



Assessing the Knowledge of Vaccination Amongst the Second Year MBBS Students at GSVM Medical College

Dr Virendra Kushwaha*, Dr Pooja Agrawal, Dr Sarthak Goel, Dr Sonali Chandra, Dr Pradeep Gupta

Department of Pharmacology, G.S.V.M Medical College Kanpur, India.

*Corresponding author's E-mail: vkushwaha1970@gmail.com

Received: 06-12-2024; Revised: 28-02-2025; Accepted: 12-03-2025; Published online: 20-03-2025.

ABSTRACT

Introduction: Vaccinations are pivotal in disease prevention. Understanding healthcare providers' knowledge, attitudes, and practices (KAP) regarding vaccination is vital for enhancing immunization programs.

Objectives: To assess and improve the KAP regarding vaccination among medical students through an educational intervention.

Methods: The study was conducted by department of pharmacology at GSVM Medical College. 202 MBBS students participated in this study, which involved pre- and post-lecture surveys to evaluate the impact of a targeted educational lecture on vaccination.

Results: Post-intervention results indicated significant improvements: recognition of Edward Jenner increased from 66.34% to 76.36%, understanding of vaccine mechanisms rose from 71.52% to 80.69%, and awareness of vaccine-preventable diseases surged from 37.60% to 84.70%. Advocacy for vaccination campaigns also grew from 90.9% to 98.6%.

Conclusion: The educational session markedly enhanced students' KAP regarding vaccinations, underscoring the necessity of such content in medical curricula to prepare students for their roles in public health.

Keywords: Vaccination, immunisation, campaigns.

INTRODUCTION

The principle behind vaccination is simple yet powerful: by introducing a weakened or inactivated form of a pathogen into the body, the immune system learns to recognize and combat the real disease if encountered in the future. This process not only protects individuals but also helps create herd immunity, reducing the overall spread of infections and safeguarding vulnerable populations, such as infants, the elderly, and those with weakened immune systems.

Despite overwhelming scientific evidence supporting their safety and efficacy, vaccines have often been met with skepticism and misinformation. In recent years, vaccine hesitancy has emerged as a growing public health concern, fueled by misinformation, fears of side effects, and distrust in medical institutions. However, experts emphasize that the benefits of vaccination far outweigh the risks, and extensive research ensures that vaccines undergo rigorous testing before being approved for public use.

As the world continues to combat emerging infectious diseases, including COVID-19 and new variants of existing viruses, the role of vaccination remains more critical than ever. Immunization not only prevents illness and death but also reduces healthcare costs, minimizes the strain on medical systems, and contributes to global health security. Vaccination remains one of the most effective public health strategies for preventing the spread of infectious diseases¹. However, the success of vaccination programs depends heavily on the knowledge, attitudes, and practices of healthcare providers, including medical students, who will

eventually become the frontline advocates for these programs². Understanding their baseline knowledge and attitudes towards vaccination, as well as their personal vaccination practices, is crucial for identifying educational needs and designing interventions that can enhance their role in public health³. By preventing episodes of vaccine-preventable diseases, vaccination can also help avert associated out-of-pocket medical expenses, healthcare provider costs, and losses in wages of patients and caregivers⁴.

Aim and objective

This study aimed to assess the KAP related to vaccination among students of GSVM Medical College, Kanpur. It also evaluated the effectiveness of an educational lecture on improving the students' understanding and attitudes towards vaccination and how these changes might influence their personal vaccination practices.

MATERIAL AND METHODS

This cross-sectional KAP study was conducted at GSVM Medical college Kanpur, involving 202 students of 2022 batch. A structured questionnaire via google form was given to the students on their whatsapp group before the lecture. The lecture covering key topics related to vaccination, including the history of vaccines, the science behind how vaccines work, the importance of maintaining up-to-date vaccinations, and the role of healthcare professionals in promoting vaccination⁶. The same questionnaire was given post lecture. This questionnaire included multiple-choice questions designed to test the students' understanding of vaccination concepts, their



attitudes towards vaccination campaigns, and their own vaccination practices ⁵. The responses were collected pre-discussion and post-discussion automatically via two different links on the requested email. MS excel was used to compare and analysis of responses pre and post lecture.

