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ORIGINAL RESEARCH

Assessing Awareness & Perceptions of Fresher Medical Students Before and After An Interactive Educational Session on Vaccination – A Cross-Sectional Study

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ABSTRACT

Background: Vaccination has played a pivotal role in preventing vaccine preventable diseases and is an integral part of the overall health system. Nowadays the phenomenon of "vaccine hesitancy" is increasing among a relevant part of the world population.[1,2] Though most often a positive attitude toward vaccination is seen, many medical students show lacunae in their own immunization histories and inadequate knowledge about vaccination.[3] The World Health Organization's Global Strategy on Human Resources for Health: Workforce 2030sets policy recommendations and targets for in-service and pre-service training programs to improve workforce competency which includes outcomes on improving competencies and behavior change for immunization service delivery and student readiness for immunization practice.[4] Evidence-based observations also demonstrate that strong provider recommendations increase vaccine confidence in patients. As future clinicians, these students are primary influencers and sources of information on vaccination for the public.[5]It is therefore important to assess the knowledge and attitude of fresher medical students towards vaccination and train them accordingly. It has been demonstrated that multidisciplinary formative interventions comprise the most powerful strategy to improve knowledge about vaccines, educational intervention being foremost among these.[6,7] **Aim**: To bring about an increase in the knowledge and awareness level about vaccination in fresher medical students, thereby contributing to vaccine acceptance and decreasing vaccine hesitancy. **Objective:** To assess the outcome of educative session regarding vaccination on perceptions and awareness of fresher medical students. **Methodology:** Aqualitative, quasi experimental study was conducted for fresher medical students, which included both pre session & post- session, using validated structured questionnaires. Statistical analysis was carried out using Chi-squared and MC nemar tests & results were considered statistically significant when the p value obtained was lower than 0.05. **Results:**A total of 140 students participated in the study. Overall, the level of knowledge on vaccinations changed significantly, while perceptions also were more positive after educational intervention. Awareness: 128 (91.4%) of them were aware of their own immunization history and had been vaccinated, while 11 (8%) were unaware. 51 (36%) were sure of having a record of their immunization, with 44 (32%) being not very sure. Knowledge & perceptions: Improvement in perception positivity was seen in recognizing the contribution of vaccines in the context of infectious diseases [133 (95%) to 136 (97%)] and safety of vaccines [108 (77%) to 129 (92.3%)]. **Conclusion:** Educative interventions for medical students, when started early, can have a highly positive impact on knowledge and attitudes of these students regarding vaccinations.

Key words: Vaccination, vaccine hesitancy, educational session impact

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INTRODUCTION

Immunization has played a key role in the control of infectious diseases of public health concern and has been till date, one of the greatest achievements in the field of Medicine. Despite this, a growing concern lately has been "Vaccine hesitancy" – defined by World Health Organization (WHO) Strategic Advisory Group of Experts (SAGE) as a "delay in acceptance or refusal of vaccines despite availability of vaccine services".[8]

Medical personnel who have themselves been vaccinated have been found to be more knowledgeable about vaccination and more effective in communicating and promoting public confidence and play a key role in combating "vaccine-hesitancy".[9] It goes without saying, that a strong recommendation from them about immunization would boost vaccine uptake and encourage positive approach towards this concept.[9] However, inadequate knowledge, misconceptions, lack of awareness may actually prove to be great hindrance. If trained early on in their careers, especially as part of their student curricula, it is possible to promote vaccine-acceptance. It is important to understand beliefs, level of awareness, fears and misconceptions about vaccination in their early years of study. By doing so, an overall improvement in their knowledge and perceptions can be achieved through training, which in turn, would boost positive approach towards vaccinations. The triad of basic immunization training resting on three main pillars of education includes theoretical knowledge, practical exposure and communication skills enhancement to propagate the importance of vaccinations and alleviate the doubts and allay the fears of parents and patients.[3] Multifaceted, multipronged formative interventions are thought to be the most powerful strategy to improve knowledge about vaccination. An educational intervention was thus chosen to understand baseline knowledge and attitudes of fresher medical students and to assess the impact of this educational session on them regarding their beliefs about immunization.

