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ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE (KAP) OF PHARMACISTS AND PHARMACY STUDENTS TOWARD VACCINATION

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ABSTRACT

Vaccination remains one of the most effective public health interventions globally. Pharmacists, as accessible healthcare professionals, play a vital role in promoting, educating, and delivering vaccination services. This study aimed to assess the Knowledge, Attitude, and Practice (KAP) of pharmacists and pharmacy students toward vaccination. A structured questionnaire was administered through an online survey. Results indicate that while the majority demonstrated good knowledge and positive attitudes toward vaccination, gaps were identified in practical involvement and confidence in counselling vaccine-hesitant individuals. Strengthening training programs and integrating vaccination-related skills into pharmacy curricula are recommended.

KEYWORDS: Vaccine, Attitude, Pharmacist, Immunization, Vaccine Vial Monitor, Practice.

1. INTRODUCTION

Vaccination remains one of the most cost-effective public health interventions, preventing 4–5 million deaths annually and substantially reducing the global burden of infectious diseases (WHO, 2023).[1,2] Despite the proven efficacy and safety of vaccines, gaps in vaccination coverage persist worldwide, especially in low- and middle-income countries such as India. These gaps are strongly influenced by public misconceptions, limited accessibility, and the

attitudes and practices of healthcare professionals who play critical roles in immunization programs.[3,4]

Pharmacists are among the most accessible healthcare providers and are frequently the first point of contact for patients in the community. Their expanding role includes vaccine storage, handling, counselling, documentation, and were permitted vaccine administration. Evidence indicates that pharmacists significantly improve vaccination uptake by addressing patient concerns, providing education, and facilitating convenient access to immunization services.[5,6] However, their contribution largely depends on their own knowledge, attitudes, and practices (KAP) toward vaccination.

Several studies have demonstrated considerable variability in the KAP of pharmacists and pharmacy students toward immunization. Lack of adequate training, insufficient exposure during pharmacy education, and misconceptions related to vaccine safety and adverse effects have been identified as major barriers to pharmacist-led immunization initiatives.[7.8] In India, pharmacists are increasingly recognized as important stakeholders in public health, yet limited research has systematically examined their KAP toward vaccination. Understanding these aspects is essential to identify existing gaps, strengthen pharmacy curricula, and design targeted interventions that enhance pharmacists' readiness to participate actively in immunization programs.

Therefore, this study aims to assess the knowledge, attitudes, and practices toward vaccination among pharmacists and pharmacy students. This assessment will help highlight critical areas needing improvement and support evidence-based strategies to empower pharmacists as key contributors to national immunization efforts.

This study evaluates the knowledge, attitude, and practice of pharmacists and pharmacy students toward vaccination using a validated KAP questionnaire.[9,10,11,12,13,14,15,16,17]

2. MATERIALS AND METHODS

2.1. Study Design

A cross-sectional, questionnaire-based survey conducted among pharmacists and pharmacy students of BIU COP and RCOP Bareilly International University, Bareilly.

2.2. Study Tool

A Google Form-based KAP questionnaire consisting of four sections:

1. Demographics
2. Knowledge
3. Attitude
4. Practice

2.3. Data Collection

Responses were collected online over a period of one weeks. Participation was voluntary.

2.4. Data Analysis

Descriptive statistics (percentages, mean scores) were used to evaluate KAP levels. Scores were categorized as:

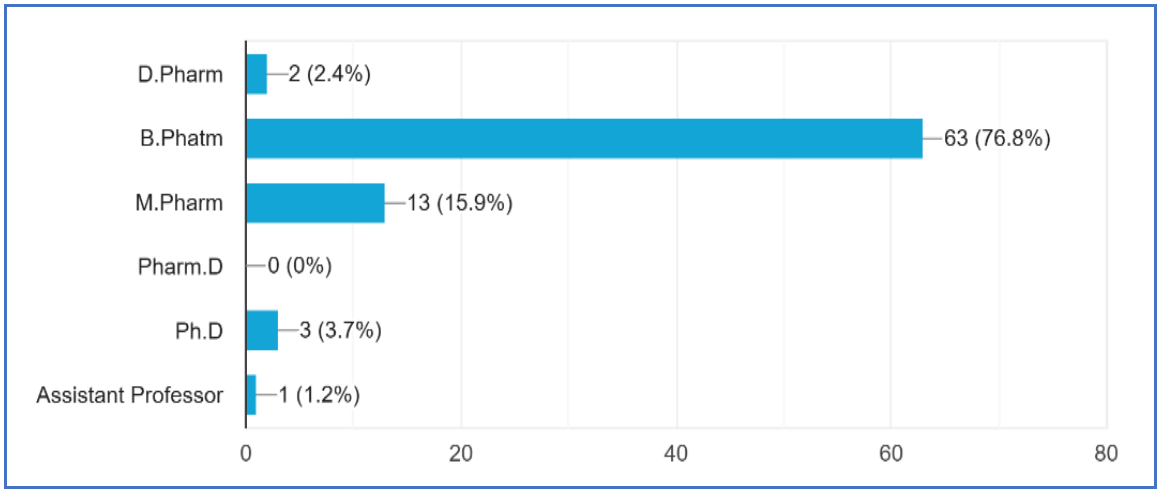
- Good Knowledge/Attitude/Practice: ≥75%
- Moderate: 50–74%
- Poor: <50%

3. RESULTS

3.1. Demographics

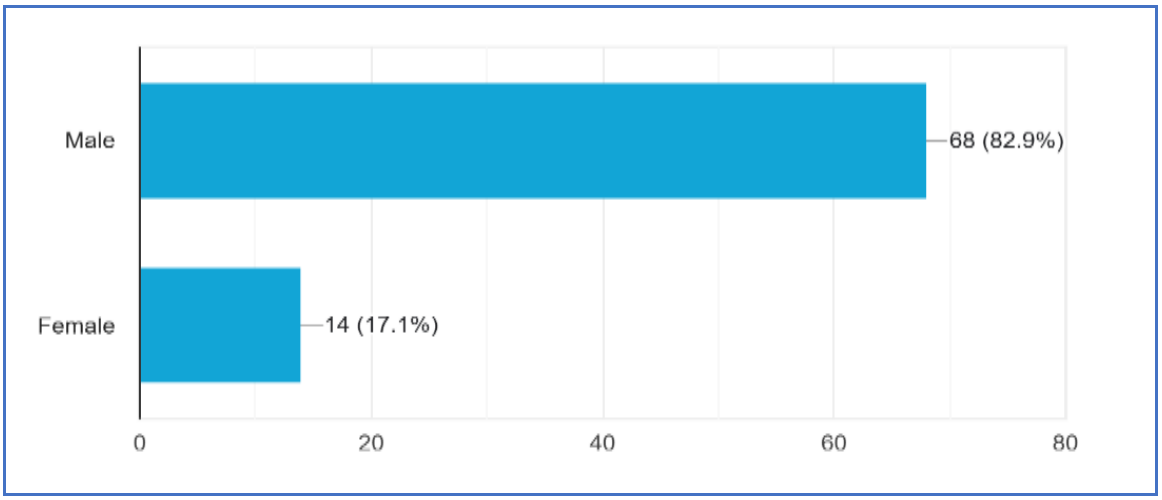
3.1.1. Participants: 82 respondents (mix of pharmacists and pharmacy students).