RESULTS

The age distribution of the 202 responses shows a predominant concentration in the early 20s, with a significant portion of respondents being 20 and 21 years old. Both of these age groups account for the largest percentages, with 56 respondents (27.7%) aged 20 and 55 respondents (27.2%) aged 21. This is followed by 22-year-

olds, making up 20.3% of the total, with 41 responses. The age groups of 19 and 23 have smaller representations, at 10.4% and 8.4%, respectively. There are only a handful of respondents in the 24 and 25 age categories, with 4 respondents (2%) aged 24 and 6 respondents (3%) aged 25. The least represented age groups are 18 and 27, with only 2 respondents (1%) aged 18 and 1 respondent (0.5%) aged 27. Interestingly, there are no respondents aged 26, 28, 29, or 30, indicating that the survey population skews heavily toward individuals in their early 20s.

Out of the participants 59.4 percent were male and 40.6 percent were female.

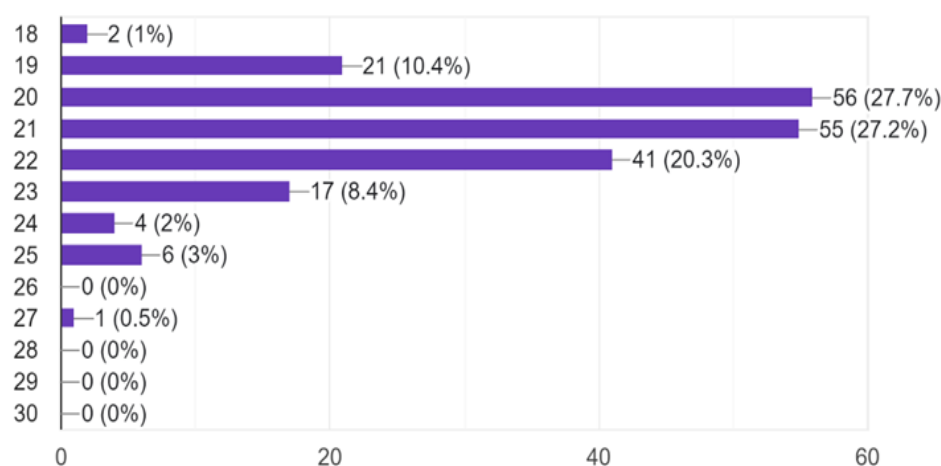
Comparison of Pre- and Post-Lecture Responses

The table below summarizes the key findings from the pre- and post-lecture assessments conducted on the students.

