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EVALUATION OF IMMUNIZATION STATUS, KNOWLEDGE AND PERCEPTION OF MEDICAL AND PARAMEDICAL STUDENTS ON VACCINATION

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ABSTRACT

Background: Medical and paramedical students are at high risk for acquiring infectious diseases in a clinical setting due to needle stick injuries and other modes of transmission making them susceptible to diseases like Hepatitis B, Diphtheria, Measles, Mumps, Chickenpox. These can be prevented by proper vaccinations like Hepatitis B, DTaP, MMR and Varicella vaccines. **Objective**: To know the important vaccinations taken by medical and paramedical students, evaluate Hepatitis B vaccination pattern, immune status and to assess their knowledge and perception on vaccination. **Methodology**: A questionnaire based study was carried out among medical and paramedical students. Data was collected and subjected to proper statistical analysis in Microsoft Excel spreadsheet. **Result**: About 110 students participated in the study, among which 98.2% students considered vaccination essential. Hepatitis B vaccination was taken recently by 61.8% students, followed by Varicella (17.3%), MMR (16.4%) and DTaP (5.5%). About 50% students considered that vaccines can give complete protection from disease. About 5.5% students have experienced an infectious disease within clinical settings due to lack of vaccination. About 38.2% have experienced side effects. About 97.3% students considered awareness on proper vaccination as essential among medical students. **Conclusion**: Vaccination was considered essential by a majority of

students. Hepatitis B vaccine was taken recently by many of them. The risk of acquiring contagious diseases in a clinical setting is high and since a minority of them still lacks enough knowledge on vaccine efficacy, it is necessary to educate them about the importance of taking proper vaccinations against infectious diseases.

KEYWORDS: Vaccination; Medical students; Hepatitis B vaccination.

1. INTRODUCTION

Medical and paramedical students are at high risk for acquiring and transmitting vaccine preventable infectious diseases in a clinical setting. The health care environment in which they work and the nature of their work increases their risk of being exposed to blood-borne pathogens and infections.[1] They are prone to needle stick injuries and other modes of transmission possible within a clinical area that puts their life at risk. Vaccination can provide them with immunity and help in improving their defence against various contagious diseases.

Hepatitis B, a liver infection caused by HBV is highly contagious, spreads by direct contact with infected blood or by needle pricks and can put healthcare workers, medical and paramedical students at high risk. More than 2 billion people are estimated to be infected with HBV worldwide and about 350 million of these people suffer from chronic HBV infection predominantly liver cirrhosis and hepatocellular carcinoma.[2] HBV can be transmitted via infected blood and body fluids through percutaneous or mucosal exposure. Medical, paramedical students and healthcare providers have been shown to be four times more likely to contract HBV than the general adult population.[1] According to various data, about 5%-10% of the HBV infected people become chronically infected. Chronic HBV infection in people increases their risk for chronic liver diseases such as liver cirrhosis, chronic active hepatitis and primary hepatocellular carcinoma which remain highly infectious throughout their lifetime. Medical and paramedical students who perform tasks which causes an exposure to blood or blood contaminated body fluids should take high precautions and ensure that they are properly vaccinated against them.[3] Hepatitis B vaccination is of primary importance in such students to prevent the risk of acquiring Hepatitis B infection.

Some of the other vaccine preventable hospital acquired infections include Diphtheria, Measles, Mumps, Chicken pox etc which can be prevented by DTaP, MMR and Varicella vaccines. The medical professionals are found to be thirteen times more risky than normal population for acquiring measles.[3] Hence vaccination is considered essential in medical and

paramedical students to prevent acquiring and spreading of such highly contagious diseases. Occurrence of any side effects of vaccination also needs to be assessed in order to encourage reporting of vaccine adverse effects and to educate them about the importance of vaccine pharmacovigilance.

The medical and paramedical students need to have thorough knowledge in the efficiency and importance of vaccination and its use in preventing various highly infectious diseases that are easily transmitted from one person to another via various methods in a hospital. Being in a medical field and surrounded by other healthcare providers help them improve their knowledge on such vaccine uses and vaccine-preventable infectious diseases. It may also help them to encourage the general population in taking vaccinations and their booster doses at the appropriate time.