3.1.2. Qualification: D. Pharm, B. Pharm, M. Pharm, Pharm. D, Other (please specify)



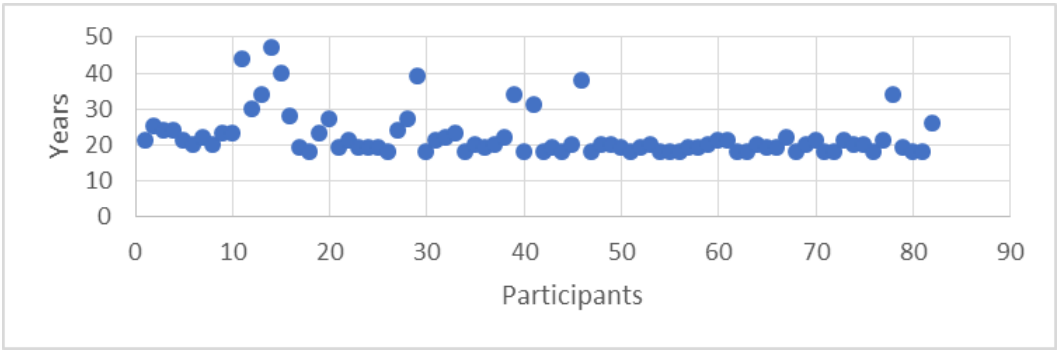
"Fig. 1: Qualification of Participants"

3.1.3. Gender: Male, Female.



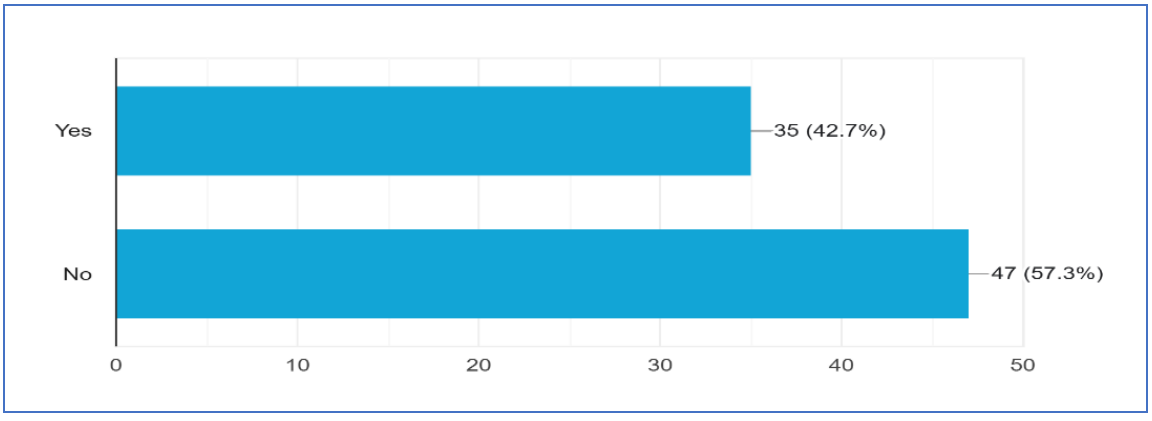
"Fig. 2: Gender of Participants."

3.1.4. Age of Participants



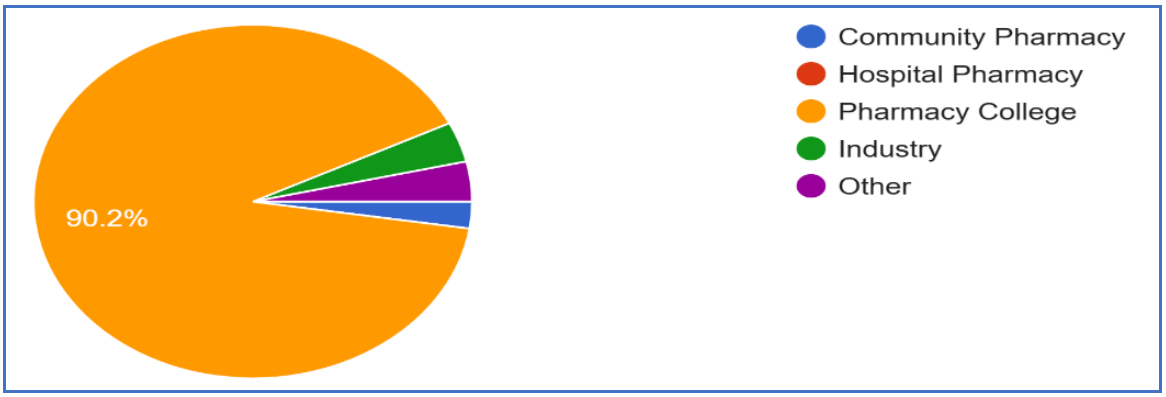
"Fig. 3: Age of Participants."

3.1.5. Registered Pharmacist: Yes, No.



"Fig. 4: Registered Pharmacist."

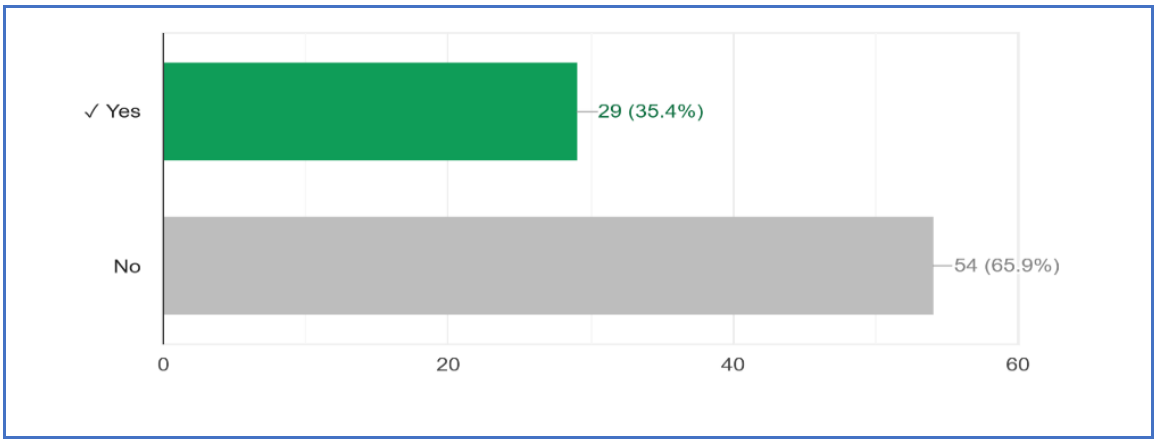
3.1.6. Current Setting / Workplace



"Fig. 5: Current Setting / Workplace of Participants."