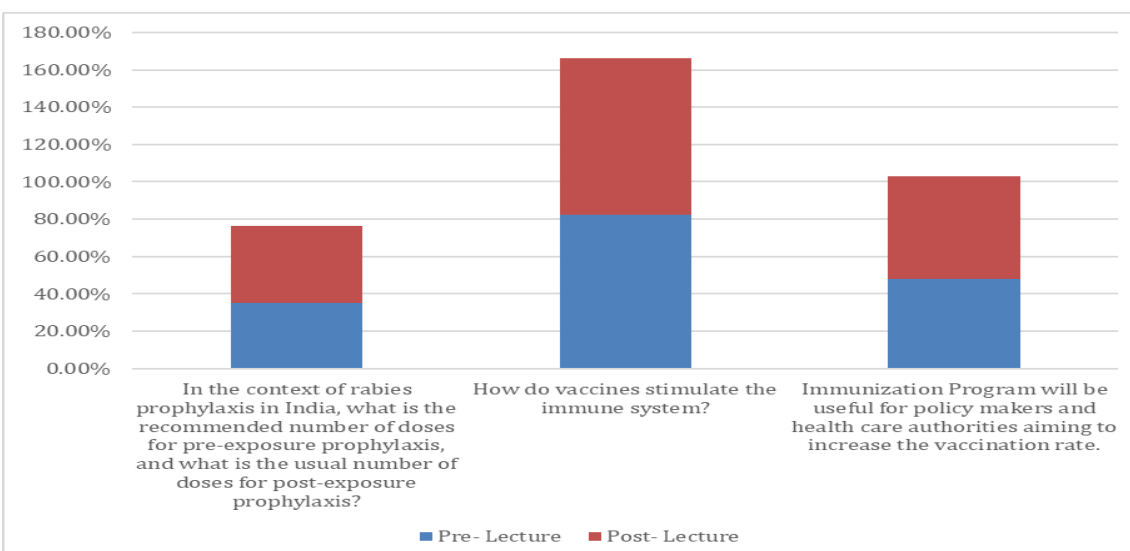
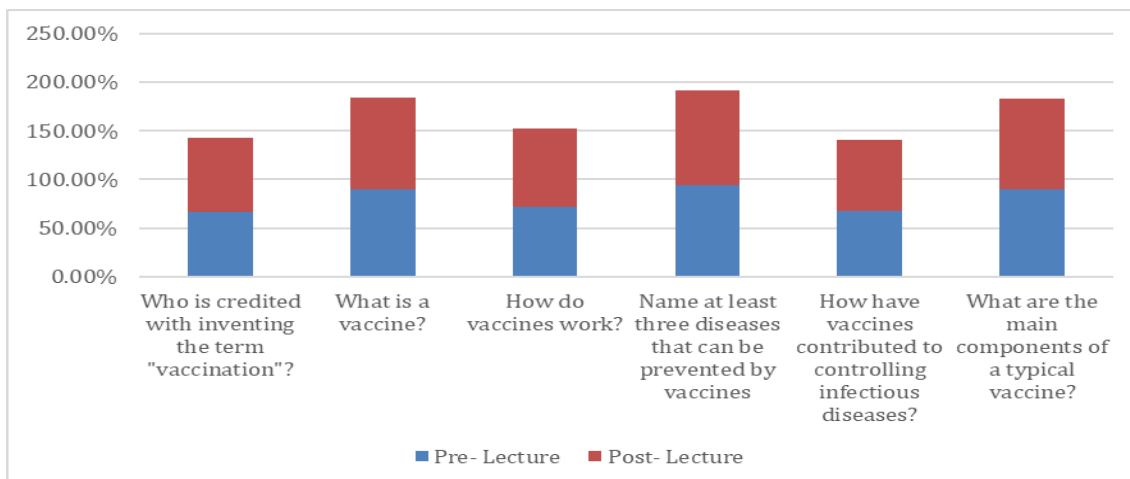
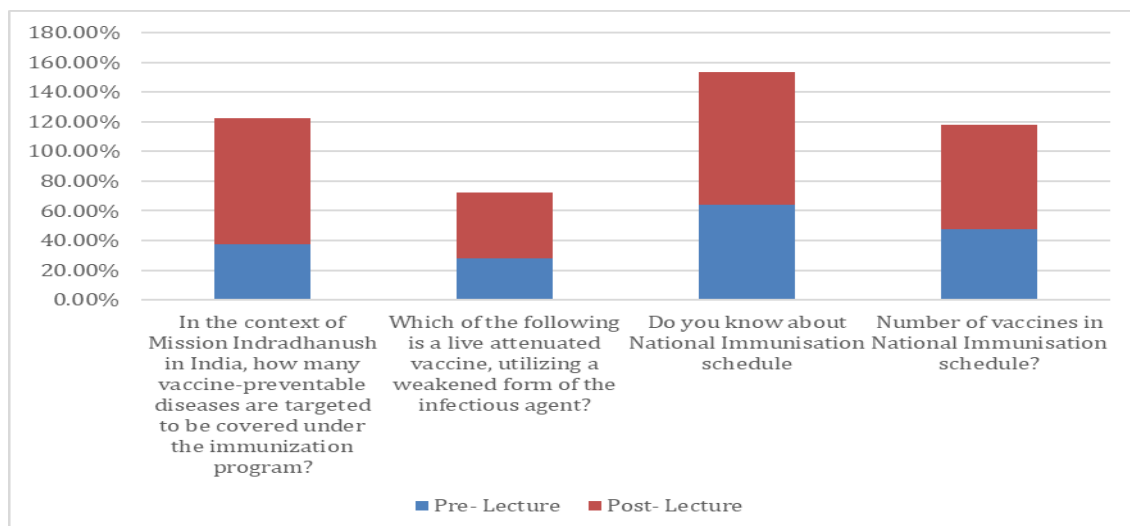
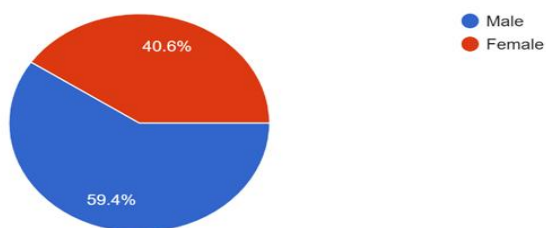
Questions	Pre-Lecture (%)	Post-Lecture (%)
Who is credited with inventing the term "vaccination"?	66.34%	76.36%
What is a vaccine?	90.30%	94.06%
How do vaccines work?	71.52%	80.69%
Name at least three diseases that can be prevented by vaccines	93.94%	98.02%
How have vaccines contributed to controlling infectious diseases?	67.27%	73.76%
What are the main components of a typical vaccine?	89.70%	93.10%
In the context of Mission Indradhanush in India, how many vaccine-preventable diseases are targeted to be covered under the immunization program?	37.60%	84.70%
Which of the following is a live attenuated vaccine, utilizing a weakened form of the infectious agent?	27.90%	44.60%
Do you know about National Immunisation schedule	64.20%	89.10%
Number of vaccines in National Immunisation schedule?	47.90%	70.30%
In the context of rabies prophylaxis in India, what is the recommended number of doses for pre-exposure prophylaxis, and what is the usual number of doses for post-exposure prophylaxis?	35.20%	41.10%
How do vaccines stimulate the immune system?	82.40%	83.70%
Immunization Program will be useful for policy makers and health care authorities aiming to increase the vaccination rate.	47.88%	54.95%

