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Medical resident's knowledge, attitude, and practice in H1N1 pandemic

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ABSTRACT

Introduction: In an epidemic, health-care providers (including medical residents) are in the risk of infection. Their proper compliance to the epidemic would lead to the successful management of the epidemic. The aim of this study was to assess the medical residents' knowledge, attitude, and practice (KAP) about influenza (H1N1) and its vaccination in H1N1 provincial referral hospitals in Tabriz, Iran. **Methods:** Using cross-sectional descriptive design, this study was carried out from 25 January to 30 March 2015 (during the epidemic). All the medical residents in three H1N1 provincial referral hospitals (220 individuals) in Tabriz were included. A valid questionnaire was used for data collection. **Results:** Over 51% of the participants were male. The mean score of knowledge and attitude about H1N1 were 53.5 and 62.2, respectively. There was no significant difference ($P > 0.05$) between the residents who had uptake influenza vaccine and who refused in Knowledge level. Vaccination rate was calculated as 73%. "Fear of influenza infection" (34.6%) and "health facilities recommendation" (30.8%) were the main reasons of vaccination. **Conclusions:** Health authorities and medical universities must employ proper policies to improve the medical residents' knowledge about H1N1. Furthermore, vaccination facilities must be provided in hospitals to increase the vaccination rate.

KEY WORDS: Attitude, H1N1 influenza, knowledge, vaccination

INTRODUCTION

Influenza (A, H1N1) as a public-health problem had raised significant socioeconomic and clinical burden worldwide [1,2]. Its first outbreak was announced in June 2009 by the World Health Organization [3]. Worldwide, over 400,000 hospitalization and 18,449 deaths in a year due to influenza, was estimated by Centers for Disease Control and Prevention [4]. Moreover, annual influenza epidemics had resulted in about 3-5 million cases and 250-500 thousand deaths worldwide [5]. In Australia, 14,068 cases were confirmed since 2013 [6]. Turkey had 127 deaths due to influenza until November 22, 2009. In

Iran, during about 6 months (June 1 to November 11, 2009), 2662 cases were identified of which 2.18% (58 cases) were died [7]. Influenza pandemic affects the population health. In an influenza pandemic, health-care workers (HCWs) and medical students are at the risk of exposure and subsequent transmission to the patients [8,9]. Medical students, especially residents, because of their role in patients cure and frequently contacts with patients in hospitals, posed as an important source of influenza transmission [10,11]. Lack of adequate knowledge and perceived attitude in contracting with a pandemic, would be led to failure in behavioral adoptions [10,12,13]. Rathi *et al*. (2011) study showed that most of the urban adult population in India had adequate knowledge about different aspects of influenza [12]. Similarly, Hesham *et al*. (2009) [14] reported significant knowledge in medical students about influenza, but Khowaja *et al*. (2011) revealed inadequate knowledge of them [15]. Shiraz medical and dental residents and fellowships knowledge, attitude, and practice (KAP) about influenza were in an acceptable level [16]. About 40% of students in previous studies were not concerned about H1N1 exposure [10,11]. Regarding, vaccine, as the most effective method, prevents influenza infection and overall mortality by 56% and 68% respectively. Vaccination was strongly recommended for HCWs (including medical residents), but it had low acceptance among them (among 16-40% coverage) [5,18,19]. However, studies showed that patients who were hospitalized in a hospital with more than 60% vaccinated personnel, had experienced less infection risk in compare with others [20,21]. "Doubts about vaccine safety," "fear of side effects," "low risk of being infected," and "disbelief to vaccine protectiveness" were reported as the common causes to vaccination refuse [1,5,22]. Seasonal pidemics of influenza in Iran, demands a proper policy to protect the risk groups especially medical students. In 2015 influenza epidemic in East Azerbaijan province, Iran, three teaching hospitals were selected as referral centers of the influenza cases. One of them was for child and two were general hospitals. Medical residents were participated in cases management in mentioned hospitals. The aim of this study was to assess the medical residents' baseline KAP about influenza (H1N1) and its vaccination.