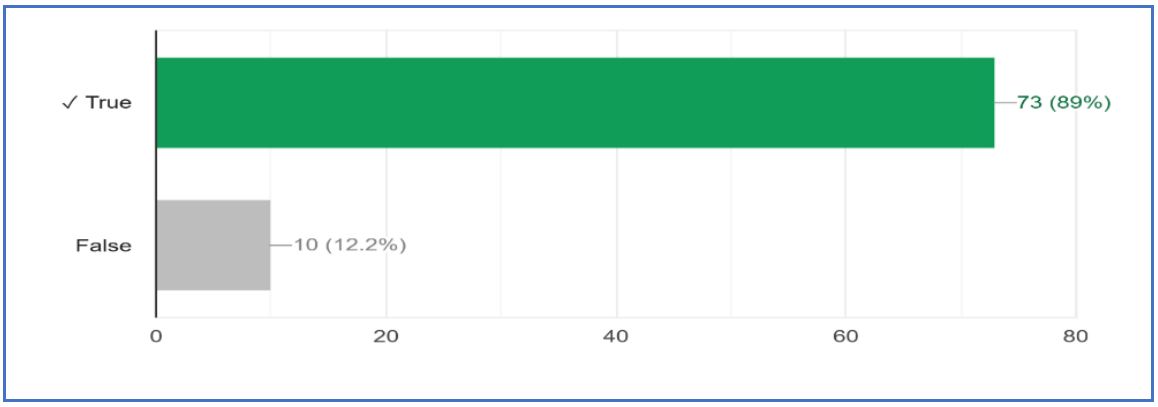
3.2. Knowledge

3.2.1. Have you received any formal training in immunization or vaccination



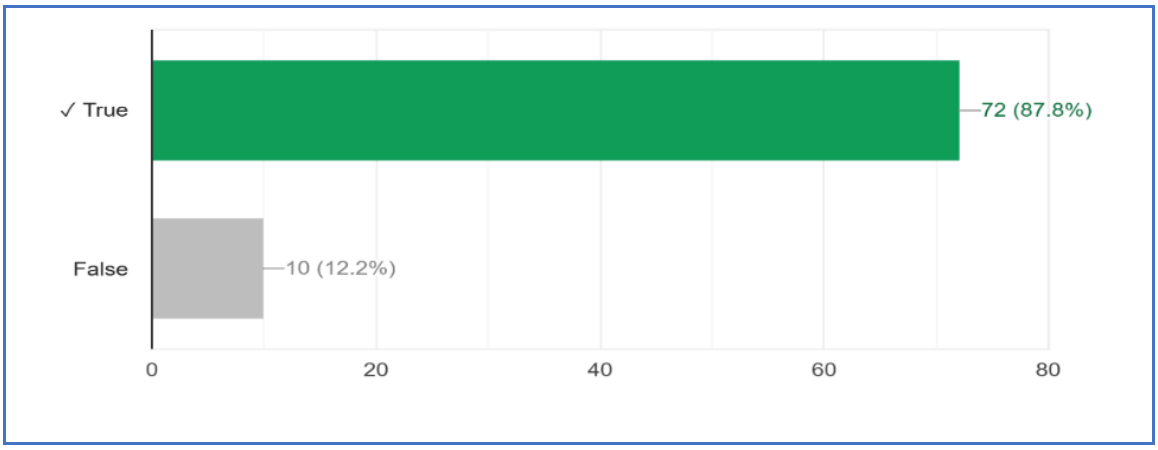
"Fig. 6: Received any formal training in immunization or vaccination."

3.2.2. Most vaccines should be stored at 2–8°C



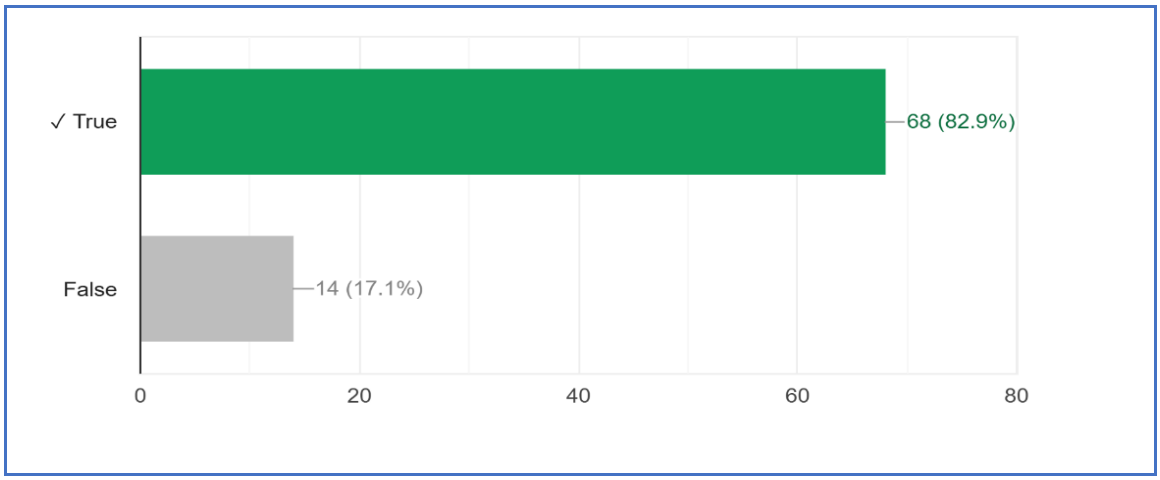
"Fig. 7: Most vaccines should be stored at 2–8°C."

