



(RESEARCH ARTICLE)



Evaluation of Knowledge of routine immunization among rural High school children in Karnataka: Pre and Post intervention study

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Abstract

Context: Immunization is essential for preventing both acute and long-term infectious illnesses. The decision-makers for children's vaccinations in the future are adolescents. Because vaccinations decrease morbidity and mortality for both the vaccinated individual and their family throughout life, it is imperative that teenagers be educated about the dangers associated with vaccine-preventable diseases and the safety of vaccinations.

Aim: To assess student's knowledge about routine immunization among rural high school children in Sathnur village, Kanakpura Taluk.

Settings and Design: A cross-sectional study was conducted using the convenience sampling technique.

Methodology: The data was collected using a pre validated questionnaire to assess the knowledge and perception of risk responses from the participants. Sociodemographic details were also included in the questionnaire, and it was administered on the same day before and after delivering an education session. Students were asked to respond to questions where 1 indicates disagree, 2 indicates neutral, and 3 indicates agree.

Statistical analysis: Descriptive and analytical statistics were done. McNemar and Kruskal-Wallis tests were performed to test for differences between pre- and post responses.

Results: A statistically significant association was noted (p value <0.005) about immunizations and the diseases they prevent with an increase in the score. Students' perception of vaccine safety also improved after the intervention ($P <0.01$).

Conclusions: There was an increased confidence in students in having an opinion about vaccine preventable diseases and immunization following the intervention.

Keywords: Immunization; Adolescent; Vaccine; Infection; mortality

1. Introduction

Among the ten greatest contributions to public health in the 20th century is immunization. Vaccination has the potential to decrease the risk of illness and disability. Adolescence is a time where new social roles and responsibilities are acquired. It is therefore essential to educate adolescents about the risks of vaccine-preventable diseases and immunization safety because immunization prevents morbidity and mortality for them and their families throughout their lives^{1,3}.

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As there is no known curriculum for adolescent education on vaccine-preventable disease and the benefits of vaccines, this study was thus, undertaken to assess the level of knowledge about routine immunization among rural high school children in Sathnur village through an interactive education method that evaluated the respondents' knowledge about vaccination by comparing questionnaire responses before and after the session and, hopefully, to suggest educational interventions and promote more awareness regarding immunizations.

2. Methodology

A questionnaire-based study was conducted among rural high school children in Sathnur village, Kanakpura taluk, to assess students' perceptions about immunization and vaccine-preventable diseases before and after delivering an interactive education session. A convenient sample of government high school children who were studying in Sathnur village, Kanakpura taluk, was included in the study. Based on the prevalence obtained from the previous study, which was 77.9 %, after substituting the values in the formula, the sample size obtained was 66.13. Hence, a sample size of 100 was selected. Students present in the school on the day of collection of data were considered for the study, which comprised the sample size.

Individuals studying in school and who obtained consent to participate in the study and who were present on the scheduled day of the study were included in the study. Parents, teachers, and the pupils in the selected schools were well informed about the study, and the consent of the parents was also obtained. A closed ended, self-administered, pre-validated questionnaire was administered to the study participants on the same day before and after delivering the education session¹. convenience sampling technique was applied in this cross-sectional study. The institutional review board granted ethical approval.

2.1. Data collection

Approval for the interactive educational session was obtained from the principal of the participating high school after a discussion of the goal and content. The school teachers and parents were given an explanation about the study. written informed consent to attend the interactive education session and to answer the questionnaire was obtained from the parents or guardians a week before the actual day of the education session. The subject's participation was entirely voluntary, and participant details were kept confidential.

The data was collected using a pre validated questionnaire to assess the knowledge and perception of risk responses from the participants¹. Demographic detail was also included in the questionnaire.

The questionnaire was administered on the same day before and after delivering the educational session. Each response item was evaluated using a three-point Likert scale. Students were asked to respond to questions where 1 indicates disagree, 2 indicates neutral, and 3 indicates agree. There was a PowerPoint presentation and a video presentation during the educational session.