Aim

To bring about an increase in the knowledge and awareness level about vaccination in fresher medical students, thereby contributing to vaccine acceptance and decreasing vaccine hesitancy.

Objective

To assess the outcome of educative session regarding vaccination on perceptions and awareness of fresher medical students.

Methodology

The study was conducted for 148 fresher medical students in the first month of their joining medical school. A qualitative, quasi experimental pre-test/post-test, validated, structured questionnaire design with identical surveys was administered to all consenting students before and after an educational intervention. Those who didn't consent were not included in the study.

The Questionnaire was designed to assess awareness, views, perceptions about vaccination and knowledge about one's one immunization status. Pretest assessment was done to determine the knowledge of Immunization before providing brief educational training and post-test assessment was carried out soon after completion of the educational activity. Pre and post- test assessment was conducted using the same structured, validated questionnaire. The questionnaire contained questions with open, multi-choice, yes/no & Likert scale response categories: "strongly agree," "agree," "neutral," "disagree," or "strongly disagree." To assess the impact of the educational activity on the knowledge and perceptions of students on vaccinations, each student was asked to fill in the same questionnaire before and after attending the class. Descriptive statistical analysis was performed with Microsoft Excel sheet.; categorical data were reported as numbers and percentages and compared through the Chi-square and Mc nemar tests. 'Yes/ No' answer categories were shown as frequency (percentage). Results were considered statistically significant with a p-value of 0.05.

Questions that focused on attitudes, beliefs or perceptions were evaluated for improvement, which was defined as changing from "neutral," "disagree," or "strongly disagree" for each question in the pre-test survey to either "agree" or "strongly agree" in the post-test survey and as those who changed a "disagree" or "strongly disagree" in the pretest survey to "neutral" in the post-test survey. Improvement was coded as 1 and all other results were coded as a 0.

RESULTS

Out of 148 students chosen for the study, 7 were absent for the educational session and one student did not consent. 8 students were thus not considered for this study. Most of the students were in the age group of 18- 19 years. Out of 140 consenting students who became part of the study, 83 (59%) were females and 57 (41%) were males. Overall, the level of knowledge on vaccinations changed significantly, while perceptions also were more positive after educational intervention.

Awareness: 128 (91.4%) of them were aware of their own immunization history and had been vaccinated, while 11 (8%) were unaware. 51 (36%) were sure of having a record of their immunization, with 44 (32%) being not very sure. One student had not been immunized since his parents didn't believe in immunization and one student had been partially immunized. 138 (99%) were aware about vaccine and its beneficial effects.

Knowledge & perceptions: An improvement was seen in the level of knowledge after educational intervention, as was evident by post- session scores.

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Only 51 (36%) had some knowledge about immunization for health professionals, which improved after the session [131 (94%)]. Improvement in perception positivity was seen in recognizing the contribution of vaccines in the context of infectious diseases [133 (95%) to 136 (97%)] and safety of vaccines [108 (77%) to 129 (92.3%)]. Female students showed more positive perception in comparison to male students. Only 3(2%) retained negative perception about vaccines even after the class, the main reasons being fear of vaccines and reduced belief in immunization.

Overall, improvement was seen in the knowledge and perceptions about vaccines.