3.2.3. Vaccine Vial Monitor (VVM) indicates if a vaccine has been exposed to heat



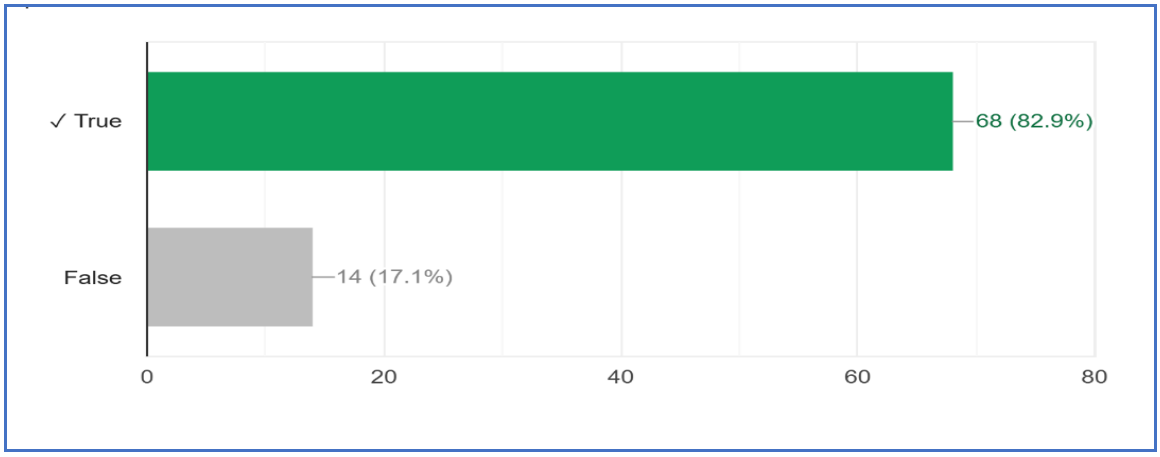
"Fig. 8: Vaccine Vial Monitor (VVM) indicates if a vaccine has been exposed to heat."

3.2.3. Live vaccines are contraindicated in severely immunocompromised patients



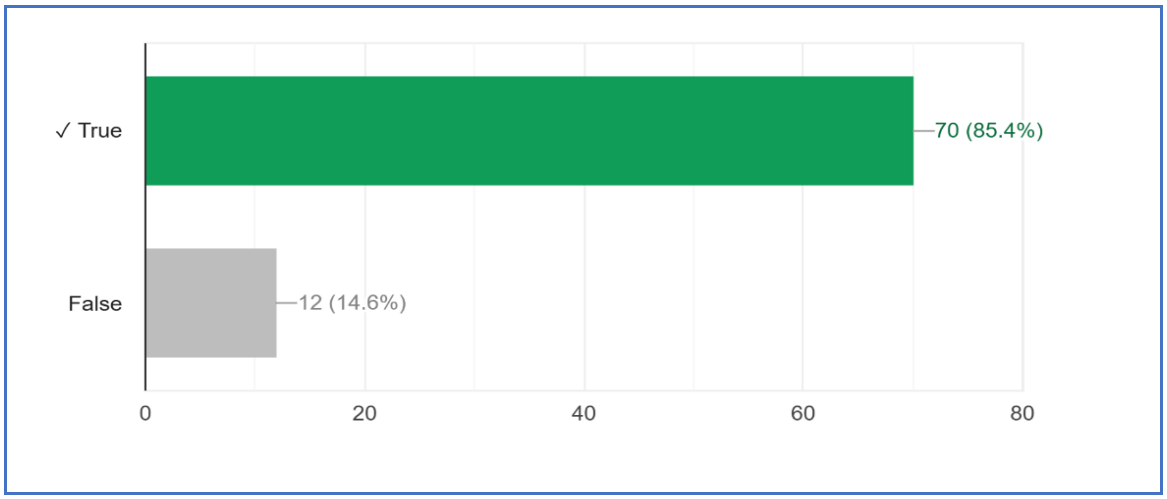
"Fig. 9: Live vaccines are contraindicated in severely immunocompromised patients."

3.2.4. Influenza vaccine should be taken every year



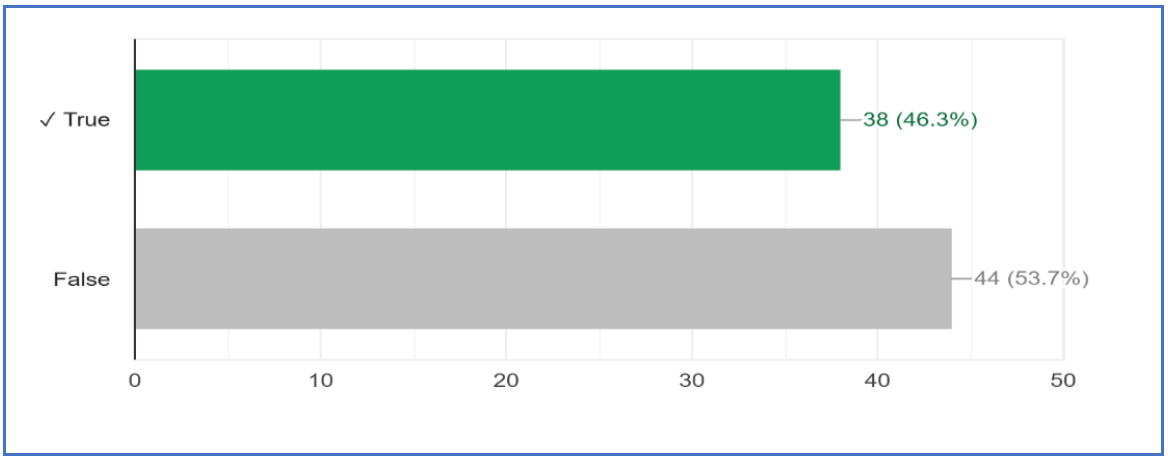
"Fig. 10: Influenza vaccine should be taken every year."

3.2.5. Anaphylaxis is a potential adverse reaction after vaccination



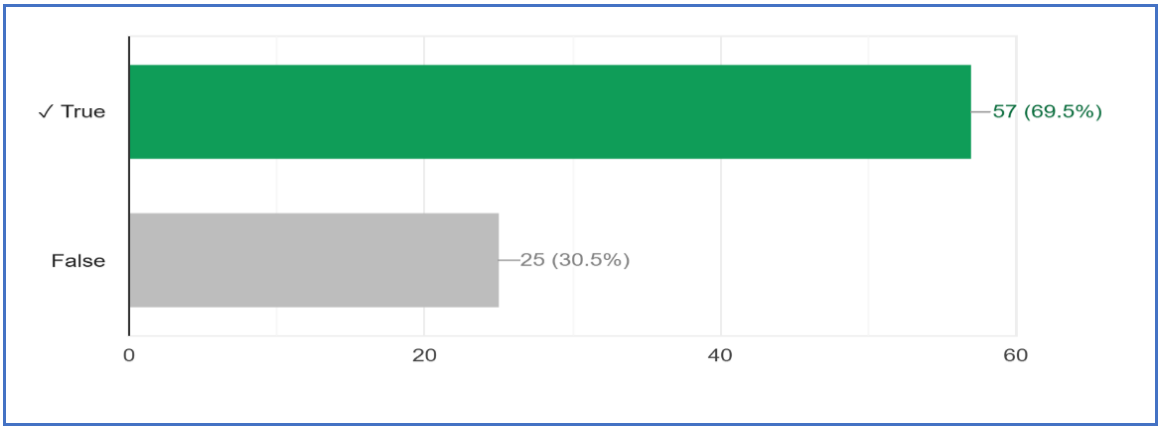
"Fig. 11: Anaphylaxis is a potential adverse reaction after vaccination."