2. OBJECTIVES

1. To know the important vaccinations taken by medical and paramedical students.
2. To evaluate the Hepatitis B vaccination pattern and their immune status.
3. To assess their knowledge and perception on vaccination.

3. MATERIALS AND METHODS

A questionnaire based study was carried out using the information's gathered from students in various medical and paramedical fields in Kerala, India. The study utilized purposive sampling technique. This study provides information on the vaccination pattern, immune status, knowledge and perception of medical and paramedical students on vaccination. The Data was collected and subjected to proper statistical analysis in Microsoft Excel spreadsheet. The study was conducted during September-November 2018. A web based questionnaire was developed with 17 questions and employed to collect data. Inclusion criteria are medical and paramedical students of age 17 years and above. Exclusion criteria are medical and paramedical students below age 17 and students not in medical and paramedical field. The study was conducted after protocol approval from Ezhuthachan College of Pharmaceutical Sciences. All data collected were analyzed using descriptive and inferential statistics. The data were analyzed using descriptive statistics for demographic characteristics, vaccination importance and essentiality, vaccinations taken recently, infections acquired due to lack of vaccination and side effects of vaccination.

4. RESULT

Total 110 students participated in the study which includes 87 female and 23 male, among which 98.2% students considered vaccination as essential in medical and paramedical students. About 87.3% students chose Hepatitis B vaccination as the most important one followed by Varicella (28.2%), MMR (27.3%) and DTaP (15.5%). About 68.2% students considered it essential to take a vaccination, already taken in childhood. Hepatitis B vaccination was taken recently by a majority of the medical students (61.8%), followed by Varicella (17.3%), MMR (16.4%), DTaP (5.5%). About 50% students considered that vaccines can give complete protection from disease, 71.8% considered immunity acquired by vaccination as better. About 5.5% students have experienced an infectious disease within and 20.9% students outside the clinical setting due to lack of vaccinations. The infections acquired due to lack of vaccinations include chickenpox (75%), Hepatitis (13%), Mumps (6%) and Diphtheria (6%). About 61.8% students reported of not experiencing any side effects of vaccination while 38.2% have experienced side effects which include injection site reaction (n=34), mild fever (n=21), muscle and joint pain (n=19), skin rashes (n=6), and shivering (n=2). About 97.3% students considered an awareness on proper vaccination as essential among medical and paramedical students.

5. DISCUSSION

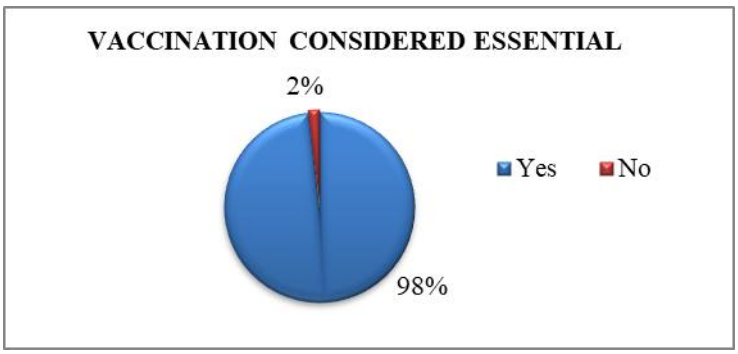

Figure 1: Percentage of medical and paramedical students who considered vaccination essential.

Vaccination was considered essential by 98% students and non-essential by 2% students. It signifies that a large majority of students were aware of the need for vaccination and its importance in prevention of infectious diseases in hospitals while 2% of them were unaware of the importance of vaccination. Despite being in the best position to have thorough knowledge about the importance of vaccination and its ability to prevent infectious diseases, few students still seem reluctant to admit its essentiality. They need to be educated and

provided proper knowledge on the importance of taking vaccinations and on the prevention of such hospital acquired infectious diseases.

Medical and paramedical students have a very high risk of acquiring infectious diseases like Hepatitis B, Diphtheria, Measles, Mumps, Rubella, Pertussis, Chicken pox etc in the hospital settings compared to the general population. Vaccinations and their booster doses need to be taken at proper scheduled time to prevent such infectious disease. Providing them a proper education and counseling them along with their parents on the importance of immunization would be helpful in ensuring proper vaccination and reduce their risk of acquiring and spreading such infections in hospital settings. It will help improve their insight into immunization need and its efficacy in providing protection from occupational hazards.