Table 1: Pre and post educational intervention findings

Question	n=140	n (%)		
Q2) I have been immunised in childhood	Yes	127(90.6)		
	No	1(0.7)		
	Don't know	11(8)		
	Partially	1(0.7)		
Q3) I have a record of my immunisation till now	Yes	51(36)		
	No	14(10)		
	Don't know	31(22)		
	Maybe, not sure	44(32)		
		Pre	**Post**	
Q1) I know what a vaccine is	Yes	138(99)	140(100)	I
	No	2(1)		
Q8) I will encourage my friends and/or family to get immunized if such a situation arises	Agree/StronglyAgree	138(99)	140(100)	I
	Neither agree nor disagree	1(0.7)		
	Disagree/Strongly disagree	1(0.7)		
Q10) My opinion on immunization for healthcare professionals	It should be mandatory for all	93(67)	65(46)	
	It should be optional	10(7)	19(14)	
	Few mandatory, few optional- depending on the vaccine	24(17)	55(39.3)	I
	I don't know/I am not sure	13(9)	1(0.7)	
Q4) I participate in decisions affecting my health care with my parents	Yes	109 (78)	115 (82)	**Mc-nemar=0.000 p-value=0.146 I**
	No	11 (8)	5 (4)	
	Will start from now	20 (14)	20 (14)	
Q5) I am informed about immunizations for healthcare professionals	Yes	51(36)	131(94)	I
	No	31(22)	2(1)	
	Not completely Aware	58(42)	7(5)	
Q6) I believe vaccines are safer now than when I was young	Positive Perception	108(77)	129(92.3)	**Mc-nemar Bowker tes=17.00p-value=0.001* I**
	Neither nor	23(17)	10(7)	
	Negative Perception	9(6)	1(0.7)	
Q7) I believe immunizations are important to my health	Positive Perception	138(99)	139(99.3)	**Mc-nemar=0.000 p-value=1.00 I**
	Neither nor	2(1)	1(0.7)	
	Negative Perception	0	0	
Q9) I am against immunisation, if Yes reason	No	131(94)	134(96)	
	Yes	9(6)	6(4)	I
	a.I don't believe in it	3(2)	3(2)	
	b. I have to pay for it	1(0.7)	0	
	c. I am scared of ill- effects of	4(3)	2(1)	

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	the vaccine			
	d. I am allergic	0	0	
	e. I don't see any benefits of getting vaccinated	1(0.7)	0	
	f. No particular reason	0	1(0.7)	
Comparison				**Mc-nemar=0.000 p-value=0.375**
	Yes	9(6)	6(4)	
	No	131(94)	134(96)	
Q11) Vaccines have contributed much to eliminate/ reduce occurrence of infectious diseases	Agree/StronglyAgree	133(95)	136(97)	**Mc-nemar Bowker tes=3.00p-value=0.083*** I
	Neither agree nor disagree	6(4.3)	3(2.3)	
	Disagree/Strongly disagree	1(0.7)	1(0.7)	