3.2.6. The correct storage location for vaccines is the refrigerator door shelf



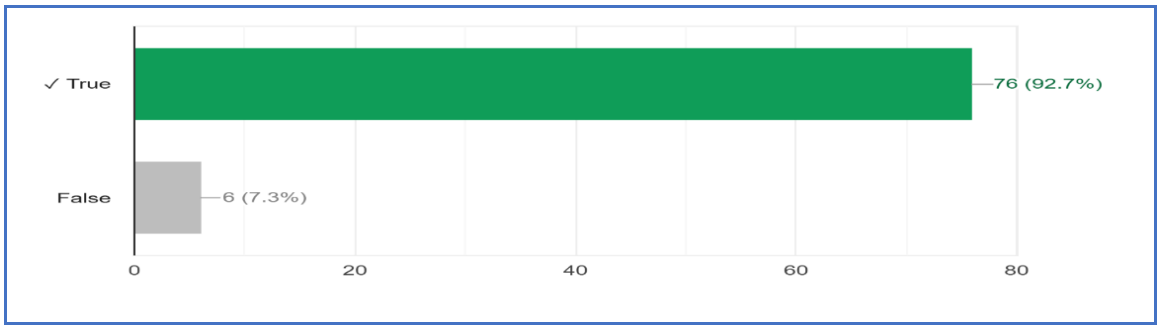
"Fig. 12: The correct storage location for vaccines is the refrigerator door shelf."

3.2.7. Pharmacists are authorized to administer vaccines in India



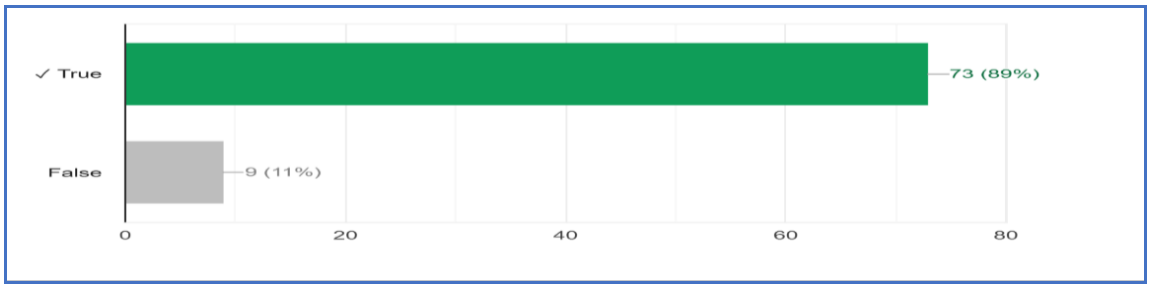
"Fig. 13: Pharmacists are authorized to administer vaccines in India."

3.2.8. Vaccine potency can be affected by temperature fluctuations



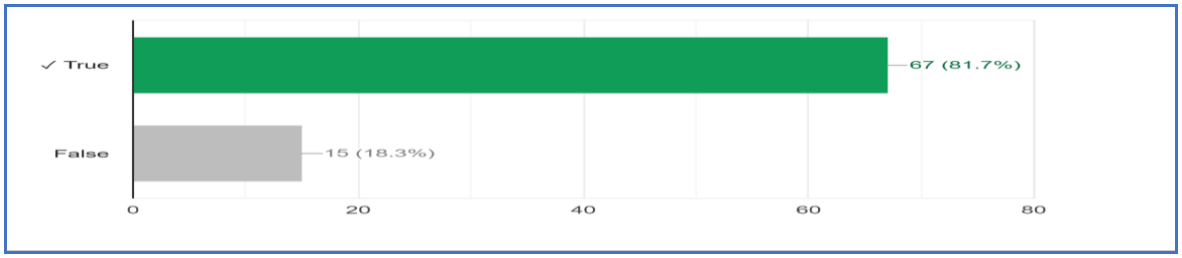
"Fig. 14: Vaccine potency can be affected by temperature fluctuations."

3.2.9. Documentation of lot number and expiry date is necessary for each administered vaccine



"Fig. 15: Lot number and expiry date is necessary for each administered vaccine".

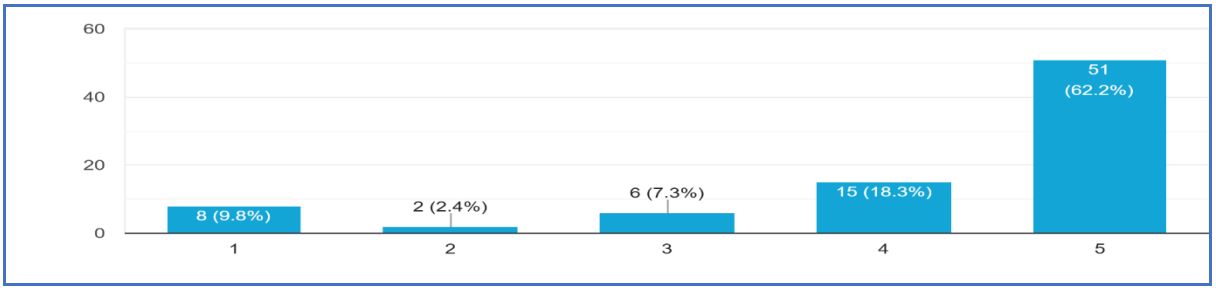
3.2.10. Vaccines can be administered even if a person has a mild fever



"Fig. 16. Vaccines can be administered even if a person has a mild fever"

