[9] Kadioglu A. Renal measurements, including length, parenchymal thickness, and medullary pyramid thickness, in healthy children: what are the normative ultrasound values? AJR Am J Roentgenol 2010; 194:509-515.

[10] Eze CU, Eze CU, Marchie TT, Ohagwu CC, Ochie K. Observer Variability in Sonographic Measurement of Kidney Sizes among Children in Benin City, Nigeria. . West Indian Med J. 2013 Dec; 62(9):817-24.

[11] Pantoja Zuzuárregui JR, Mallios R, Murphy J. The effect of obesity on kidney length in a healthy pediatric population.Pediatr Nephrol 2009; 24:2023-2027.

[12] Glodny B, Unterholzner V, Taferner B, Hofmann KJ, Rehder P,Strasak A, et al. Normal kidney size and its influencing factors- a 64-slice MDCT study of 1.040 asymptomatic patients. BMC Urol 2009; 9:19.

[13] GavelaT, Bayle M S, Mardones G G, Gallego S, Pérez J M and. Pintado MT. Ultrasonographic study of kidney size in children. Nefrologia. 2006; 26:325–9.

[14] Christophe C, Cantraine F, Bogaert C, Coussement C, Hanquinet S, Spehl M, et al. Ultrasound: a method for kidney size monitoring in children. Eur J Pediatr. 1986; 145:532–538.

[15] Safak AA, Simsek E, Bahcebasi T. Sonographic assessment of the normal limits and percentile curves of liver, spleen, and kidney dimensions in healthy school-aged children. J Ultrasound Med 2005; 24: 1359-1364.

[16] Kim J.H., Kim, M.J., Lim, S.H., Kim, J. and Lee, M.J. Length and Volume of Morphologically Normal Kidneys in Korean Children: Ultrasound Measurement and Estimation Using Body Size. Korean J Radiol. 2013; 14 (4):677-682.

[17] Soyupak SK, Narli N, Yapicioglu H, Satar M, Sungur EH. Sonographic measurements of the liver, spleen and kidney dimensions in the healthy term andpreterm newborns. Eur J Radiol 2002; 43:73–78.

[18] Otiv A, Mehta K, Ali U, Nadkarni M. Sonographic measurement of renal size in normal Indian children. Indian Pediatr 2012; 49: 533-6.

[19] Dixit PK, Sahai SB, Rath B, Garg A, Chowdhary V. Norms for renal parenchymal volume in Indian children. Indian Pediatr. 1994; 31:1059-64.

[20] Schlesinger AE, Hernandez RJ, Zerin JM, Marks TI, Kelsch RC. Interobserver and Intraobserver variations in sonographic renal length measurements in children. Am J Radiol. 1991:156:1029-32.

[21] Ganesh R, Vasanthi T, Lalitha J, Rajkumar J, Muralinath S. Correlation of renal length with somatic variables in Indian children. Indian J Pediatr. 2010; 77:326-8.

[22] Zerin JM, Blane CE. Sonographic assessment of renal length in children: a reappraisal. Pediatr Radiol 1994; 24:101-106.

[23] Schmidt IM, Mølgaard C, Main KM, Michaelsen KF. Effect of gender and lean body mass on kidney size in healthy 10-yearold children. Pediatr Nephrol 2001; 16:366-370.

[24] Vujic A, Kosutic J, Bogdanovic R, Prijic S, Milicic B, Igrutinovic Z (2007) Sonographic assessment of normal kidney dimensions in the first year of life - A study of 992 healthy infants. Pediatr Nephrol 22:1143–1150

[25] Geelhoed JJ, Taal HR, Steegers EA, Arends LR, Lequin M, Moll HA, et al. Kidney growth curves in healthy children from the third trimester of pregnancy until the age of two years. The Generation R Study. Pediatr Nephrol. 2010; 25:289–298.

[26] Akhavan A, Brajtbord JS, McLeod DJ, Kabarriti AE, Rosenberg HK, Stock JA. Simple, age based formula for predicting renal length in children. Urology 2011; 78:405-10.

[27] Lee MJ, Son MK, Kwak BO, Park HW, Chung S, Kim KS, Kidney size estimation in Korean children with Technesium-99m dimercaptosuccinic acid scintigraphy. Korean J Pediatr 2014;57 (1):41-45.