*statistically significantI = Improvement

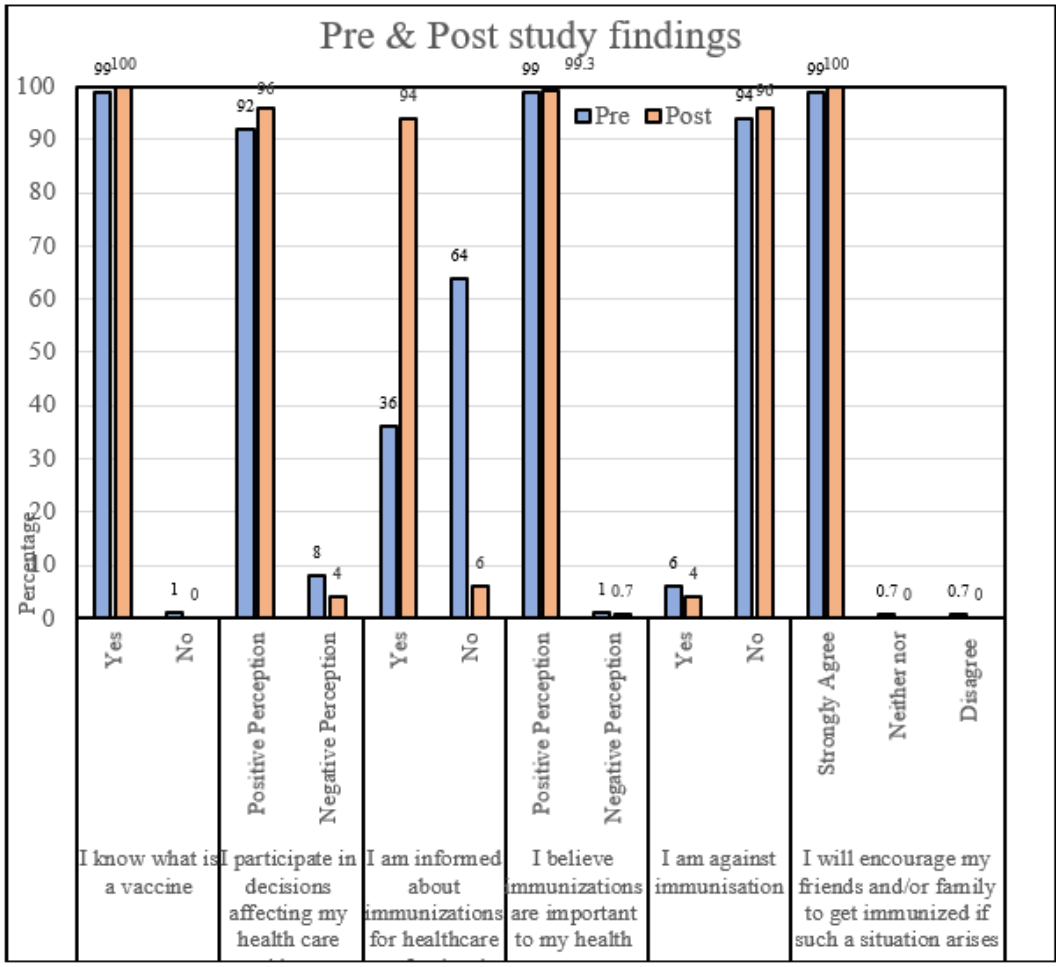

Figure 1

DISCUSSION

The study was taken up to gauge and understand the awareness level, beliefs and knowledge about vaccination in fresher medical students through a two-hour educational activity/ class. This is similar to Afonso *et al.* who held a two-hour vaccination seminar for first semester medical students and were able to significantly improve the students' attitude toward the topic of immunization as a result.[10] In contrast to this study, Rill V *et al.*focused on medical students in the later clinical year of study and found that by that stage, fixed views on vaccinations had already been formed in the young minds, which could only be changed minimally by a seminar conducted over a minimum period.[3] This perhaps, supports the notion that 'catching them young' in their first year of medical school increases chances of impressioning upon their minds the right views about immunization. Though awareness about vaccines and immunization, in general, was seen in majority of them [138 (99%)],

few were actually familiar with vaccines for healthcare professionals [51(36%)] or their own immunization history [(127(90.6%))]. This was similar to study by A. Bechini*et al.* whose findings showed students showing a gap in the knowledge about vaccinations.[11] Our study showed increase in positive perception towards vaccines and importance of immunization which was similar to several studies. [7,10,12,13] Role of a formative intervention as a powerful strategy to improve knowledge about vaccines was emphasized in the study by Mena G *et al.*[14] Previous studies show that early clinical years are the ideal time to introduce teaching activities about vaccination as part of the normal curriculum and more effective too.[12,15,16,17] Medical students become more knowledgeable after such educational interventions, which in turn, would make them more willing participants for self- vaccination in future and also would become future flag bearers for the community by being role models themselves, encouraging the public to follow the same.

LIMITATIONS OF THE STUDY

No follow up study to evaluate long term impact was done. Likert scoring used in our study may have introduced bias based on comprehension of students who may not have understood extreme response categories or who unknowingly may have agreed with statements they did not understand completely. Vaccine hesitancy index was not measured.

CONCLUSION

Educative interventions, when started early, can have a highly positive impact on integrating knowledge and attitudes regarding vaccinations, strengthening the psychosocial attributes. Medical students are considered 'intended targets' for educational campaigns as they are still unprimed to a certain extent and are still open to changing their views. Motivated self- practicing health personnel would, in turn, pave a way for further positive impact on general population.

India's 'National Vaccination Day' theme for this year is '**Vaccines Work For All'**. This theme is a call to highlight the fact that safe and effective vaccinations are essential for all human lives. In order to make this goal achievable even in the foreseeable future and to remove 'vaccine hesitancy', it is essential that medical colleges proactively take up such interventions regularly, spread across all the four years of student training, as part of medical curriculum.

Recommendations: A structured program for including vaccine education as part of the normal medical curriculum has to be conceptualized, which would help in reinforcing this concept in young minds, empowering them to take rational decisions in the future.

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