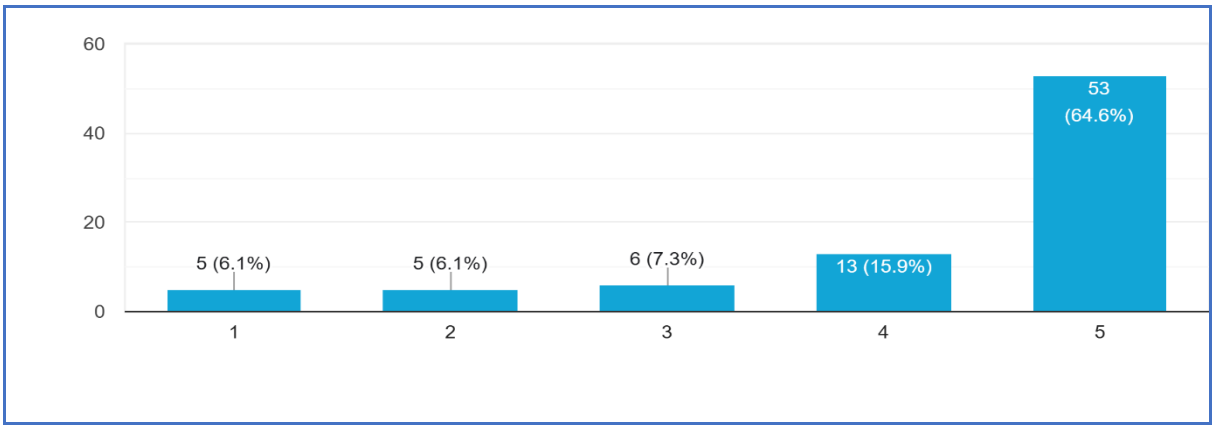
3.3. Attitude

3.3.1. Vaccination is one of the most effective public-health interventions



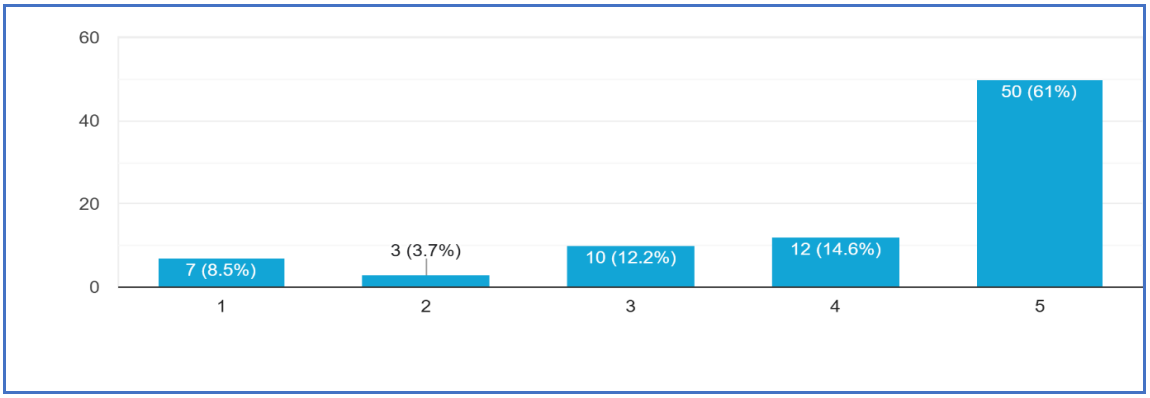
"Fig. 17. Vaccination is one of the most effective public-health interventions"

3.3.2. Pharmacists should actively promote vaccination awareness among the public



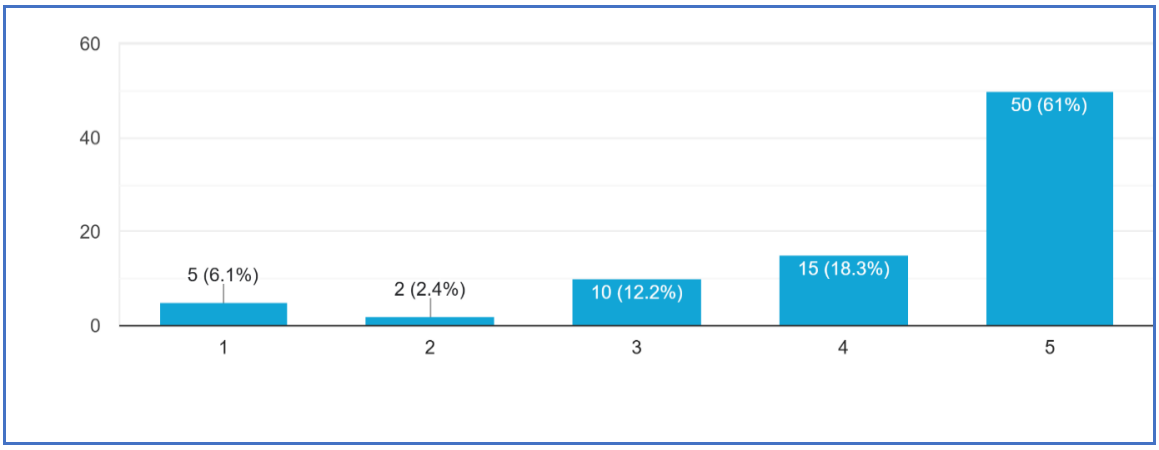
"Fig. 18: Pharmacists should actively promote vaccination awareness among the public"

3.3.3. Pharmacists should be authorized to administer vaccines



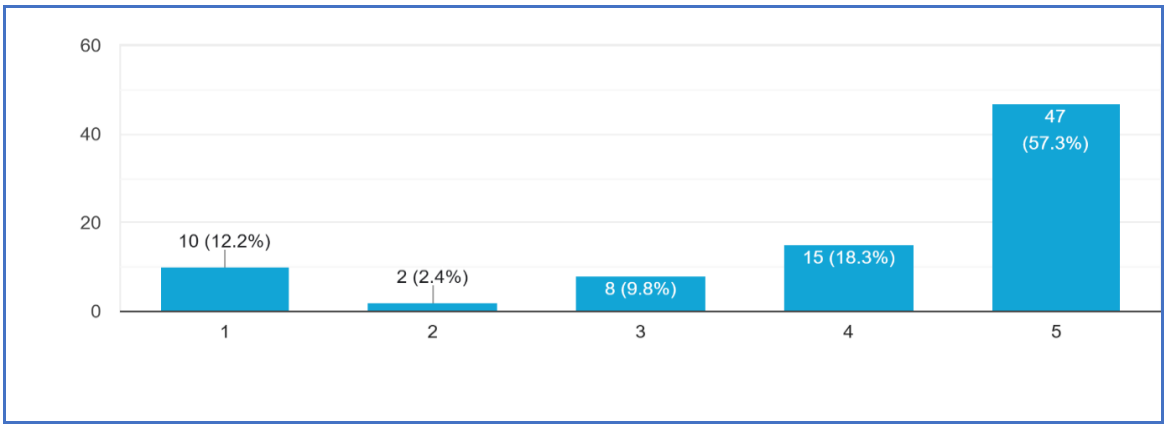
"Fig. 19: Pharmacists should be authorized to administer vaccines".

3.3.4. I feel confident counselling patients about vaccination



"Fig. 20: Confident counselling patients about vaccination"

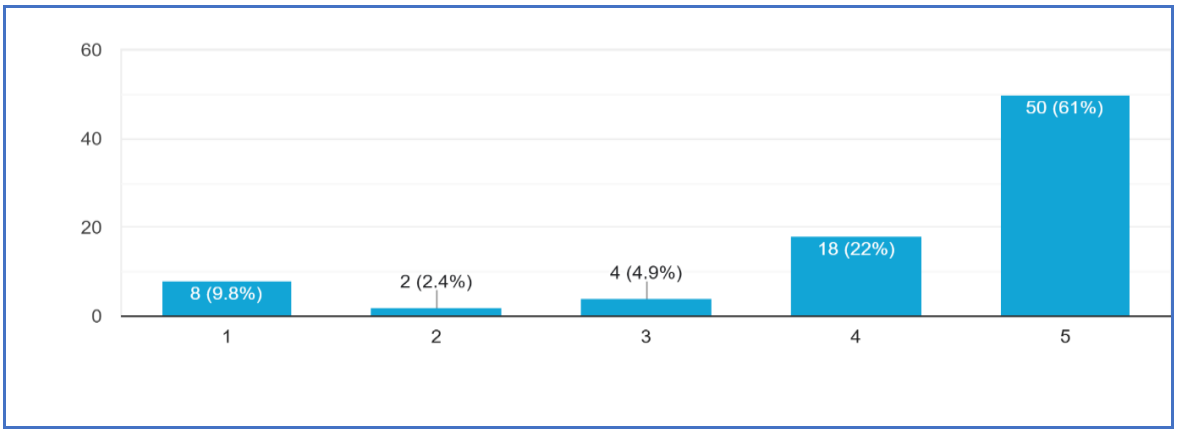
3.3.5. I am concerned about vaccine side effects