[28] Sheikhazadi, A., Sadr S.S , Ghadyani, M.H, Taheri, S.K, Manouchehri, A.A, Nazparvar, B, et al. Study of the Normal internal Organ Weights in Tehran's Population. J Forensic Leg Med 2010; 17(2):78-83.

[29] Caglar V, Kumral B, Uygur R, Alkoc O A, Ozen O A, Demirel H. Study of Volume, Weight and Size of Normal Pancreas, Spleen and Kidney in Adults Autopsies. FMAR, 2014; 2: 63-69

ORIGINAL ARTICLE

MEDICAL STUDENTS' AND DOCTORS' KNOWLEDGE ABOUT INFLUENZA DISEASE AND ITS VACCINE

Razia Latif , Saba Safdar , Aiesha Ishaque

ABSTRACT

Background: Influenza is a common disease affecting people of all age groups. Generally considered to be a mild disease, it can however, cause devastating effects in the very young, elderly and immunocompromised people.

Objective: To assess and compare the knowledge of influenza and its vaccine amongst medical students and practicing physicians.

Methods: A cross sectional survey was conducted on medical students and doctors at a tertiary care hospital. The participants were asked to fill out a structured questionnaire regarding knowledge and beliefs about influenza disease and its vaccine. Information thus obtained was tabulated and analysed and the two groups compared. Knowledge scores were calculated and the respondents were considered to have adequate knowledge if they scored> 60% on the knowledge part of the questionnaire.

Results: There were 179 participants in the study, of which 79 were medical students and 100 were practicing doctors. Majority of the respondents in both the groups knew the causative agent, mode of transmission and preventative measures of influenza. However, they lacked knowledge about complications of influenza. Respondents' knowledge was significantly deficient regarding many aspects of the influenza vaccine. Analysis of the knowledge scores revealed that only 49% of the physicians and 31.6% of the medical students had adequate knowledge about influenza disease and its vaccine.

Conclusion: Medical students and practicing physicians lack adequate knowledge about influenza and its vaccine. More emphasis needs to be placed on educating health care professionals about influenza and the importance of its vaccination program.

KEY WORDS: Influenza, Vaccination, Preventive Measures.

INTRODUCTION

Influenza is a viral disease affecting people of all age groups. Three types of the influenza virus, type A, B and C cause disease in humans, with the majority of cases occurring due to type A and to a lesser extent by type B. Symptoms include fever, cough, runny nose, sore throat, headache and malaise. In temperate climates, the disease peaks in the winter months. Generally a mild disease in healthy young adults, it can cause significant morbidity and mortality in the very young, elderly and those with underlying medical problems like asthma, diabetes and chronic renal failure. [1]

Influenza is a preventable disease and the most effective way of preventing it is by vaccination. The influenza vaccine has been available for many years. Influenza vaccine coverage rates for health care workers (HCWs) are generally low. In England, reported vaccination rate for HCWs for the 2012-2013 season was 45.6% and for doctors was 44.7%.[2] An Australian study reported influenza vaccination rate of 22% for HCWs and 26% for doctors.[3] This rate was much higher in USA, where 75.2% of HCWs and 92.2% of the physicians reported having received the influenza vaccine for the 2013-2014 season.[4] Limited information is available regarding this from the developing countries.

Myths prevail regarding influenza infection and influenza vaccine in HCWs as well as the general public and pose as barriers for influenza vaccination. This study was carried out to assess and compare the knowledge and beliefs of medical students and physicians regarding influenza infection and its vaccine.

Razia Latif
Professor of Pediatrics, Department of Pediatrics, Ziauddin University, Karachi.
Saba Safdar
Post graduate trainee, Department of Pediatrics, Ziauddin University, Karachi.
Aiesha Ishaque
Assistant Professor, Department of Family Medicine, Ziauddin University, Karachi.

METHODOLOGY

This was a cross sectional study and was approved by the Ethics Review Committee of the institution. Written informed consent was obtained from the participants by one of the authors. Fourth year medical students (Group I) and practicing physicians (Group II) working at a tertiary care hospital were asked to fill out a structured questionnaire. Questions were designed to test their knowledge about influenza disease, influenza vaccine and their own beliefs about the vaccine. The results were tabulated, analysed and the two groups compared using Statistical Package for Social Sciences version 20.0. Results were considered to be significant, if the p-value was <0.05. Global knowledge scores were also calculated for the two groups, with one point given for each of the correct response in the questionnaire. A respondent was considered to have adequate knowledge if he or she scored >60% on the knowledge part of the questionnaire.

