

Knowledge Regarding The U-Win Vaccination Program Among Mothers of Under-Five Children in Sangli–Miraj–Kupwad Corporation, Maharashtra: A Descriptive Cross-Sectional Study

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ABSTRACT

Background: U-WIN is India's digital immunization platform intended to support beneficiary registration, electronic vaccination records, reminders and follow-up for pregnant women and children. Mothers' knowledge may influence their ability to engage with these services, yet evidence from Sangli-Miraj-Kupwad is limited.

Objective: To assess knowledge regarding the U-WIN vaccination program among mothers of under-five children and determine its association with selected demographic characteristics.

Methods: A descriptive cross-sectional study was conducted among 400 mothers of under-five children recruited by purposive sampling from selected community settings in Sangli-Miraj-Kupwad Corporation. Data were collected during December 2025 using a 20-item structured knowledge questionnaire. Internal reliability was reported as $r=0.95$. Frequencies, percentages and Fisher's exact test were used; statistical significance was set at $p<0.05$.

Results: Most participants were aged 26–30 years (42.5%), had completed high school (48.5%) and were not employed outside the home (91.0%). Overall, 370 mothers (92.5%) had average knowledge, 19 (4.8%) had poor knowledge and 11 (2.8%) had good knowledge. Knowledge was associated with educational attainment (Fisher's exact test=70.906, $p<0.001$), but not age ($p=0.302$) or occupation ($p=0.205$).

Conclusion: Knowledge of U-WIN was predominantly average, while good knowledge was uncommon. Community-based, accessible digital-health education—especially for mothers with lower educational attainment—may improve understanding and use of U-WIN-related immunization services.

Keywords: U-WIN; digital immunization; maternal knowledge; under-five children; immunization; India.

INTRODUCTION

Immunization is a highly effective public-health intervention for preventing morbidity and mortality from vaccine-preventable diseases. In India, childhood vaccination is delivered primarily through the Universal Immunization Programme (UIP). Digital systems have increasingly been introduced to strengthen beneficiary registration, record keeping, monitoring and follow-up.

U-WIN is designed to provide a digital record of immunization for pregnant women and children and to support reminders and continuity of care. The usefulness of any digital health platform, however, depends not only on system availability but also on beneficiaries' awareness, digital literacy and ability to access assistance when required.

Mothers commonly coordinate children's visits to immunization services and therefore represent an important group for assessing knowledge of U-WIN. Education, communication with health workers, access to mobile technology and family support may shape awareness and use of digital immunization services. Local evidence is needed to guide context-appropriate education in urban and peri-urban communities.

This study assessed knowledge regarding the U-WIN vaccination program among mothers of under-five children in Sangli-Miraj-Kupwad Corporation and examined associations with age, educational attainment and occupation.

METHODS

Study design and setting. A quantitative, descriptive cross-sectional design was used. The study was conducted in selected Anganwadi centres, urban primary health clinics and community settings within Sangli-Miraj-Kupwad Corporation, Maharashtra, India.

Participants and sampling. The study included 400 mothers of at least one child younger than five years. Participants were recruited using purposive sampling. Mothers aged 19–40 years, residing within the corporation limits and available

during data collection were eligible. Mothers reported as having a mental health condition that prevented participation were excluded.

Data collection. Data were collected from 1 to 31 December 2025 after obtaining institutional/health-authority permission and written informed consent. A Marathi-language, self-structured 20-item questionnaire was administered through face-to-face interviews. The reported administration time was approximately 20–25 minutes. The manuscript states that questionnaire reliability was $r=0.95$; the exact reliability procedure should be specified in the final submission.

Measures. The primary outcome was knowledge regarding U-WIN. Based on the reported scoring system, scores of 0–6 were classified as poor, 7–13 as average and 14–20 as good. The questionnaire covered awareness of U-WIN functions, registration, reminders, records, certificates and vaccination-related information.