METHODS

A cross-sectional study was conducted at 3 teaching hospitals of the Tabriz University of Medical Sciences. These hospitals include more than 1200 bed as tertiary care referral centers in north-west of Iran. These hospitals were selected as the provincial referrals for the influenza cases since 2015 epidemic. Actually, 220 medical residents (medical students who are in the professional course) were presented in these hospitals, and all were included in the study. A self-reported and valid questionnaire was designed based on existing literature (CVI = 0.79) [1,11,16,22]. A pilot study was held (n = 30) and the questionnaire reliability was approved (α = 76.5). The pilot study data were included in the whole study. The questionnaire consisted of 27 items in 5 main sections: (a) Demographics (age, gender, patient contact in a day); (b) knowledge about influenza (8 items, 4 point Likert scale); (c) attitude (9 item, 4 point Likert scale); (d) reasons for refusing or accepting vaccination (5 checkbox items); (e) beliefs and practice about other preventive methods (5 items, 4 point Likert scale). Data were gathered during the epidemic (25 January to 30 March). The study was approved by the Ethical Committee of Tabriz University of Medical Sciences. SPSS 21 was used to data analyzing. Descriptive statistics were applied to generate relative frequencies. Student's t-test for independent samples was used for continues variables.

RESULTS

Out of 220 enrolled medical residents, 193 filled out the questionnaire completely (response rate = 87.7%). Over 51% of the participants were male and the mean of their age was 24.5 ± 3.7. Most of the residents (27.5%) were in surgery wards. About 36% of the residents, in everyday work, had a contact with more than 30 patients in hospitals. The mean of professional engagement years in the hospital was 2.6.

The mean score of knowledge and attitude about H1N1 were 53.5 and 62.2, respectively. There was no significant difference ($P > 0.05$) between the residents who had uptake influenza vaccine and who refused in knowledge level. Moreover, a significant relation between residents' gender (using a t-test) and professional engagement years (using Pearson correlation) was not appeared. Surgery residents were the most participants in our study (31%), but pulmonary residents had the highest level of H1N1 knowledge (79.17 ± 12.3). Moreover, a significant difference was appeared between residents in different fields in H1N1 knowledge (using one-way ANOVA), but it was not seen in attitude. Most of the participants (40%) had got their information about influenza through their hospitals. Websites were the second information source of medical residents. Mass media was the information source just for 11% of the participants. While, they believed that the most reliable information about influenza epidemics was provided by their teachers (medical professionals). Only 7.7% of respondents had rate hospital information as reliable information. Health affair of Tabriz University of Medical Sciences was the second source of reliable information about influenza epidemics.

More than 71% of the participants had a fear of influenza epidemic. Figure 1 illustrates the residents' level of concern of being infected. Most of the medical residents (65.2%) were concerned about contracting with influenza [Figure 1].

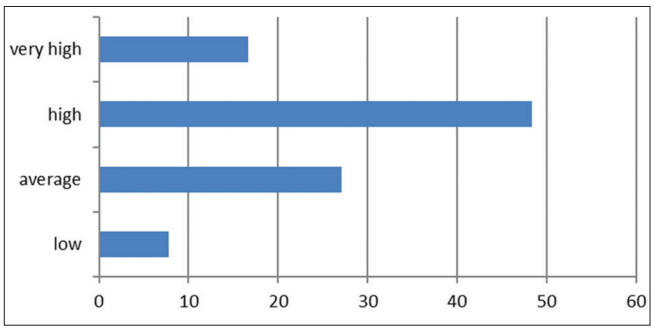

Figure 1: Medical residents perceived risk of H1N1 influenza exposure

Nearly, 61% of medical residents argued that influenza vaccine would have side effects, but 60% (116 individuals) of participants had no information about its side effects frequency. Despite to the opinion of the half of the participants (52%) who believed that vaccination must be only for high-risk individuals, about 27% (51 individuals) of medical residents did not uptake H1N1 vaccine. Over the third of the residents (35%), who did not get the vaccine, argued that there was no vaccination in their working hospital. Taking vaccination in next epidemic (18.8%), having no concern about H1N1 (13%) and distrust about available vaccines (10.6%) were the most important reasons to not vaccination. "Fear of influenza infection" (34.6%), "health facilities recommendation" (30.8%), and "professional ethics" were the most cited reasons for receiving an influenza vaccination by medical residents.