RESULTS

There were 179 participants in the study, of which 79 were fourth year medical students and 100 were practising physicians. The demographic data of the respondents is shown in Table 1. Majority of respondents were below 30 years of age and with less than five years of working experience. Only a small percentage of respondents had post graduate qualification. There was a slight preponderance of female respondents.

The responses to the questionnaire by the study participants are shown in Table 2. Majority of the respondents in both the groups correctly identified the causative agent, mode of transmission and preventative measures for influenza. Only 1/3rd of the students and one half of the doctors knew that influenza infection can be fatal. Both the groups lacked knowledge about various aspects of the influenza vaccine. More students than doctors knew the correct recommended age for giving the influenza vaccine (p= 0.001). Majority of the respondents in both the groups did not know that the vaccine in current use is safe in pregnancy and that it is recommended for high risk patients such as those with chronic lung disease, cardiac problems and chronic renal failure. Only half of doctors and 2/3rd of the students said that they would recommend influenza vaccine for themselves. Only 12% of the practising physicians had received the influenza vaccine, whereas for the students, the response was slightly better (p< 0.001).

Regarding the global score for knowledge, only one third of medical students and one half of doctors had adequate knowledge about influenza infection and influenza vaccine (Figure 1).

DISCUSSION

Majority of the respondents for the current had sufficient knowledge about influenza infection. However, majority of them did not know that influenza infection can be fatal. It is a well known fact that influenza can be a serious illness and can cause mortality especially in the very young, elderly patients and those at risk for developing complications.[5]

Table 1. Demographic data of the respondents (N=179)

Demographic characteristic		Frequency	Percentage (%)
Gender	Male	78	43.6
	Female	101	56.4
Age groups	18-30	152	84.9
	31-40	20	11.2
	41-50	5	2.8
	51-60	1	0.6
	>60	1	0.6
Profession	Students	79	44.1
	Practicing doctors	100	55.9
Highest Degree	High school	79	44.1
	MBBS	74	41.3
	Postgraduate degree (FCPS/MCPS/MPHIL)	26	14.5
Work experience (years)	None	79	44.1
	<5 years	78	43.6
	5-10 years	18	10.1
	>10 years	4	2.2
Work Place	Hospital	61	34.1
	OPD and Hospital	118	65.9

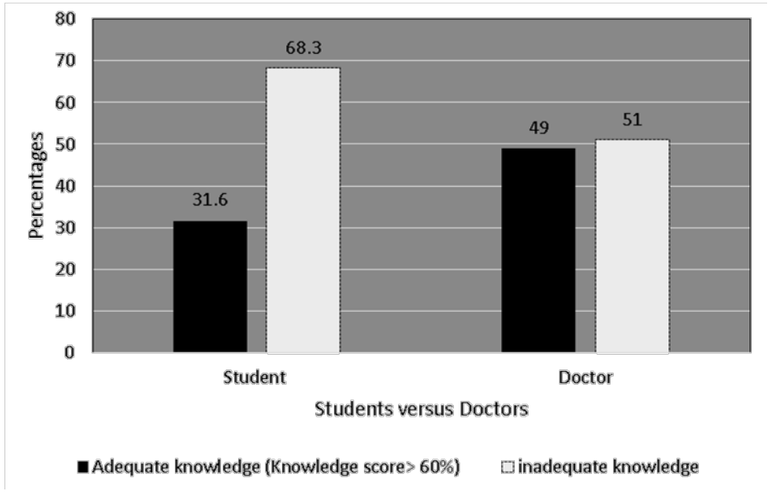
Table 2. Responses of medical students and practising physicians