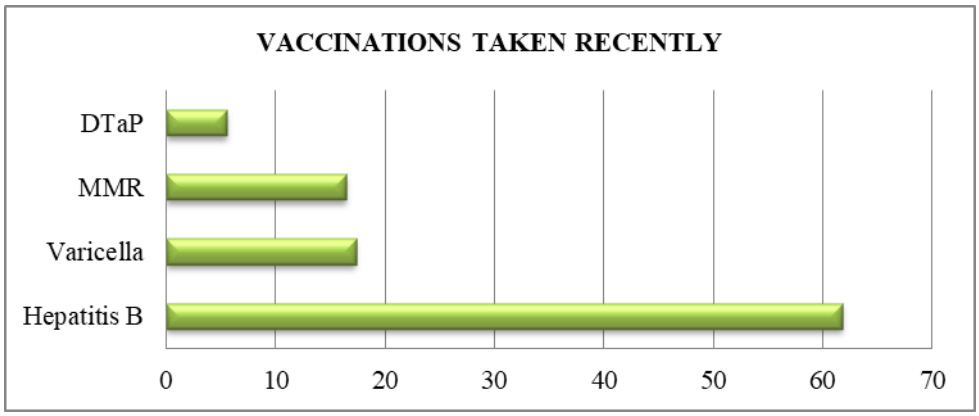

Figure 2: Vaccinations taken recently by medical and paramedical students.

From figure 2, it is evident that a majority of the students have taken Hepatitis B vaccination followed by Chicken pox, MMR and DTaP vaccines. Hepatitis B vaccination was taken recently by a majority of the students (61.8%). It is one of the essential vaccinations that is mandatory to be taken before working in a hospital or any medical areas for students or medical staff in order to ensure effective protection against Hepatitis B infection. The other vaccinations like DTaP, MMR, and Varicella taken by them provide them with good immunity and help in preventing other contagious blood-borne and air-borne diseases.

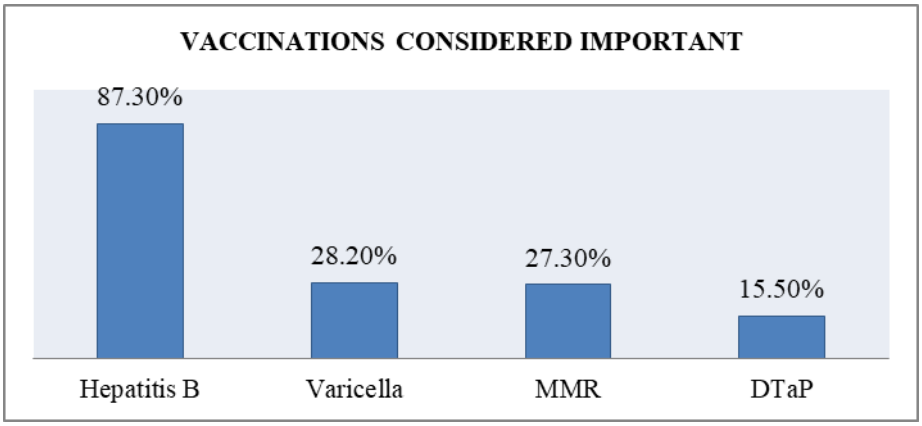

Figure 3: Various vaccinations which are considered important.

Among the various vaccinations to be taken by medical and paramedical students, Hepatitis B vaccine was considered the most important (87.3%) followed by Varicella (28.2%), MMR (27.3%) and DTaP (15.5%) vaccines. From the data obtained, it is evident that a majority of the medical and paramedical student's acknowledged the high importance of Hepatitis B vaccination as well as Varicella, MMR and DTaP vaccines. They were found to have sufficient knowledge on the importance of various vaccinations, particularly the Hepatitis B vaccination. About 97.3% students considered awareness on proper vaccination as essential among medical and paramedical students. This shows the need for providing further awareness about vaccination such as their indication, need, dose, schedule, mechanism of action and its possible adverse effects.