The risks of vaccine-preventable diseases, the benefits of vaccination, and the concept of herd immunity were described in the PowerPoint presentation. A video presentation was used to show the impact of vaccine-preventable diseases, which can have on people's lives after infection, and the content of the presentation also included information related to vaccine hesitancy. The focus of the final session was on making educated decisions on immunization for current and future generations.

2.2. Statistical analysis

The data collected was compiled using Microsoft Excel and was subjected to statistical analysis using the Statistical Package for Social Science (SPSS, version 23.0). Descriptive and analytical statistics were done. A nonparametric test was conducted. McNemar and Kruskal-Wallis tests were applied to test for differences between pre and post responses. p-values of <0.05 were considered to indicate statistical significance.

3. Results

In the present study hundred students participated. Out of hundred participants, 51(51%) male and 49(49%) female participants were there. (Figure 1). The mean age was 14.13 (\pm .950) years. The response of the pre intervention survey depicted in figure 2 revealed that the majority of the students (86, 86%) thought that their immunizations were up-to date, 7 (7%) said they were not up to date while 7 (7%) were unsure about their immunization history.

The most common sources of information about immunization identified by respondents were school (75, 75%), healthcare provider (11, 11%) and family (14, 14%) as depicted in figure 3. Most of the responding students in the pre intervention (81, 81%) indicated that they participate in decisions regarding their health care, alongside their parents. When asked if they believed vaccines were safe, the score improved from 93 % to 100% after the intervention ($P < 0.01$) (Table 1).

There was also an increase in agreement that the safety of vaccines has improved over time, with an increased score. Following the intervention, students felt they were more informed about immunizations and the diseases they prevent with an increase in the score (Table 1). Similar improvement was noticed when students were asked if they understood how to obtain credible information on immunizations and vaccine preventable diseases, ($P < 0.00$). There was an increase in the percentage score after intervention which reflected an improvement in the student's perception that immunizations are important to their health and it appears to have influenced the students' motivation to encourage their friends and family to be immunized (Table 1).