Data analysis. Categorical data were summarized using frequencies and percentages. Fisher’s exact test was used to examine associations between knowledge category and selected demographic variables. A two-sided $p<0.05$ was considered statistically significant. Analyses were reportedly performed using [insert software and version].

Ethical considerations. Written informed consent was obtained from all participants. The final manuscript should include the name of the approving ethics committee, approval number and approval date; these details were not provided in the submitted manuscript.

RESULTS

Participant characteristics. The sample comprised 400 mothers. The largest age group was 26–30 years (170, 42.5%). High school was the most frequently reported educational level (194, 48.5%), and 364 participants (91.0%) were not employed outside the home.

Table 1. Sociodemographic characteristics of participants (N=400).

Characteristic	Category	n	%
Age (years)	18–25	104	26.0
	26–30	170	42.5
	31–35	107	26.8
	36–40	19	4.8
Education	Professional/honours	12	3.0
	Graduate	49	12.3
	Intermediate/diploma	46	11.5
	High school	194	48.5
	Middle school	83	20.8
Occupation	Primary school	16	4.0
	Working	36	9.0
	Not working/homemaker	364	91.0

Knowledge levels. Most mothers had average knowledge (370, 92.5%). Poor knowledge was observed in 19 mothers (4.8%), whereas 11 mothers (2.8%) had good knowledge.

Table 2. Distribution of participants by U-WIN knowledge level (N=400).

Knowledge category	Score range	n	%
Poor	0–6	19	4.8
Average	7–13	370	92.5
Good	14–20	11	2.8

Item-level responses. The highest reported correct-response proportions concerned U-WIN notifications and reminders for upcoming vaccination (93.5%), follow-up after a missed vaccination (94.3%), inclusion of hepatitis B vaccination (91.0%), and generation of a vaccination certificate (90.8%). The lowest reported proportions concerned the purpose of U-WIN (2.75%), the group responsible for maintaining the database (3.5%), and the number of vaccinations provided under U-WIN (23.3%). The manuscript also reports 0% correct responses for two registration/reminder items; these apparent inconsistencies should be checked against the original questionnaire and coding file before publication.

Association with demographic variables. Educational attainment was significantly associated with knowledge category (Fisher's exact test=70.906, $p<0.001$). No statistically significant association was observed for age (Fisher's exact test=6.592, $p=0.302$) or occupation (Fisher's exact test=2.920, $p=0.205$).

Table 3. Association between selected characteristics and knowledge category (N=400).

Variable	Test statistic	p value	Interpretation
Age	6.592	0.302	Not significant
Education	70.906	<0.001	Significant
Occupation	2.920	0.205	Not significant

DISCUSSION

In this study, nearly all mothers were classified as having average knowledge regarding U-WIN, while only a small proportion achieved the predefined good-knowledge level. This suggests that awareness of the platform may be partial: mothers may recognize reminders or vaccination records but remain unfamiliar with registration procedures, the purpose of the platform and the institutional processes supporting the digital record.

Educational attainment was the only characteristic significantly associated with knowledge. This finding is plausible because education may support comprehension of digital instructions, health information and service navigation. The absence of significant associations with age and occupation indicates that these characteristics alone may not identify mothers who require support. Education should therefore be considered together with digital access, language, health-worker communication and household decision-making.

The item-level findings point to specific educational priorities. Health workers should explain, in simple local-language terms, what U-WIN is, who can register a child, how records and reminders work, what to do after a missed dose and where to obtain help. Demonstration-based counselling may be more useful than distribution of written information alone for mothers with limited literacy or limited experience using digital services.

The study should be interpreted in light of its design. Purposive sampling and recruitment from selected settings limit generalizability. The cross-sectional design prevents causal conclusions, and knowledge was measured using a self-structured instrument. In addition, the manuscript contains internal inconsistencies regarding the data-collection schedule, questionnaire items and the reporting of $p=0.000$. These should be corrected by referring to the raw dataset and the approved protocol.