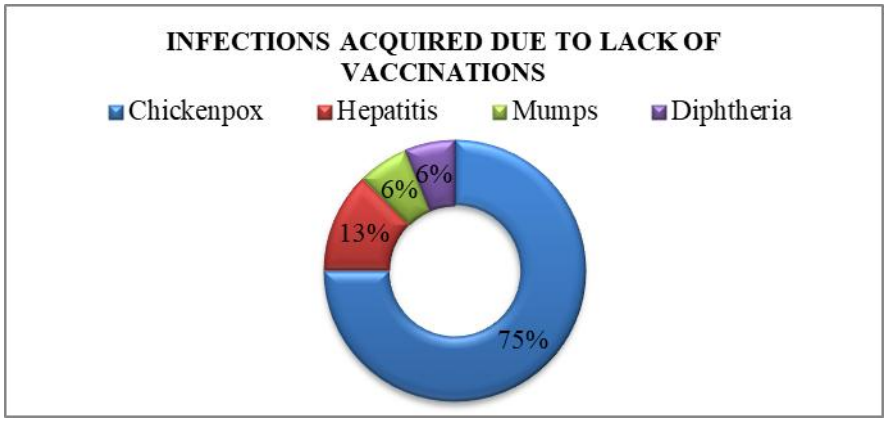

Figure 4: Various infections acquired due to lack of vaccination.

Lack of vaccination can make the medical and paramedical students prone to infectious diseases like Chickenpox, Hepatitis B, Mumps, Measles, Pertussis and Diphtheria due to poor immunity against these diseases and lack of proper preventive measures against them. About 75% students have acquired chicken pox, 13% have acquired Hepatitis, 6% have acquired

Mumps and Diphtheria due to lack of vaccination against them. About 5.5% students have experienced an infectious disease within clinical settings due to lack of vaccination. This shows the requirement for adequate vaccinations and its importance in providing protection against such highly contagious diseases. As most of these infections are easily vaccine preventable, hence it is highly recommended to take proper vaccination and thus ensure effective measures against such infectious diseases.

Hepatitis B vaccine schedule for adults is usually 2 or 3 doses, Varicella vaccine is 2 doses, MMR vaccination is 1 or 2 doses (based on indication) and DTaP is scheduled as 1 dose, followed by DT or DTaP booster every 10 years.

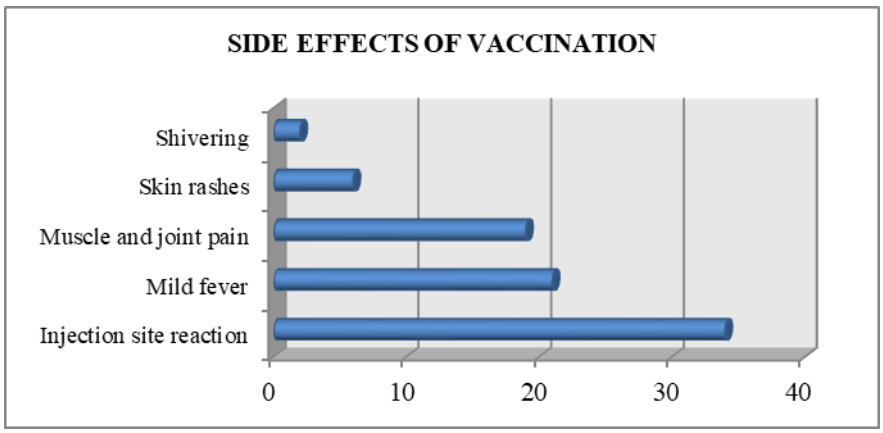

Figure 5: Adverse effects of vaccination experienced by medical and paramedical students.

Vaccines provide a good protection against many infectious diseases but their administration can sometimes be related with the development of adverse reactions known as "vaccine adverse events". Although a majority of the students (61.8%) reported of not experiencing any side effect, about 38.2% students have experienced side effects. The most commonly encountered adverse effects were injection site reactions followed by mild fever, muscle and joint pain, skin rashes and shivering.

The adverse effects need to be correctly reported to the vaccine pharmacovigilance department, which will help for accurate detection and reduce the adverse effects of vaccination on the population. Reporting can be done by providing information like demographic details, type of vaccine received, manufacturer, injection site, current illness and medications used, onset and details of adverse effect, history of any adverse effects with vaccination and any other concurrent vaccinations taken.[14]

6. CONCLUSION

Vaccination was considered essential by a majority of medical and paramedical students and Hepatitis B vaccine was taken recently by many of them. Majority of them had sufficient knowledge on the importance of vaccination. A significant small fraction of students still lacked sufficient knowledge on vaccine efficacy and hence it is necessary to educate them about the importance of taking proper vaccinations against infectious diseases. A few percentage of students were found to have acquired infections in clinical settings due to lack of vaccination. Infections acquired by such means may also be transmitted to other critical care patients within the hospitals which may worsen their conditions further as well as spread to other co workers, thus putting the life of many at great risk within clinical areas. Hence this study shows the need for an awareness on proper immunization among healthcare workers, medical and paramedical students.

