



CODEN [USA]: IAJPBB

ISSN : 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**

SJIF Impact Factor: 7.187

<http://doi.org/10.5281/zenodo.4393156>Available online at: <http://www.iajps.com>

Research Article

**KNOWLEDGE AND ATTITUDE OF UNDERGRADUATE
MEDICAL STUDENTS OF CENTRAL PUNJAB TOWARDS
INFLUENZA VACCINATION****¹Hafiza Aimen Shafiq, ¹Sheerin Nazar Sherazi, ¹Muhammad Arslan Hussain, ²Maryam Sarwar, ¹Fatima Sundas, ³Muhammad Salman Fazal**¹Undergraduate Student, 4th year MBBS, Sahiwal Medical College Sahiwal, Pakistan., ²House Officer, Allied Hospital, Faisalabad., ³Undergraduate Student, 4th year MBBS, Allama Iqbal Medical College Lahore, Pakistan.**Article Received:** October 2020**Accepted:** November 2020**Published:** December 2020**Abstract:**

Background And Objective: Influenza is endemic in Pakistan. One of the greatest reasons of it's being endemic among all age groups is inadequate knowledge and barriers among the safe immunization. The study was intended to assess attitude and knowledge of medical students towards influenza and its vaccination.

Methodology: A web based questionnaire was used to conduct the survey among n=382 self- selected undergraduate medical students of central Punjab. Results were assessed by using SPSS version-26.

Results: A total of n=382 responses were received. [88.7%] of participants know about influenza. [75%] of the respondents knew the actual mode of transmission i.e. droplets, [52.4%] choose cough and flu as the most common symptom, Majority [82.2%] knew the right answer for duration of symptoms. Only 30.1% of the participated medical students were vaccinated against influenza. Only [40.3%] had the information about against which strains of influenza seasonal flu vaccine provide protection and actual time to get vaccinated. Majority [24.4%] of the respondent medical students choose medical training as the source that influences them most in their influenza vaccine uptake decision. [31.4%] of participants labelled lack of awareness and knowledge on flu vaccination to be the biggest barrier in the way of healthcare workers to be vaccinated against influenza.

Conclusion: The study described that student's knowledge regarding influenza was moderate. The results regarding medical students' vaccination uptake and knowledge were highly disappointing. Students awareness and knowledge about influenza vaccine need to be improved by organizing seminars and awareness sessions.

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Please cite this article in press Hafiza Aimen Shafiq et al, **Knowledge And Attitude Of Undergraduate Medical Students Of Central Punjab Towards Influenza Vaccination., Indo Am. J. P. Sci, 2020; 07[12].**

INTRODUCTION:

Influenza is a major health problem especially in developing countries due to lack of effective policies and inadequate healthcare resources [1]. Influenza is a highly infectious disease occurring in epidemic form whose signs and symptoms vary from mild flu to severe illness and may cause severe morbidity and mortality especially among high risk groups. Medical Students are always at risk of getting such infectious diseases during healthcare practices and their education [2]. Only way of effective prevention from influenza is vaccination [Recommendations for mandatory influenza vaccinations for health care personnel from AMDA's infection advisory subcommittee [3]. So In this regard, there is need of increase coverage of influenza vaccination of medical students and improvement of their knowledge and awareness regarding risk factors, signs and symptoms pertaining to influenza flu [4]. So, this survey was conducted to assess the knowledge and attitude of medical students of central Punjab towards influenza and its vaccination. Influenza transmission within health care settings has been widely reported in medical literature [5]. Therefore, both the World Health Organization [WHO] and the Strategic Advisory Group of Experts [SAGE] on Immunization recommend seasonal and pandemic influenza vaccination for HCPs [6]. Despite these guidelines and recommendations, vaccination coverage among HCPs has remained low, with little improvement during the pandemic of influenza A [H1N1] in 2009 [7]. Despite a variety of promotional campaigns and interventions, influenza vaccination acceptance among HCPs and medical students generally remains low and most studies report poor adherence to this recommendation. Swine Flu knowledge, attitude and practices survey of medical students of Karachi in 2018 show negligible [1.7%] of students vaccinated against the virus, which is quite a dismal [8]. Another cross-sectional descriptive study conducted in Peshawar also show a very low percentage of healthcare professionals that were vaccinated against influenza.