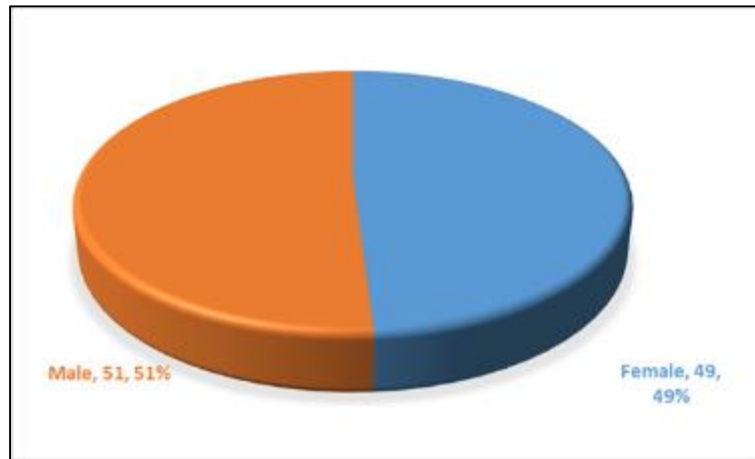


Figure 1 Gender wise distribution of the study population

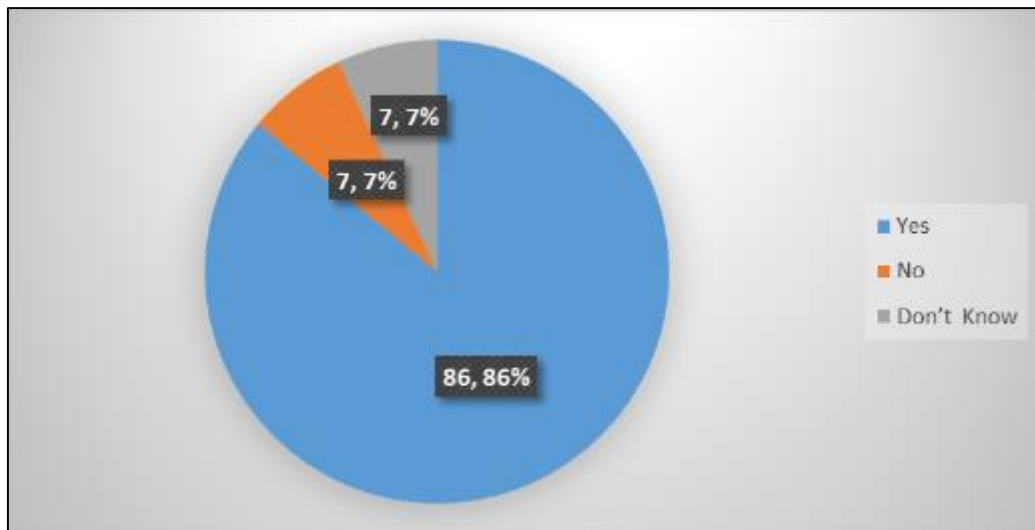


Figure 2 Response to the question: My immunizations are up-to-date

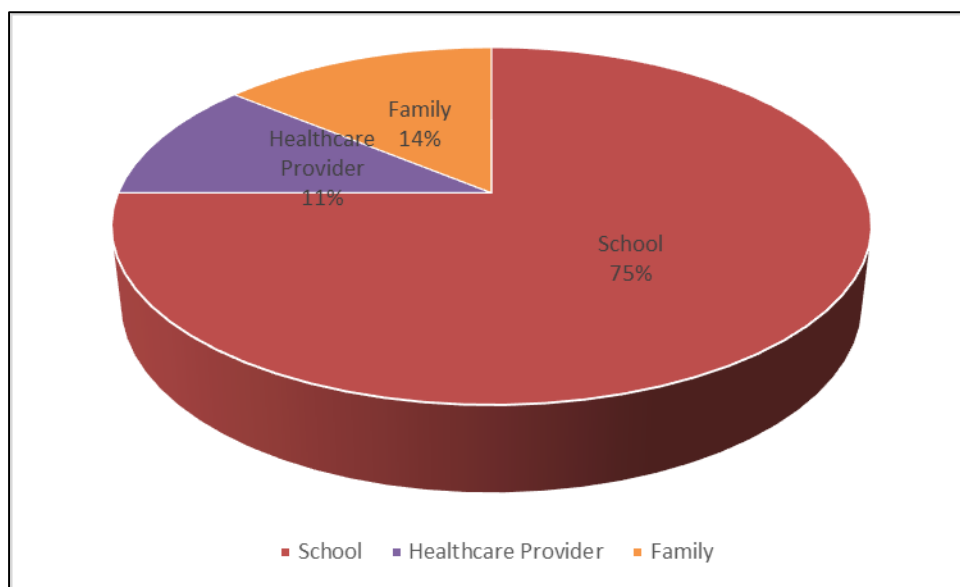


Figure 3 Response to the question: Source of information regarding immunizations and/or vaccine preventable diseases

Table 1 Information about the differences between the pre and post intervention scores

| Question | Pre-Intervention Response | | Post Intervention Response | | Wilcoxon Signed Ranks Test p-value |
|--|---------------------------|--------------------|----------------------------|--------------------|------------------------------------|
| | Mean±SD | Percentage (Agree) | Mean±SD | Percentage (Agree) | |
| 1.I participate in decisions affecting my healthcare with my parent(s) | 2.78± 0.48 | 81% | 2.98±0.14 | 98% | 0.00 |
| 2.I believe vaccines are safer now than when I was a baby. | 2.92± 0.30 | 93% | 3.00±0.00 | 91% | 0.01 |
| 3.I believe vaccines are safe. | 2.86± 0.49 | 92% | 2.82± 0.57 | 100% | 0.46 |
| 4.a. Tetanus will affect my generation | 2.06± 0.82 | 37% | 2.56± 0.82 | 77% | 0.00 |
| 4.b.Pertussis will affect my generation | 2.24±0.92 | 39% | 2.41± 0.81 | 62% | 0.10 |
| 4.c. Measles will affect my generation | 2.42± 0.92 | 66% | 2.46± 0.80 | 66% | 0.52 |
| 4.d. Mumps will affect my generation | 2.31±0.98 | 41% | 2.39± 0.85 | 63% | 0.37 |
| 4.e. Chicken Pox will affect my generation | 2.01± 0.96 | 29% | 2.47±0.83 | 69% | 0.00 |
| 5.I am informed about immunizations and the diseases they prevent. | 2.07± 0.62 | 23% | 2.85±0.43 | 88% | 0.00 |
| 6.I know how to obtain credible information on immunizations and vaccine preventable diseases. | 2.07± 0.80 | 33% | 2.68±0.61 | 76% | 0.00 |
| 7. I believe immunizations are important to my health. | 2.93± 0.29 | 94% | 2.97±0.17 | 97% | 0.24 |
| 8.I encourage my friends and/or family to get immunized. | 3.01± 0.10 | 99% | 3.00±0.00 | 100% | 0.31 |