DISCUSSION

Since hospitals had a potential to be important outbreak centers during an epidemic, health-care provider's KAP are determinants in compliance to the epidemics (referring to compliance with recommended infection prevention and control measures, preventive interventions, and policies). Medical residents are one of the health-care provider groups in teaching hospitals. Because of their low working experience and professionality, they must be more cautious about the epidemics. Based on our study results, medical residents did not have adequate knowledge about H1N1 epidemics. Unlike to our results, Akan *et al.* (2010) revealed that the university students had enough knowledge about H1N1 [23]. Similarly, over the 96% of participants in Van *et al*. (2010) study were aware of the H1N1 pandemic in Australia [11]. Information about H1N1 was provided by hospitals for most of the medical residents (40%). However, medical residents had the most trust on the information which was provided by their professors. This was announced by Akan *et al*. (2010) that it is expected, in medical students, to get their information through health professionals and the internet [23]. Mass media was the information source just for 11% of the participants. This was in contrast with the findings reported in previous studies [16,23-25]. It could be discussed that mass media in Iran must perform their role in informing the community. Paek *et al*. (2008) argued that health institutions, during epidemic, must have a close relationship with the media to disseminating information [26]. Actually, proper compliance toward epidemic is the result of greater attitude and perceived the risk of susceptibility [27]. By the mean attitude score of 62, more than 70% of the participants believed that H1N1 epidemic was serious, and 65.2% of them had exposure concern. These findings were unlike with previous studies which reported only 25% and 32% of participants considered themselves at contracting risk [10,28]. Nevertheless, literature had ranked health-care providers as one of the important risk groups and a priority for vaccination [29]. Despite this recommendation, vaccine uptake rate was low in health-care providers [5,19]. It must be stated that there are differences regarding the attitude to the vaccination in the literature [11,30]. Van *et al*. revealed that 60% of university students and staff had willing to uptake H1N1 vaccine before pandemics but during the pandemics, vaccination rate was 14% [11]. Another study in Turkey showed that vaccination rate among HCWs was 12.7% [22]. Furthermore, HCWs low rate of vaccination was reported in other countries such as Greece, Germany, and Italy [31-33]. Unlike to this literature, H1N1 vaccine acceptance rate among Malaysian PHC workers was 86.3% and 67.2% of them received H1N1 Influenza vaccine [34]. Furthermore, in a study of Spain hospital personnel, it was revealed that vaccination rate was significantly increased over the three seasons, especially in physicians, which reached 60% [19]. These were similar to our results with 73% vaccination rate. As reported in the literature, self-protection against H1N1 infection, to protect the patients, advice of health authorities were the most cited reasons to accept the H1N1 vaccination in our study [5,22,34]. Regarding this, we could say that health authorities' initiatives to encourage the hospitals personnel to be vaccinated had positive effects. However, "inaccessibility to the vaccine in the working hospital," "low concern about being infected," and "distrust to the available vaccines" were argued as the most important obstacles to be vaccinated. Similarly, "doubt about effectiveness and safety of vaccine" and "low exposure concern" were reported as reasons of not vaccination [5,9,19,28]. It is proven that providing vaccination in the workplace was a useful way to increase the coverage rate [19,35]. Hence, health authorities must consider this issue in the hospitals.

The study was restricted to the medical residents who work in three H1N1 Influenza referral hospitals of Tabriz, Iran. Our participants were quite homogeneous, so it was impossible to run some analysis regarding context variables. However, as the study was done in epidemic period, it provides nearly real information and a basic for health managers of the region to improve the technical knowledge of the care providers.

CONCLUSION

Proper compliance to the H1N1 epidemic needs a good level of KAP of health-care providers. It was revealed that medical residents, as a caregiver, had a low level of knowledge. However, high level of perceived concern about H1N1 infection showed that there was a fear of epidemic between them. This could be led to the imperfect care of the patients. Health authorities are to create a sedative atmosphere to better control of the epidemics. Moreover, beside the providing professional information for the medical residents in hospitals, improving the relationship with mass media to informing the community is recommended. Moreover, vaccination facilities must be provided in hospitals to increase the vaccination rate.