A literature search showed no published article on the topic of knowledge and attitude of medical students of central Punjab towards influenza vaccination [9]. So we conducted this descriptive cross sectional survey to assess the knowledge of medical students of this region Punjab about risk factors, signs and symptoms of Influenza and to evaluate their attitude towards influenza vaccination. It also aimed at determining the major barriers in the uptake of influenza vaccine and the factors that influence medical student's decision of being vaccinated against this virus

MATERIALS and METHODS:

We conducted a cross-sectional study among students of different medical students in Punjab, Pakistan. The data was collected within a period of 7 months [March -September 2020]. A sample size of 382 undergraduate medical students were included in this study to get a better representation of the population at the college while allied health sciences students, graduate and post graduate students were excluded.

The study was executed after the approval of Head of Department Community Medicine, Sahiwal Medical College. The medical students of the different medical institutes in Punjab, were selected using non-probability convenience sampling,

At 95% confidence level with alpha of 0.05 and assumed prevalence of 50%, the required sample size is 384, spanning a time period of 7 months. A validated and pre-tested questionnaire was formed and distributed amongst students. In the questionnaire simple questions were asked about the influenza vaccination like, what knowledge does the subject has about influenza vaccination, have subject ever got vaccinated against the influenza viruses, is subject willing to get vaccination against influenza next season and what were the side effects the subject felt after vacation. To minimize bias and improve understanding, two doctors reviewed the questionnaire. All students from the first to the final year comprised the study population, and no internists or medical personnel were included. All those who hesitated to participate were excluded. The sociodemographic details of each student were collected including the age, gender, and year of study. The questionnaire was divided into three sections, namely information about influenza, information about influenza vaccination and attitude toward influenza vaccine. All questions were based on a multiple choice format. The first part focused on the information like nature of the disease, mode of transmission, signs, and symptoms, risk factors, incubation period, availability of the medication, vaccines and possible complications. The second part was based on the knowledge about vaccination that the students had. The third part was based on the attitude of subject toward the vaccine either they should get vaccinated against influenza virus or should not. And does it actually prevent subjects from getting influenza or it has no role at all along with possible side effects the students thought it contained.

RESULTS:

Following results were obtained by the survey among n=382 self- selected undergraduate medical students.

Their demographics, influenza associated knowledge, vaccination status and their attitude towards influenza vaccination was assessed.

According to these statistics, 60.16% of the participant selected the right option or it can be said that they had knowledge about influenza. They were asked certain questions about the flu regarding its awareness, symptoms, cause, how can it be transmitted, duration, organ damage, cure of the virus and their study medium. As they were asked, have they ever heard about influenza flu? The response was a 97.6% Yes. Similarly, as they were asked do you know the symptoms of influenza flu? About 63.9% selected, fever with sore throat. On asking which organ gets most affected by Influenza 81.9% chose respiratory tract.

Furthermore, the following percentages were obtained after certain questions 41.6% chose natural remedies for influenza treatment, 53.7% chose books as a medium of influenza information, 58.6% chose droplet as the mode of transmission of influenza flu, 82.2% chose 3-7 days for persistence of influenza symptoms.

The table given below contains the statistics regarding the knowledge that the subjects had about Influenza vaccine.

According to these statistics, 34.22% of the participant selected the right option or it can be said that they had knowledge about vaccine for influenza. They were asked eight certain questions related to influenza vaccine such as, seasonal flu vaccine provide protection against? They were asked according to you, who need to get vaccinated and according to you, how often you need to get vaccinated for influenza? They were asked, what is the most common side effect of influenza vaccine? Also, Influenza vaccine is contraindicated in? Furthermore, which priority group receiving seasonal influenza vaccine.

The table given below also contains the statistics regarding the vaccination details of the subjects that if they were vaccinated or not. According to our survey, only 30.1 % respondent medical students were vaccinated against influenza out of which only 2.4% get vaccinated on a regular basis.

The tables below contain the results of the responses of the vaccinated respondent medical students as they were asked certain questions regarding their experience with the flu vaccine and their attitude towards it. When they were asked, how often did they

get vaccinated? 20.4% chose, only once till yet. As a reply to, did you read the explanation about vaccination and understood its effects and potential side effects? 10.7% chose, don't remember. Similarly, while responding to the question that did you ever notice any side effect after influenza vaccination within 30 minutes to 2 weeks? 16.0% chose, no. Further 14.4% chose maybe in response to the question about feeling improvement after receiving vaccination and 14.7% also chose maybe while responding to their intention to get vaccinated against influenza in the next season.