Age

202 responses



Gender
202 responses



Pre-Lecture Findings

Knowledge of Vaccination:

- Invention of the Term 'Vaccination': Before the lecture, 66.34% of the students correctly identified Edward Jenner as the individual credited with inventing the term 'vaccination.' However, 33.66% of the students incorrectly attributed this to other figures, such as Louis Pasteur or Jonas Salk. This indicates that while the majority had a correct understanding, a significant minority had gaps in their historical knowledge of vaccination⁸.

- Understanding of Vaccine Function: 71.52% of the students correctly identified vaccines as preventive measures rather than treatments for diseases. However, 9.70% of the students selected incorrect answers, indicating some confusion about the fundamental purpose of vaccines⁹.

- Mechanism of Action: 71.52% of the students correctly understood that vaccines work by stimulating the immune system to develop immunity against diseases. However, 28.48% of the students either chose incorrect mechanisms or were unsure, highlighting a need for better understanding in this area¹⁰.

Attitude Towards Vaccination

- Support for Vaccination Campaigns: 90.9% of students expressed strong support for vaccination campaigns, recognizing their importance in controlling the spread of infectious diseases¹¹. However, only 45.5% reported that they consistently kept up with routine vaccinations, such as influenza or tetanus boosters. The remaining 54.5% admitted to either delaying or rarely receiving these vaccines, indicating a discrepancy between their positive attitudes towards vaccination and their personal practices¹².

Personal Vaccination Practices:

- COVID-19 Vaccination Status: 84.8% of students had completed all recommended doses of the COVID-19 vaccine 5. However, 14.6% were only partially vaccinated, and 0.6% were not vaccinated. This suggests that while most students were compliant with COVID-19 vaccination recommendations, a notable percentage had either not completed their vaccinations or were not fully aware of their status¹³.