4. Discussion

Improving the health by increasing awareness about routine immunizations is important. Healthcare providers have limited opportunities to convey information about immunization to adolescents¹. There is an enormous decline in the incidence of many infectious diseases and a reduction in childhood morbidity and mortality^{9,12}. Hence, the vaccination benefits cannot be ignored. The current study focused on assessing the level of knowledge about routine immunization among rural high school children in Sathnur village through an education session. Very few studies suggested the reasons for suboptimal coverage and identified potential disparities in uptake of routine immunization services among rural households¹⁹.

In the present study, an attempt was made to investigate the effectiveness of an education session among rural school children.

The pre and post intervention questionnaire was utilized, which is an instrument specifically designed to investigate the level of students' knowledge, attitudes, and beliefs about immunizations and vaccine preventable diseases on the same day before and after delivering the education session¹.

The present study findings were in line with studies conducted by Zipursky S et al² in 2010 as the most common sources of information about immunization identified by respondents were school (80%) which was almost similar to the present study, where it was around 75%. This suggested the importance of how collaboration between public health and schools can provide an opportunity to educate an age group that can be hard to reach and improve the overall routine immunization¹.

The present study reported that most of the responding students in the pre intervention (81, 81%) indicated that they participate in decisions regarding their health care, alongside their parents whereas the study conducted by Herman R et al (2019)⁶ reported that about one-third of adolescents reported making decisions about vaccines with their parents. This finding suggested that it's important to gain an insight into parent's information needs regarding immunization so that any further improvement if required can be addressed.

The study conducted by Esposito S et al (2018)¹⁰ use of the website and the lesson greatly increased the overall awareness of the benefits of vaccinations. In the present study, when asked if they believed vaccines were safe, the score improved from 93 % to 100% after the intervention ($P < 0.01$). Hence, it showed that various web-based educational programs for adolescents could raise their vaccination coverage¹⁰. As the use of information and communication technologies is advancing in all corners of society, the present study offers a vision to the educational administration to educate young students about vaccine preventable diseases and immunization.

The strength of the study is that it was conducted among rural school children to gather information about the level of knowledge about routine immunization, and it seems significant in the current context when pandemic effect was evident and the importance of Covid vaccinations is also highlighted. The current study's limited generalizability can be attributed to the use of convenience sampling and the small sample size.

Recommendations

Promoting activities in rural high school students to increase awareness can help to encourage and reiterate the importance of vaccination. A well-tailored health education approach, is an effective strategy because education and a critical thinking approach via different modes of communication can promote a positive attitude towards vaccination²⁰.

5. Conclusion

The present study shows that educational intervention increased the confidence in students in having an opinion about vaccine preventable diseases and immunization. It is the responsibility of all the stakeholders to create and spread optimistic views on vaccination for the benefit of the country and the world from vaccine preventable diseases.

Compliance with ethical standards

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Statement of informed consent

All participants in the present study gave their informed consent.