The tables below contain the results showing people responses, which were a part of this survey regarding their influenza vaccination, if not vaccinated. They were asked questions to assess their attitude towards flu vaccine and to know their perspective why they think they need not to be vaccinated and the answers were presented as valid percentage.. Responding to the question, why did you not get vaccinated [because you think of it]? 59.2% chose "Not necessary". Similarly, 31.7% chose "No" in response to, do you think you really need a flu vaccine each year/season? Moreover, 47.6% chose "No" while reacting to, do you think a flu vaccine give you flu? And 51.8% chose "No" as a response to, do you think it is better to get a flu than getting flu vaccine?

Lastly to the question, is it true that getting a flu vaccine make you more susceptible to get other respiratory viruses? 114[29.8%] responses to this question were excluded due to some system error while 228[59.7%] remaining responses were no and 44[10.5%] were yes.

The table given below also contains the statistics regarding the knowledge that the subjects exhibited toward influenza vaccination. According to these statistics, 34.22% of the participant selected the right option or it can be said that they had knowledge about vaccine for influenza. They were asked eight certain questions related to influenza vaccine such as, seasonal flu vaccine provide protection against? They were asked according to you, who need to get vaccinated and According to you, how often you need to get vaccinated for influenza? They were asked, what is the most common side effect of influenza vaccine? Also, Influenza vaccine is contraindicated in? Furthermore, which priority group receiving seasonal influenza vaccine. According to our survey and responses we get, the overall knowledge of participated medical students regarding influenza vaccine was poor.

Furthermore, the survey questionnaire included certain questions to assess attitude of respondents towards flu vaccine and the following responses were received.

- Possible reason of why should not be vaccinated? The maximum [45.0%] chose, not at risk of a possible infection.

- As a medical student, what influences you to take or not to take flu vaccine? The maximum [24.9%] chose, Medical training.

According to you, what is the biggest barrier in the way of healthcare workers to be vaccinated against influenza? The maximum [31.4%] chose, Lack of awareness and knowledge on flu vaccination.

TABLES

Table 1: Frequency of Demographic Variables with Percentages [n=382]

Variables	Groups	Frequency	Percentage [%]
Gender	Male	142	37.2%
	Female	240	62.8
Age Groups	<18	03	0.8
	18-25	377	98.7
	>25	02	0.5
Residence	Day Scholar	140	36.6
	Hostel Resident	242	63.4
Class	1 st Year	44	11.5
	2 nd Year	80	20.9
	3 rd Year	73	19.1
	4 th Year	139	36.4
	Final Year	46	12.0

Table 2: Knowledge about Influenza

QUESTIONS	Groups	Frequency	Percentage
Do you know about influenza?	Yes	339	88.7
	No	07	1.8
	May be	36	9.4
Have you ever heard of Influenza Flu?	Yes		
	No	07	1.8
	May be	02	05
What is the causative agent of this Flu?	Influenza	90	23.6
	Influenza Virus	287	75.1
	Rhino Virus	02	05
	Step. Pneumonia	03	08
According To You What is the mode of transmission of Influenza?	Air Borne	100	26.2
	Direct Contact	46	12
	Droplets	224	58.6
	Feco - Oral	06	1.6
	Physical Test	06	1.6
What is the most common symptom of Influenza?	Cough and Flu	200	52.4
	Fever With Sore-Throat	41	10.7
	Nasal Irritation And Flu	138	36.1

For how many days Influenza symptoms persist?	1 month	2	.5
	1-2 days	21	5.5
	2-3 weeks	45	11.8
	3-7 days	314	82.2
Which Organ does Influenza affect the most?	Liver	6	1.6
	Lungs	59	15.4
	Respiratory tract	313	81.9
	Stomach	4	1.0
How do you treat Influenza?	Anti-Biotics	95	24.9
	Ayurvedic Treatment	33	8.6
	Natural Remedies	159	41.6
	No Measures	95	24.9
Your Medium for information About Influenza?	Books	205	53.7
	Personal Experience	117	30.6
	TV And Advertisements	52	13.6
	Wards	8	2.1
According to You what is the most effective way of prevention from Influenza?	Arrange Awareness Programs	26	6.8
	Avoiding Contact With Sick People	107	28.0
	Cover nose and mouth	96	25.1
	Travel Restriction	3	.8
	Vaccination of Human	123	32.2
	Washing Hands with Soap	27	7.1
Severity Rating For Influenza?	Fatal	5	1.3
	Mildly Dangerous	198	51.8
	Moderate Dangerous	133	34.8
	Severely Dangerous	16	4.2
	Unknown	30	7.9