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REFERENCES

1. Vírseda S, Restrepo MA, Arranz E, Magán-Tapia P, Fernández-Ruiz M, de la Cámara AG, *et al.* Seasonal and Pandemic A (H1N1) 2009 influenza vaccination coverage and attitudes among health-care workers in a Spanish University Hospital. Vaccine 2010;28:4751-7.

2. World Health Organization. Public Health Measures During the Influenza A (H1N1) 2009 Pendemic. Meeting Report. Who Technical Consultation; 2010. Available from: http://www.whoint/influenza. [Last cited on 2015 Feb, 20].
3. Delcourt VA, Nion N, Bricaire F, Similowski T, Delpech VN. Planning for an H1N1 influenza pandemic, specific enforcement of a white plan. Soins 2009;45-7.
4. Centers for Disease Control and Prevention (CDC). Update: Influenza activity – United States, September 28-November 29, 2008. MMWR Morb Mortal Wkly Rep 2008;57:1329-32.
5. Tanguy M, Boyeau C, Pean S, Marijon E, Delhumeau A, Fanello S. Acceptance of seasonal and pandemic a (H1N1) 2009 influenza vaccination by healthcare workers in a French teaching hospital. Vaccine 2011;29:4190-4.
6. Australian Department of Health and Ageing. Australian Influenza Surveillance Report No 6. 2013. p. 1-2.
7. Gooya MM, Soroush M, Mokhtari-Azad T, Haghdoost AA, Hemati P, Moghadami M, *et al*. Influenza A (H1N1) pandemic in Iran: Report of first confirmed cases from June to November 2009. Arch Iran Med 2010;13:91-8.
8. Rothberg MB, Haessler SD, Brown RB. Complications of viral influenza. Am J Med 2008;121:258-64.
9. Bellia C, Setbon M, Zylberman P, Flahault A. Healthcare worker compliance with seasonal and pandemic influenza vaccination. Influenza Other Respir Viruses 2013;7 Suppl 2:97-104.
10. Hussain ZA, Hussain SA, Hussain FA. Medical students' knowledge, perceptions, and behavioral intentions towards the H1N1 influenza, swine flu, in Pakistan: A brief report. Am J Infect Control 2012;40:e11-3.
11. Van D, McLaws ML, Crimmins J, MacIntyre CR, Seale H. University life and pandemic influenza: Attitudes and intended behaviour of staff and students towards pandemic (H1N1) 2009. BMC Public Health 2010;10:130.
12. Rathi S, Gandhi H, Francis M. Knowledge and awareness about H1N1 flu in urban adult population of Vadodara, India. Electron Phys 2011;3:392-5.
13. Aslan S, Gulsun S, Citak EC, Ahsen O, Habibe P. An inquiry of knowledge, attitudes and practices against pandemic H1N1 influenza among Turkish health care workers: Experience of a single center in Southeast of Turkey. Afr J Microbiol Res 2010;4:2363-70.
14. Hesham R, Cheong JY, Hasni JM. Knowledge, attitude and vaccination status of varicella among students of Universiti Kebangsaan Malaysia (UKM). Med J Malaysia 2009;64:118-23.
15. Khowaja ZA, Soomro MI, Pirzada AK, Yoosuf MA, Kumar V. Awareness of the Pandemic H1N1 Influenza global outbreak 2009 among medical students in Karachi, Pakistan. J Infect Dev Ctries 2011;5:151-5.
16. Askarian M, Danaei M, Vakili V. Knowledge, attitudes, and practices regarding pandemic H1N1 influenza among medical and dental residents and fellowships in Shiraz, Iran. Int J Prev Med 2013;4:396-403.
17. Poland GA, Tosh P, Jacobson RM. Requiring influenza vaccination for health care workers: Seven truths we must accept. Vaccine 2005;23:2251-5.
18. Mereckiene J, Cotter S, Nicoll A, Levy-Bruhl D, Ferro A, Tridente G, *et al*. National seasonal influenza vaccination survey in Europe, 2008. Euro Surveill 2008;13. pii: 19017.