References

- [1] Blanchard JL, Johnson C, McIntyre M, Crowcroft NS, McLellan A. A pre and post intervention study measuring the effect of interactive education on adolescent perceptions of vaccines, vaccine safety and disease risk. *J Public Health (Oxf)*. 2020;42(3): e272-e277
- [2] Zipursky S, Wiysonge CS, Hussey G. Knowledge and attitudes towards vaccines and immunization among adolescents in South Africa. *Hum Vaccin*. 2010;6(6):455-61.
- [3] Joanne M. Langley. Adolescent immunization – Protecting youth and preparing them for a healthy future. *International Journal of Pediatrics and Adolescent Medicine*.2015; 2:1-6.
- [4] Jiang N, Gu P, Liu K, Song N, Jiang X. Acceptance of COVID-19 vaccines among college students: a study of the attitudes, knowledge, and willingness of students to vaccinate. *Hum Vaccin Immunother*. 2021;17(12):4914-4924.
- [5] Hilton S, Patterson C, Smith E, Bedford H, Hunt K. Teenagers' understandings of and attitudes towards vaccines and vaccine-preventable diseases: a qualitative study. *Vaccine*. 2013;31(22):2543-50.
- [6] Herman R, McNutt LA, Mehta M, Salmon DA, Bednarczyk RA, Shaw J. Vaccination perspectives among adolescents and their desired role in the decision-making process. *Hum Vaccin Immunother*. 2019;15(7-8):1752-1759.
- [7] Nandi A, Shet A. Why vaccines matter: understanding the broader health, economic, and child development benefits of routine vaccination. *Hum Vaccin Immunother*. 2020;16(8):1900-1904.
- [8] Gowda C, Schaffer S, Dombkowski K, Dempsey A. Understanding attitudes towards adolescent vaccination and decision-making dynamic among adolescents, parents and providers. *BMC Public Health* 2012;509(12):1–10
- [9] Esposito S, Principi N, Cornaglia G; ESCMID Vaccine Study Group (EVASG). Barriers to the vaccination of children and adolescents and possible solutions. *ClinMicrobiol Infect*. 2014;20 Suppl 5:25-31.
- [10] Esposito S, Bianchini S, Tagliabue C, Umbrello G, Madini B, Di Pietro G et al. Impact of a website based educational program for increasing vaccination coverage among adolescents. *Hum Vaccin Immunother*. 2018;14(4):961-968.
- [11] Humiston, Sharon G. Rosenthal, Susan L. Challenges to Vaccinating Adolescents: Vaccine Implementation Issues. *The Pediatric Infectious Disease Journal*.2005;24(6):S134-S140.
- [12] Miller NK, Verhoef M, Cardwell K. Rural parents' perspectives about information on child immunization. *Rural Remote Health*. 2008;8(2):863.
- [13] Lehmann C, Benson PA. Vaccine adherence in adolescents. *ClinPediatr (Phila)*. 2009;48(8):801-11.
- [14] Benin AL, Wu AC, Holmboe ES, Shapiro ED, Anyan W. How can we communicate about vaccines with adolescents and their parents? *ClinPediatr (Phila)*. 2010;49(4):373-80.
- [15] National Vaccine Advisory Committee. The promise and challenge of adolescent immunization. *Am J Prev Med*. 2008;35(2):152-7.
- [16] Nath B, Singh JV, Awasthi S, Bhushan V, Kumar V, Singh SK. KAP Study on Immunization of Children in a City of North India – A 30 Cluster Survey. *Online JHealth Allied Scs*. 2008; 7(1):2.
- [17] Sharma R, Bhasin SK. Routine immunization - do people know about it? A study among caretakers of children attending pulse polio immunization in East delhi. *Indian J Community Med*. 2008;33(1):31-4.
- [18] Angadi MM, Jose AP, Udgiri R, Masali KA, Sorganvi V. A study of knowledge, attitude and practices on immunization of children in urban slums of bijapur city, karnataka, India. *J ClinDiagn Res*. 2013;7(12):2803-6.

- [19] Francis MR, Nuorti JP, Kompithra RZ, Larson H, Balraj V, Kang G et al. Vaccination coverage and factors associated with routine childhood vaccination uptake in rural Vellore, southern India, 2017. *Vaccine*. 2019;37(23):3078-3087.
- [20] Priya P K, Pathak VK, Giri AK. Vaccination coverage and vaccine hesitancy among vulnerable population of India. *Hum VaccinImmunother*. 2020;16(7):1502-1507.