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REFERENCES

1. Aroke D, Kadia BM, Anutebeh EN, Belanquale CA, Misori GM, Awa A, et al. Awareness and Vaccine Coverage of Hepatitis B among Cameroonian Medical Students. Biomed Res Int., 2018; 2018: 3673289.
2. Noubiap JJN, Nansseu JR, Kengne KK, Tchokfe Ndoula S, Agyingi LA. Occupational exposure to blood, hepatitis B vaccine knowledge and uptake among medical students in Cameroon. BMC Med Educ., 2013; 13: 148.
3. CDC. “Immunization of health-care workers: Recommendations of the Advisory committee on immunization practices (ACIP) and the hospital infection control practices advisory committee (HICPAC)”. MMWR, 1997; 46(18): 1-42.
4. M. S. Akhter, A. Rizwan, and M. Wahiduzzaman. Vaccination status and awareness of Hepatitis B among undergraduate medical students of two medical colleges in Bangladesh. Medicine Today, 2016; 28(1): 27–29.

5. M. Giri, J. Panda, and A. Sahoo. Hepatitis B awareness and vaccination status among first year medical students. International Journal of Community Medicine and Public Health, 2016; 3(2): 530–532.
6. R. Gambhir, V. Kapoor, G. Jindal, S. Garg, S. Setia, and S. Setia. Attitudes and awareness regarding Hepatitis B and Hepatitis C amongst health-care workers of a tertiary Hospital in India. Annals of Medical and Health Sciences Research, 2013; 3(4): 551–558.
7. Papagiannis D, Tsimtsiou Z, Chatzichristodoulou I, et al. Hepatitis B Virus Vaccination Coverage in Medical, Nursing, and Paramedical Students: A Cross-Sectional, Multi-Centered Study in Greece. Int J Environ Res Public Health, 2016; 13(3): 323.
8. Jinlin Hou, Zhihua Liu, Fan Gu. Epidemiology and Prevention of Hepatitis B Virus Infection. Int J Med Sci., 2005; 2(1): 50-57.
9. A Vinodhkumaradithyaa, M Srinivasan, RA Sankarasubramanian, A Uma, I Ananthalakshmi, P Thirumalaikolundusubramanian, P Kanagasundaram. Hepatitis B Vaccination Among Medical Students. Indian J Community Med., 2008; 33(1): 67-68.
10. Rathi A, Kumar V, Majhi J, Jain S, Lal P, Singh S. Assessment of knowledge, attitude, and practices toward prevention of hepatitis B infection among medical students in a high-risk setting of a newly established medical institution. J Lab Physicians, 2018; 10(4): 374-379.
11. Wibabara Y, Banura C, Kalyango J, Karamagi C, Kityamuwesi A, Amia WC, et al. Hepatitis B vaccination status and associated factors among undergraduate students of Makerere University College of Health Sciences. PLoS One., 2019; 14(4): e0214732.
12. Ghomraoui FA, Alfaqeeh FA, Algadheeb AS, Al-alsheikh AS, Al-Hamoudi WK, Alswat KA. Medical students' awareness of and compliance with the hepatitis B vaccine in a tertiary care academic hospital: An epidemiological study. J Infect Public Health, 2016; 9(1): 60–65.
13. Salil Budhiraja and Raghuram Akinapelli. Pharmacovigilance in vaccines. Indian Journal of pharmacology, 2010; 42(2): 117.
14. Staltari O, Cilurzo F, Caroleo B, et al. Annual report on adverse events related with vaccines use in Calabria (Italy):2012. J Pharmacol Pharmacother, 2013; 4(1): S61-S65.
15. Deisenhammer S, Radon K, Nowak D, Reichert J. Needle-stick injuries during medical training. J Hospital Infect, 2006; 63(3): 263–267.