19. de Juanes JR, García de Codes A, Arrazola MP, Jaén F, Sanz MI, González A. Influenza vaccination coverage among hospital personnel over three consecutive vaccination campaigns (2001-2002 to 2003-2004). Vaccine 2007;25:201-4.
20. Carman WF, Elder AG, Wallace LA, McAulay K, Walker A, Murray GD, *et al*. Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: A randomised controlled trial. Lancet 2000;355:93-7.
21. Slinger R, Dennis P. Nosocomial influenza at a Canadian pediatric hospital from 1995 to 1999: Opportunities for prevention. Infect Control Hosp Epidemiol 2002;23:627-9.
22. Savas E, Tanriverdi D. Knowledge, attitudes and anxiety towards influenza A/H1N1 vaccination of healthcare workers in Turkey. BMC Infect Dis 2010;10:281.
23. Akan H, Gurol Y, Izbirak G, Ozdatli S, Yilmaz G, Vitrinel A, *et al*. Knowledge and attitudes of university students toward pandemic influenza: A cross-sectional study from Turkey. BMC Public Health 2010;10:413.
24. Kristiansen IS, Halvorsen PA, Gyrd-Hansen D. Influenza pandemic: Perception of risk and individual precautions in a general population. Cross sectional study. BMC Public Health 2007;7:48.
25. Kamate SK, Agrawal A, Chaudhary H, Singh K, Mishra P, Asawa K. Public knowledge, attitude and behavioural changes in an Indian population during the Influenza A (H1N1) outbreak. J Infect Dev Ctries 2009;4:7-14.
26. Paek HJ, Hilyard K, Freimuth VS, Barge JK, Mindlin M. Public support for government actions during a flu pandemic: Lessons learned from a statewide survey. Health Promot Pract 2008;9 4 Suppl:60S-72.
27. Brug J, Aro AR, Richardus JH. Risk perceptions and behaviour: Towards pandemic control of emerging infectious diseases: International research on risk perception in the control of emerging infectious diseases. Int J Behav Med 2009;16:3-6.
28. Eastwood K, Durrheim DN, Jones A, Butler M. Acceptance of pandemic (H1N1) 2009 influenza vaccination by the Australian public. Med J Aust 2010;192:33-6.
29. Henriksen Hellyer JM, DeVries AS, Jenkins SM, Lackore KA, James KM, Ziegenfuss JY, *et al*. Attitudes toward and uptake of H1N1 vaccine among health care workers during the 2009 H1N1 pandemic. PLoS One 2011;6:e29478.
30. Lau JT, Yeung NC, Choi KC, Cheng MY, Tsui HY, Griffiths S. Acceptability of A/H1N1 vaccination during pandemic phase of influenza A/H1N1 in Hong Kong: Population based cross sectional survey. BMJ 2009;339:b4164.
31. Rachiotis G, Mouchtouri VA, Kremastinou J, Gourgoulianis K, Hadjichristodoulou C. Low acceptance of vaccination against the 2009 pandemic influenza A(H1N1) among healthcare workers in Greece. Euro Surveill 2010;15. pii: 19486.
32. Wicker S, Rabenau HF, Bias H, Groneberg DA, Gottschalk R. Influenza A (H1N1) 2009: Impact on Frankfurt in due consideration of health care and public health. J Occup Med Toxicol 2010;5:10.
33. La Torre G, Di Thiene D, Cadeddu C, Ricciardi W, Boccia A. Behaviours regarding preventive measures against pandemic H1N1 influenza among Italian healthcare workers, October 2009. Euro Surveill 2009;14. pii: 19432.
34. Aziz NA, Muhamad S, Manaf MR, Hamid MZ. Factors influencing H1N1 vaccination among primary health care workers: A cross-sectional study. Int J Prev Med 2013;4:664-70.
35. Fedson DS. Influenza vaccination of medical residents at the University of Virginia: 1986 to 1994. Infect Control Hosp Epidemiol 1996;17:431-3.

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