Table 3: Knowledge about Influenza Vaccine

Have You Ever Get Vaccinated for Influenza?	No	267	69.9
	Yes	115	30.1
IF YES			
How often did you get vaccinated?	2 times	12	3.1
	of and on	16	4.2
	on regular basis[in each season]	9	2.4
	only once till yet	78	20.4
Did you read the explanation about vaccination and understood its effects and potential side effects?	Valid	267	69.9
	Don't remember	41	10.7
	No	35	9.2
	Yes	39	10.2
Did you ever notice any side effect after influenza vaccination within 30 minutes to 2 weeks?	Yes	10	2.6
	Maybe	44	11.5
	No	61	16.0
Did you feel any improvement after receiving vaccination?	Maybe	55	14.4
	No	10	2.6
	Yes	50	13.1
Do you intend to be also get vaccinated against influenza in the next season?	Maybe	56	14.7
	No	24	6.3
	Yes	35	9.2
IF NO			
Why did you not get vaccinated [Because you think of it]?	Ineffective	34	8.9
	It has tremendous side effects	8	2.1
	Not necessary	226	59.2
Do you think you really need a flu vaccine each year/season?	Maybe	84	22.0
	No	121	31.7
	Yes	63	16.5
Do you think a flu vaccine give you flu?	Maybe	70	18.3
	No	182	47.6
	Yes	16	4.2
Do you think it is better to get flu than getting flu vaccine?	Maybe	36	9.4
	No	198	51.8
	Yes	34	8.9
Is it true that getting a flu vaccine make you more susceptible to get other respiratory viruses?	No	228	59.7
	Yes	40	10.5
	System	114	29.8
Seasonal flu vaccine provides protection against?	Influenza A [H1N1]	29	7.6
	Influenza A [H1N1],[H3N2]	135	35.3
	Influenza A[H1N1],[H3N2] and influenza B	154	40.3

	Influenza B	32	8.4
	Other respiratory viruses	32	8.4
According to you, who need to get vaccinated?	Children from 6 months to 9 years	178	46.6
	Healthy adults	34	8.9
	Immune-compromised	140	36.6
	Older people	30	7.9
Priority group receiving seasonal influenza vaccine	Below 16 years	106	27.7
	Healthcare workers	65	17.0
	others	27	7.1
	Over 65 years	54	14.1
	People with chronic health conditions	116	30.4
	Pregnant women	14	3.7
According to you, how often you need to get vaccinated for influenza?	Once a year	192	50.3
	Once in five years	45	11.8
	Once in life time	117	30.6
	Twice a year	28	7.3
According to you, when to be vaccinated?	December to January	74	19.4
	January to February	41	10.7
	November to January	103	27.0
	October to mid-November	164	42.9
The most common side effect of influenza vaccine?	Allergies	98	25.7
	Fever after shot	161	42.1
	Kidney failure	10	2.6
	Rash/Swelling at injection site	113	29.6
Influenza vaccine is contraindicated in?	Cold with Fever	88	23.0
	Convulsions	46	12.0
	Egg allergies	53	13.9
	History of Guilian Bar syndrome	72	18.8
	Immunosuppression	123	32.2
What do you think you need to get vaccinated against influenza or not?	May be	122	31.9
	No	92	24.1
	Yes	168	44.0
The foremost reason you think why you need to get vaccinated?	To decrease likelihood of acquiring seasonal influenza	250	65.4
	To decrease the likelihood of transmission to family members	28	7.3
Possible reason of why should not be vaccinated?			

