributed in the 13 provinces of Saudi Arabia. Stating the gender and Nationality. With respect to vaccinations, respondents were asked about their attitudes towards vaccinating their child and to choose either "Agree" or "Reject" and to state the reason for their acceptance or rejection.

Statistical analyses

A multivariate analysis demonstrated that the following factors tended to influence acceptance of a vaccination program: being a male guardian for a child, being a non-Saudi parent, and being aware of the importance of H1N1 vaccination ($P \leq 0.01$). Awareness of the risk of the H1N1 virus, a lack of alternatives to the vaccine, and the importance of the vaccine for the patient's protection were also identified as statistically important factors ($P \leq 0.05$).

RESULTS

Survey responses

Amongst the 900 survey sheets that were distributed; 469 (52.1%) were completed. with respect of nationality, 122 (26%) of the respondents were Saudi families, 288 (61.4%) did not provide their nationality, and 59 (12.6%) were members of other Arab nationalities (36 (61%) were Jordanian and 23 (39%) were Egyptians). Of the total respondents, 422 (90%) claimed that the H1N1 flu vaccination was not safe and they expressed fears regarding the potential side effects of the vaccine. In contrast, 47 (10%) respondents agreed that the H1N1 vaccination was important.

DISCUSSION

This study was limited by the number of respondents and their willingness to discuss their reasons for refusal or acceptance of a vaccine. However, consistent with many other reports, demographics, level of education, knowledge of vaccines, the effect of the media as a source of information, and the potential life-saving importance of the vaccine itself were identified as critical factors in determining the survey respondents' acceptance or refusal of the vaccine. Vaccines are widely recognized by health

authorities and the medical profession in general as an important tool for reducing infection and saving lives. The eradication of smallpox is a proven example of the effectiveness of vaccines. Yet, for many individuals, this does not provide sufficient incentive for the public to accept and comply with vaccination programs. In the present study, parents in Saudi Arabia expressed similar opinions as parents in other countries, particularly regarding doubts of the benefits of vaccines and concerns about vaccine safety. The combination of these attitudes is referred to as, "vaccine hesitancy," which is defined as an expression of concern or doubt regarding the value and safety of vaccination. However, an attitude of hesitancy differs markedly from vaccine refusal. Moreover, hesitant attitudes are not confined to those who refuse vaccination; hesitancy also includes those who encourage others to refuse vaccination.

Healthcare professionals have reported increases in problems related to the development of trustworthy relationships with patients. It is possible these relationships might otherwise allay concerns and provide reassurance for patients who are hesitant regarding vaccines, especially when resistance to vaccination is based on a lack of awareness or misinformation[22]. Vaccination-related attitudes are also shaped by a variety of other sources of information, particularly online and social media outlets. For example, anti-vaccination websites appeal to those searching the internet for vaccine information which reinforces their predilections to vaccination-avoidance, both for themselves and their children. Anti-vaccination websites also tend to be dynamic in response to both trends in public health and the successful implementation of vaccinations. Moreover, opposition claims commonly appeal to an individual's emotions, whereas claims supporting vaccination predominantly appeal to reason[23].

Many reports have been published that show that attitudes against H1N1 vaccination vary worldwide, and similar results were obtained in the present study. A variety of factors that affect the acceptance or refusal of an H1N1 vaccination relate to geo/demographic factors, education, the socioeconomic level of the parents involved, employment of family members as health workers, the level of knowledge about the vaccine and/or the disease, the sources of information available regarding vaccination, and awareness of government requirements. An example of the latter is a consideration of the Hajj season in Saudi Arabia. Most of the reasons for individuals' refusal relates to fears regarding the side effects and the safety of a vaccine. Moreover, a number of papers have discussed changes in the public's attitude towards acceptance or refusal of vaccine programs over extended periods of time[24-35].

In summary, the results of the present study highlight that awareness of the risk of the H1N1 virus and the lack of viable alternatives are statistically important factors for both individuals and their children regarding the acceptance or refusal of a vaccine ($P \leq 0.01$). Thus, any attempts to increase acceptance rates for vaccination should take these factors into account. Currently, interim CDC guidance for clinicians and public health professionals is provided upon case identification, and for infection control of patients who are confirmed or suspected to be infected with swine flu. Experience gained from the influenza H1N1 pandemic of 2009 has the potential to facilitate the development of new protocols and guidelines to control future pandemics[36], and to reduce anti-vaccination sentiment among the general public[37].

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