- Record Keeping: Only 77% of the students reported keeping a record of their vaccination history. Meanwhile, 10.9% did not keep any records, and 12.1% were unsure if they had records. This reflects a significant gap in personal health management practices, as maintaining accurate vaccination records is critical for ongoing health and well-being¹⁴.

Post-Lecture Findings

Improvement in Knowledge:

- Invention of Vaccination: After the lecture, 76.36% of the students correctly identified Edward Jenner as the inventor

of the term 'vaccination,' reflecting an unexpected decrease. This indicates the need for more emphasis on retaining historical information during educational sessions¹⁵.

- Understanding of Vaccine Function and Mechanism: Post-lecture, 94.06% of the students correctly identified vaccines as preventive measures, and 80.69% correctly understood that vaccines work by stimulating the immune system. These improvements suggest that the educational intervention successfully reinforced the correct concepts of vaccination¹⁶.

Enhanced Attitudes:

- Increased Support for Vaccination Campaigns: The number of students who strongly supported vaccination campaigns increased from 90.9% in the pre-lecture phase to 98.6 post-lecture. This suggests that the lecture not only reinforced existing positive attitudes but also helped convert previously uncertain students into strong advocates for vaccination. This change underscores the effectiveness of targeted educational interventions in shaping favorable attitudes toward public health initiatives, particularly vaccination campaigns¹⁷.

- Routine Vaccination Practices: The proportion of students who agreed to keep up with routine vaccinations such as influenza and tetanus increased to 90.6% after the lecture. This shift indicates that the educational intervention had a tangible impact on improving students' commitment to maintaining their vaccinations¹⁸.

Better Personal Practices:

- COVID-19 Vaccination Compliance: Post-lecture, 92.6% of students reported that they would complete all recommended doses of the COVID-19 vaccine, reflecting a 7.8% improvement from the pre-lecture phase¹⁹. This suggests that the lecture effectively communicated the importance of full vaccination²⁰.

Improved Record Keeping:

The lecture also had a positive impact on the students' record-keeping practices. The percentage of students who agreed to maintain vaccination records is projected to increase from 77% to 78.7% post-lecture²¹. This improvement underscores the importance of emphasizing not just the act of getting vaccinated but also the need to keep accurate records for future reference²².

DISCUSSION

The results of this KAP study demonstrate the significant impact that a structured educational intervention can have on medical students' understanding and practices regarding vaccination. The marked improvements in both knowledge and personal vaccination practices following the lecture highlight the value of integrating such educational initiatives into the medical curriculum.



Comparative Analysis:

- The 10.02% improvement in correctly identifying Edward Jenner as the inventor of the term 'vaccination' suggests that historical context is an area where students benefit from additional instruction.
- The increase in the percentage of students who understand that vaccines work by stimulating the immune system—from 71.52% to 80.69%—indicates that while the majority had a correct understanding initially, the lecture helped clarify misconceptions for a broader audience.
- The shift in attitudes, with more students strongly supporting vaccination campaigns post-lecture, points to the effectiveness of the educational content in reinforcing the importance of vaccination as a public health tool.
- The improvement in personal vaccination practices, particularly in maintaining vaccination records and completing COVID-19 vaccinations, reflects a successful translation of knowledge into action, which is critical for future healthcare providers²³.

CONCLUSION

The KAP study at GSVM Medical College, Kanpur, underscores the effectiveness of educational interventions in improving medical students' knowledge, attitudes, and practices related to vaccination. The significant gains observed post-lecture demonstrate that targeted educational content can correct misconceptions, reinforce positive attitudes, and promote proactive health behaviours. As these students progress in their medical careers, their enhanced understanding of vaccination will be crucial in advocating for and implementing public health initiatives. This study highlights the need for ongoing education in medical curricula to ensure that future healthcare professionals are well-prepared to support and promote vaccination efforts²⁴. Similar to our study agrwal et al²⁵ also had similar results and had concluded that as evidenced by the rise in knowledge levels of the medical students, vaccine guidelines now available in their four core education years.

Source of Support: The author(s) received no financial support for the research, authorship, and/or publication of this article

Conflict of Interest: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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