"Fig. 21. Concerned about vaccine side effects"

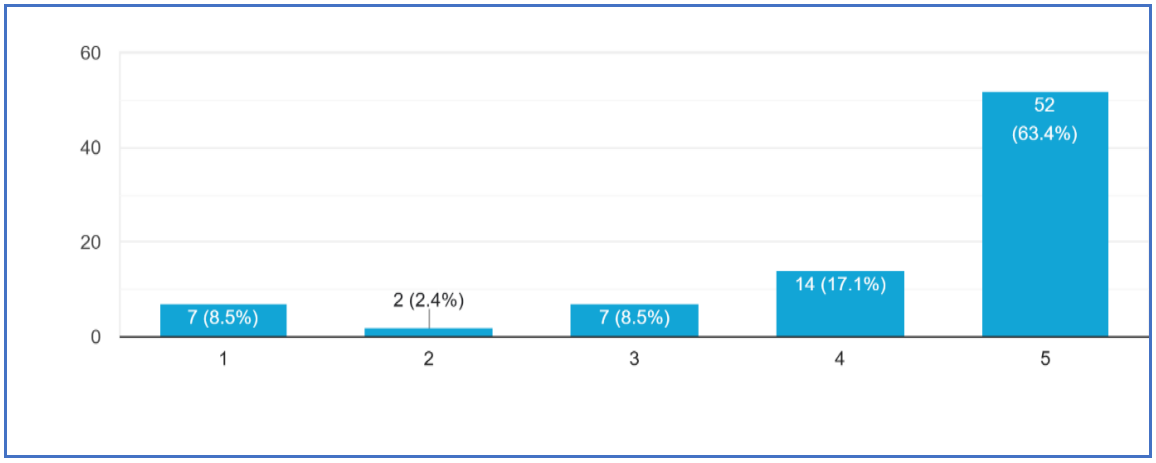
3.4. Practice

3.4.1. I am willing to receive additional training on vaccination practices



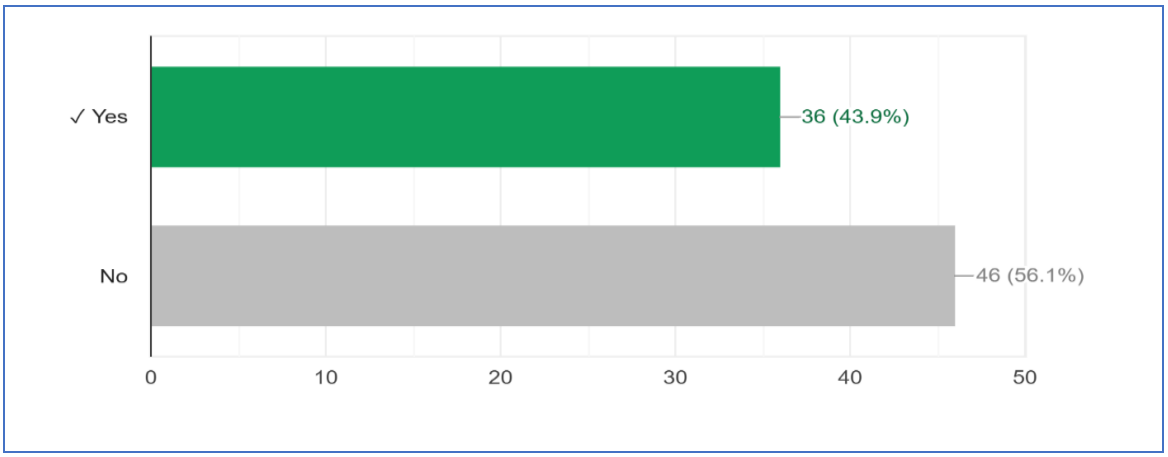
"Fig. 22. Willing to receive additional training on vaccination practices"

3.4.2. Vaccine hesitancy is a major barrier to immunization



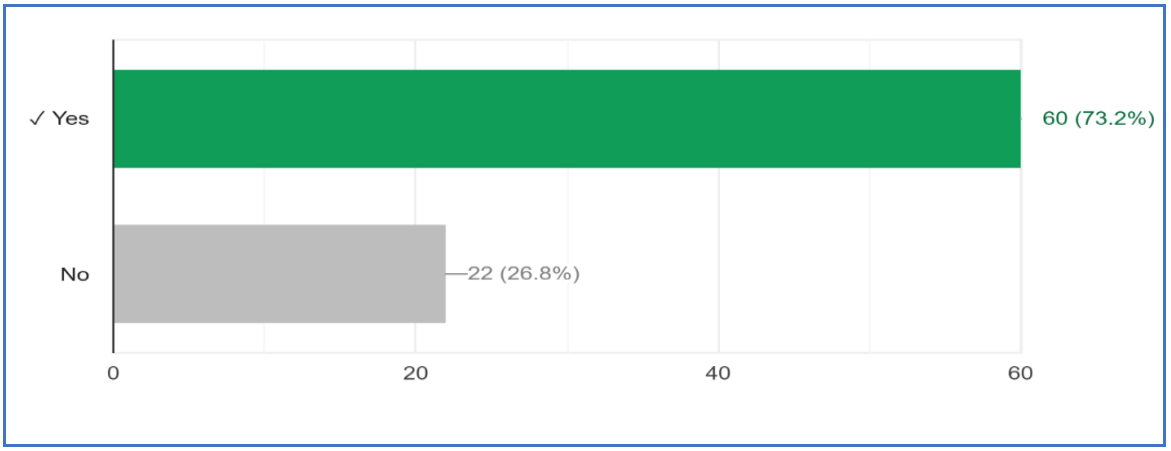
"Fig. 23. Vaccine hesitancy is a major barrier to immunization"