	Students (N=79)	Doctors (N=100)	p-value
Causative agent	60 (75.9)	92(92)	0.003*
Mode of transmission			
Coughing and sneezing	76 (96.2)	98 (98)	0.469
Foods and drinks	8 (10.1)	13 (13)	0.553
Hand shaking	28(35.4)	41(41)	0.448
Talking face to face	14(17.7)	32(32)	0.030*
Preventive measures			
Avoid overcrowding	44(55.7)	58(58)	0.757
Washing hands frequently	45 (57)	49(49)	0.289
Avoid contact with affected patient	40(50)	67(67)	0.27
Vaccination	70(88.6)	90(90)	0.764
Complications of Influenza			
Almost always a mild disease	32(40.5)	35(35)	0.45
Can be a serious illness	53(67.1)	60(60)	0.329
Can be fatal	29(36.7)	50(50)	0.075
Vaccine related knowledge			
Recommended age for vaccination	30(38)	12(12)	0.001*
Dosing Frequency	27(34.2)	61(61)	0.001*
Safety in pregnancy	31(39.2)	37(37)	0.439
Killed and live vaccines are available	27(34.2)	22(22)	0.07
Best time to vaccinate	23(29.1)	66(66)	<0.001*
Protects recipients and people around	53(67.1)	77(77)	0.14
Received vaccine	33(41.8)	12(12)	<0.001*
Reason for not receiving vaccine			
No one advised	24(30.4)	32(32)	0.816
Lack of knowledge	8(10)	17(17)	0.188
Expensive vaccine	0	6(6)	0.027*
Vaccine is ineffective	1(1.3)	10(10)	0.016*
I am healthy	17(21.5)	20(20)	0.803
Safety concerns	1(1.3)	2(2)	0.704
I am not worried about getting the disease	11(13.9)	12(12)	0.702
Previous bad experience with another vaccine	1(1.3)	3(3)	0.436
Will you get vaccinated if given free of cost	58(73.4)	64(64)	0.179
Would you recommend vaccine to:			
Yourself	51(64.6)	49(49)	0.037
Family member	58(73.4)	67(67)	0.353
Patients	62(78.5)	71(71)	0.255

Table 2. Responses of medical students and practising physicians (continued)

	Students (N=79)	Doctors (N=100)	p-value
Who should receive influenza vaccine			
All healthy individuals	32(40.5)	60(60)	0.010*
Patients with COPD	20(25.3)	53(53)	<0.001*
Patients with Cardiac problems	5(6.3)	19(19)	0.013*
Patients with CRF	3(3.8)	14(14)	0.021*
Patients with neurodevelopmental disorders	6(7.6)	13(13)	0.244
Patients with metabolic problems	11(13.9)	19(19)	0.367
Universal immunization	60(75.9)	59(59)	0.017*

Figure 1. Comparison of Influenza related Knowledge between Students and Doctors



Advisory Committee on Immunization Practices (ACIP), USA has recommended that all individuals more than six months be vaccinated against influenza.[6] Only 12% of the practising physicians knew the correct recommended age for vaccination, where as the students scored slighter better on this question. Influenza vaccine should be given annually, as a different vaccine is produced every year to combat the problem of antigenic drift of the virus. The recommended time to vaccinate is before the start of the influenza season.[6] More doctors than students knew the correct dosing frequency of the vaccine and the best time for vaccination.

Respondents' knowledge in both the groups regarding recommendation of influenza vaccine for high risk individuals was poor. Majority of respondents did not know that Influenza vaccine is recommended for the high risk individuals like those with chronic pulmonary disease, cardiac problems, diabetic patients and those with neuromuscular disease. These high risk individuals are at a greater risk for developing complications of influenza than healthy individuals.[7] In a study published in Pediatrics, the risk of complications from influenza was four times more in those with underlying neuromuscular or neurologic diseases.[8]

Approximately 42% of the medical students in the current study had received the influenza vaccine. In a study from Spain by Milunic et al, the rate of influenza vaccination for medical students was similar to that in the current study.9 Wicker et al reported a rate of 13.5% for medical students against the seasonal influenza vaccine.[10] The rate of influenza vaccination of physicians in this study was very low and is in sharp contrast to the study done by Martinello et al, which showed a rate of 82% for physicians.[11] Morbidity and Mortality Weekly Report gave an 84.3% influenza vaccine rate for physicians during the 2013-2014 season.4 The main reasons cited for not receiving the vaccine in the study were the "lack of knowledge about the vaccine", the fact that "no one advised them" and that they felt that "they were healthy and hence did not need influenza vaccination". This most likely reflects lack of continuing educational programs to improve knowledge and remove misconceptions about influenza disease and its vaccination. The absence of policies pertaining to mandatory influenza vaccination in health care institutions in our area may also account for the low vaccination rate in our study subjects.