	To decrease the likelihood of transmission to patients	42	11.0
	To reduce mortality due to influenza	39	10.2
	To reduce mortality due to other comorbid conditions	23	6.0
	Because you think ,flu vaccine give you the flu	21	5.5
	Flu vaccine has a lot of serious adverse effects	24	6.3
	Flu vaccine lacks effectiveness	55	14.4
	It is better to get the flu than a flu vaccine	38	9.9
	Not at risk of a possible infection	172	45.0
	what about people who get a seasonal flu vaccine and still get sick with flu symptoms	72	18.8
	Department of health guideline	81	21.2
	Family	90	23.6
According to you, Is influenza vaccine a part of EPI schedule?	Don't know	97	25.4
	Maybe	77	20.2
	No	105	27.5
	Yes	103	27.0
According to you, what is the biggest barrier in the way of healthcare workers to be vaccinated against influenza?	Lack of awareness and knowledge on flu vaccination	120	31.4
	Misconceptions regarding influenza immunization	90	23.6
	Negative influence from other staff	25	6.5
	Some participants believe that it is not necessary to be vaccinated	68	17.8
	The fear of experiencing pain or reaction from the vaccination	28	7.3
	Uncertainty over the efficacy of influenza vaccination	51	13.4

DISCUSSION:

Medical students being future doctors of our society should be well aware of influenza, its associated hazards and effectiveness of its vaccination as a mean of prevention from it our study was based on assessing the knowledge and attitude of medical students and determining various factors that are associated with student's decision of vaccination uptake [8]. Several factors [demographic, knowledge, attitude, other diseases, healthcare system satisfaction etc.] have been associated with the influenza vaccine uptake. Among them, a good knowledge level and a positive attitude have always been positively correlated with vaccine uptake. In Pakistan, influenza flu vaccine is not a part of EPI schedule [9]. As a matter of fact, most of medical students come to know about it through their books as is also identified by our study in which 54.3% participated medical students labeled books as their primary medium of information in this regard]. During our study, we found that total level of medical students knowledge about influenza was moderate [60.16% people chose right options for our different question on influenza signs, symptoms, risk factors, duration etc.] while knowledge on flu vaccine was relatively poor [only 34.22% of the respondents know the right answers of our questions about flu vaccine] which is a dismal [10]. In this study, we found only a small percentage of recruited medical students [30%] that have been vaccinated out of which only a very small fraction [2.4] are vaccinated on a regular basis [in each season]. A possible correlate of this is poor knowledge and a negative attitude towards influenza vaccination [11]. 59.2% of the respondent students who were not vaccinated think it not necessary to be vaccinated despite the fact that getting infection being more susceptible in a hospital environment during their education and training hours, they might be the carrier transmitting infection to patients and a possible risk for their own family.

The foremost reason students chose why they think they need not to be vaccinated was, not at a risk of possible infection [45% respondents choose this option] while a second highest percentage was of those who think influenza vaccine as not completely effective in providing protection against a possible infection [12, 13]. It indicates negative attitude and inadequate confidence of medical students on influenza vaccine. Our study was also based on identifying possible barriers in the way of safe vaccine coverage of medical students. We found in our study that only 21.2% of medical student participants consider department of health guideline as a source of influence on their possible decision to

take or not to take flu vaccine which is a dismal [14, 15].

Our health guideline authorities should be responsible for providing adequate knowledge on influenza flu vaccine and its effectiveness that can possibly modify medical student's attitude towards safe flu vaccination [16, 17]. Moreover specific guidelines regarding its need and adequate coverage for medical students should be ensured through awareness programs. As a matter of fact, during our study, we identified lack of awareness and knowledge on flu vaccination as the biggest barrier in the way of healthcare workers to be vaccinated against influenza. Misconceptions regarding influenza vaccination was amongst the second [18, 19].

The limitation of our study include cross sectional nature of our survey and possible self-selection bias because people who chose to participate in the study might be more informed about the influenza vaccine than those who chose not to complete the questionnaire. This cross sectional survey is its own kind of study conducted among medical colleges of central Punjab. During our survey, we have found a dire need to improve medical students' knowledge of influenza and educate them about possible need for safe coverage of its vaccine. Our study also highlights several barriers in the way of healthcare workers and medical students to be vaccinated, the knowledge of which can be used as a base to improve vaccination coverage of medical students in the future [20].

CONCLUSION:

The current study indicates that efforts should be increased to make a better understanding and knowledge regarding mechanism of prevention and effectiveness of influenza vaccination. Healthcare guideline authorities should arrange seminars and special educational programs to improve medical students' knowledge and positively influence their attitude towards influenza vaccine.

Acknowledgement: The authors are highly indebted to Dr. Nauman Aziz, Assistant professor Physiology Sahiwal Medical College Sahiwal for his kind support and motivation without which this project could not be completed.

Conflict of Interest: None to declare.

Funding: None.

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