3.4.3. Have you ever participated in a vaccination campaign or awareness drive?



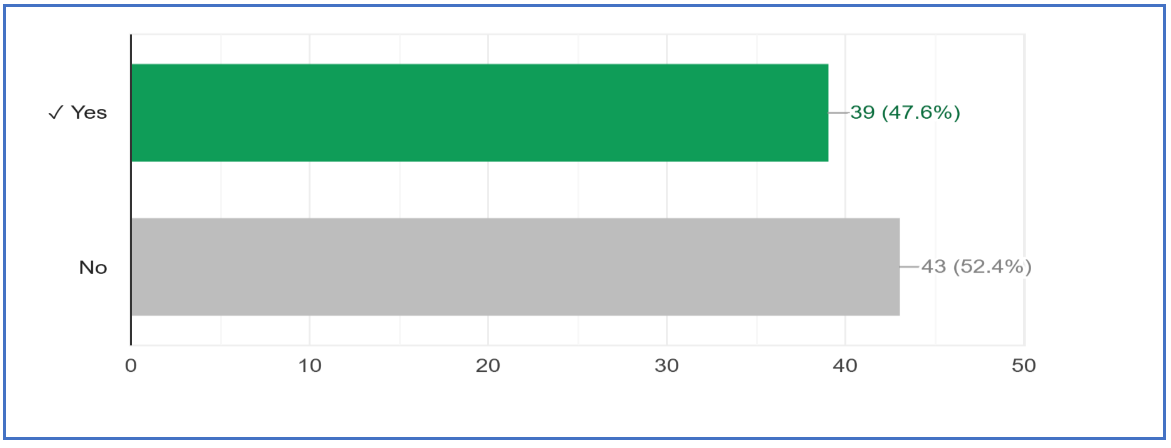
"Fig. 24. Participated in a vaccination campaign or awareness drive"

3.4.4. Have you personally received all recommended adult vaccines?



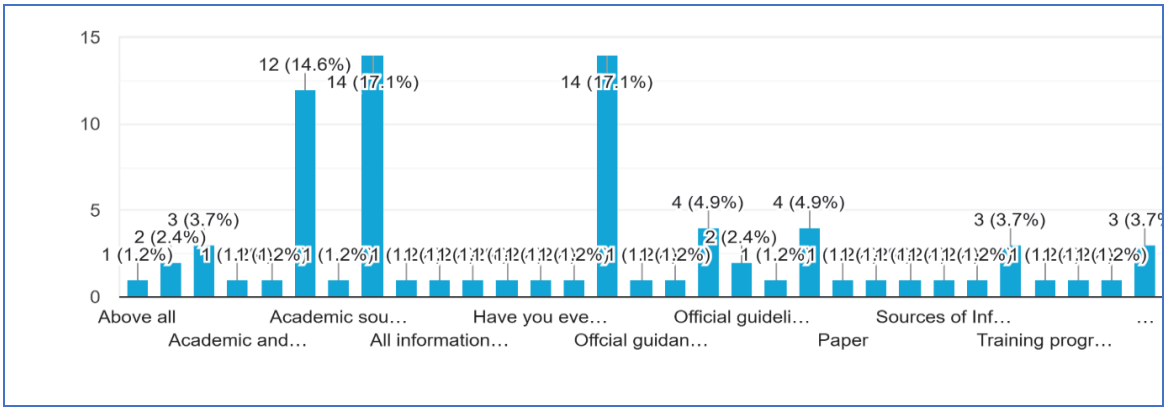
"Fig. 25. Personally, received all recommended adult vaccines"

3.4.5. Have you ever administered a vaccine under supervision or training?



"Fig. 26. Administered a vaccine under supervision or training"

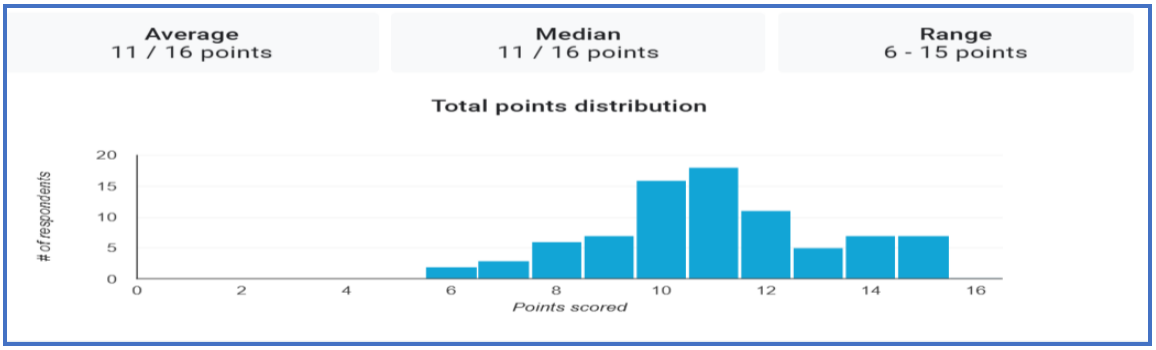
3.4.6. Sources of Information about Vaccines: Official guidelines / Training programs / Academic sources / Internet / Other



"Fig. 27. Sources of Information about Vaccines: Official guidelines / Training programs / Academic sources / Internet / Other"

- Responses analyzed: 82
- Mean knowledge score: 6.62 (out of the number of knowledge items detected)
- Median knowledge score: 7.0
- Overall mean attitude score: 4.20 (on 1–5 scale; higher = more positive)
- Mean practice score: 1.65 (sum of coded practice items; higher = better practice)

3.5. Score



"Fig. 28. Score"

DISCUSSION

The findings show that pharmacy professionals and students possess a generally strong understanding of vaccination principles and exhibit positive attitudes toward immunization. However, actual practice levels remain comparatively low, indicating barriers such as lack of training, limited institutional support, and regulatory restrictions on pharmacist-led vaccination services in many regions.

Participants: 82 respondents (mix of pharmacists and pharmacy students).

Knowledge: The mean knowledge score was 6.62 (median 7), indicating generally good factual understanding of vaccine storage, indications, and safety among respondents.

Attitude: High positive attitude (mean ≈4.20/5), suggesting strong agreement with pro-vaccination statements and willingness to support vaccination activities.

Practice: Lower practice scores (mean ≈1.65), indicating that although knowledge and attitude are good, practical engagement (counselling frequency, participation in campaigns, record-keeping, administration) is less frequent a gap that training and system support could address. The discrepancy between attitude and practice highlights a need for:

- Practical immunization workshops
- Training in patient communication
- Strengthening curriculum components on vaccination
- Opportunities for pharmacists to participate in immunization drives

5. CONCLUSION

Pharmacists and pharmacy students demonstrate good knowledge and positive attitudes toward vaccination but show limited practical engagement. Enhancing training programs and expanding the role of pharmacists in immunization services can significantly improve overall vaccination uptake and public health impact.

6. RECOMMENDATIONS

- Integrate vaccine administration modules in B. Pharm and Pharm.D programs.
- Conduct regular training on cold chain management and adverse event reporting.
- Organize vaccination drives led by pharmacy colleges.
- Encourage pharmacists to participate in national immunization programs.

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