More doctors than students in our study were reluctant to get themselves vaccinated against influenza. However, the number of respondents willing to get vaccinated improved if they were offered vaccine free of cost. This is consistent with other studies in which the influenza vaccination rates improved once free vaccination was available to them at their work site. [4]

Regarding knowledge scores, roughly 2/3rd of the medical students and one half of the doctors had inadequate knowledge about influenza infection and vaccine. Studies have shown that there is positive correlation between knowledge about influenza among health care workers and the vaccination rate.[11] In a study from United Kingdom, the nurses who were unvaccinated against influenza had the lowest knowledge scores about influenza and its vaccination.[12]

Recommendations for influenza vaccine vary by different regulatory bodies. All regulatory bodies, including the Center for Disease Control and Prevention, USA and the World Health Organization recommend vaccination for all health care workers.[13-14] There are numerous advantages of universal immunization of all health care workers against influenza. By getting vaccinated, the health care workers not only protect themselves against the disease, they also in turn prevent spread of the disease to their family members, friends and patients.[7] This automatically decreases the disease burden and health care costs in the community.

CONCLUSION

Medical students and physicians have inadequate knowledge about influenza and its vaccine. Many of them are reluctant to get themselves vaccinated against influenza. Educational courses for medical students and physicians and health awareness messages in the media for the general public, focusing on this important topic need to be intensified especially at the beginning of the influenza season. Availability of free vaccine at the work place will also help in increasing the influenza vaccination rate among health care workers. These strategies can play a big role in preventing this disease which can at times assume epidemic proportions.

REFERENCES

[1] WHO. Key Facts about Influenza (Flu) & Flu Vaccine. [online] [cited 2014 Jun 12]; Available from: URL: http://www.cdc.gov/flu/keyfacts.htm

[2] Seasonal influenza vaccine uptake amongst frontline healthcare workers (HCWs) in England. [online] 2013 [cited 2014 Jul 23];Available from: URL:https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/245605/Seasonal_Influenza_Vaccine_Uptake_HCWs_2012_13.pdf

[3] Seale L, Leask J and MacIntyre CR. Attitudes amongst Australian hospital health care workers towards seasonal influenza and vaccination. Influenza Other Respir Viruses 2010;4: 41-6.

[4] CDC. Influenza vaccination coverage among health care personnel—United States, 2013-2014 Influenza season. MMWR 2014;63: 805-11.

[5] APACI. Burden of Influenza and Benefit of Vaccination.[online] 2013 [cited 2014 Jul 23];Available from: URL:http://www.apaci.asia/influenza/burden-of-influenza-a-benefit-of-vaccination

[6] CDC. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP) — United States, 2014–15 Influenza Season. MMWR 2014; 63: 691-7.

[7] Maltezou, Tsakris. Vaccination of health-care workers against influenza: our obligation to protect patients. Influenza Other Respir Viruses 2011;5:382–8.

[8] Severe Complications in Influenza-like Illnesses. [online] 2014 [cited 2014 Jul 23];Available from: URL : http://pediatrics.aappublications.org/content/early/2014/07/29/peds.2014-0505.full.pdf+html

[9] Milunic SL, Quilty JF, Super DM, Noritz GH. Patterns of influenza vaccination among medical students. Infect Control Hosp Epidemiol 2010; 31: 85-8.

[10] Wicker S, Rabenau H, Pfeilschifter J. Risk perception and influenza vaccination coverage among medical and dental students. Internet J Med Educ 2009; 1.

[11] Martinello RA, Jones L, Topal JE. Correlation between health care workers' knowledge of influenza vaccine and vaccine receipt. Infect Control Hosp Epidemiol 2003; 24: 845-7.

[12] Zhang J, While AE, Norman IJ. Seasonal influenza vaccination knowledge, risk perception, health beliefs and vaccination behaviours of nurses. Epidemiol Infec 2012; 140:1569-77.

[13] Influenza Vaccination Information for Health Care Workers.[online] [cited 2014 Oct 12]; Available from: URL:http://www.cdc.gov/flu/healthcareworkers.htm

[14] WHO. Influenza vaccine use. [online] [cited 2014 Oct 12]; Available from: URL: http://www.who.int/influenza/vaccines/use/en/