IMPLICATIONS FOR NURSING PRACTICE

- Integrate brief U-WIN demonstrations into routine immunization counselling at Anganwadi centres and urban primary health clinics.
- Use Marathi-language visual aids showing registration, record retrieval, reminders and follow-up after a missed vaccination.
- Ask mothers to demonstrate the steps or explain them back to the health worker to confirm understanding.
- Prioritize outreach to mothers with lower educational attainment while ensuring that support is available to all caregivers.

CONCLUSION

Among 400 mothers of under-five children in Sangli-Miraj-Kupwad Corporation, 92.5% had average knowledge regarding U-WIN, 4.8% had poor knowledge and 2.8% had good knowledge. Educational attainment was significantly associated with knowledge, whereas age and occupation were not. Structured, locally understandable and demonstration-based education is warranted to strengthen community understanding of U-WIN and its role in immunization continuity.

RECOMMENDATIONS

- Conduct a pre-test/post-test intervention study evaluating structured U-WIN education.
- Validate the questionnaire through content validity, pilot testing and a clearly described reliability procedure.
- Include rural, peri-urban and multi-district samples to improve generalizability.
- Assess whether knowledge translates into actual registration, record access, timely vaccination and completion of the recommended schedule.

- Use qualitative methods to explore digital-literacy, privacy, language, access and family-level barriers.

DECLARATIONS

Ethics approval and consent to participate: The research title was approved by Bharati Vidyapeeth Institutional Ethics Committee, College of Nursing, Sangli and written informed consent was obtained from all the participants.

Consent for publication:

Competing interests: The authors have no conflict of interest.

Funding: “No external funding” was taken from any organization or agency to complete the project.

Authors’ contributions: To be completed according to the journal’s contributor-taxonomy requirements.

Data availability: To be completed, including whether de-identified data are available on reasonable request.

Acknowledgements: We would like to extend our sincere thanks to Management of Bharati Vidyapeeth (Deemed to be University), Pune for giving permission and helped us in smooth execution and completion of the research.

REFERENCES

1. World Health Organization. Immunization coverage. Geneva: WHO; 2024. Available from: <https://www.who.int/news-room/fact-sheets/detail/immunization-coverage>
2. Ministry of Health and Family Welfare, Government of India. Universal Immunization Programme. New Delhi: MoHFW; 2022.
3. International Institute for Population Sciences. National Family Health Survey (NFHS-5), 2019–21: India report. Mumbai: IIPS; 2022.
4. Ministry of Health and Family Welfare, Government of India. U-WIN: digital immunization platform and operational guidance. New Delhi: MoHFW; [verify year and document title].
5. Das A, Gupta S, Mohan U. Mothers’ knowledge, attitude and practice regarding childhood immunization in urban slums of Delhi. Indian J Community Med. 2023;48(1):45–50. [Verify bibliographic details before submission].
6. Singh P, Kaur M, Sharma R. Awareness about immunization schedule among mothers of under-five children in rural Punjab. J Family Med Prim Care. 2023;12(4):678–83. [Verify bibliographic details before submission].
7. Sharma S, Verma N, Patel K. Digital innovations in routine immunization: A review of U WIN implementation. J Family Med Prim Care. 2024;13(3):821-6.
8. Government of India. U-WIN: User manual for healthcare workers. New Delhi: Ministry of Health and Family Welfare; 2023.
9. International Institute for Population Sciences. National Family Health Survey (NFHS-5), 2019-21: India report. Mumbai: IIPS; 2022.
10. Ministry of Health and Family Welfare, Government of India. Immunization performance dashboard 2023-24: Key highlights. New Delhi: MoHFW; 2024.
11. Das A, Gupta S, Mohan U. Mothers' knowledge, attitude and practice regarding childhood immunization in urban slums of Delhi. Indian J Community Med. 2023;48(1):45-50.
12. Singh P, Kaur M, Sharma R. Awareness about immunization schedule among mothers of under-five children in rural Punjab. J Family Med Prim Care. 2023;12(4):678-83.