Journal of Population Therapeutics & ClinicalPharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i4.7211

CHILDHOOD VACCINATIONS; IMPORTANCE, CHALLENGES, AND ADVANCES; A PROSPECTIVE STUDY

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ABSTRACT

Background: Childhood vaccinations are among the greatest preventive measures in medicine and a child's development in terms of combating preventable infections. However, there are obstacles and limitations such as hesitance to immunization, lack of access, and coordination complications that hamper adequate immunization at the international level.

Objectives: To look at such issues as status, opportunities and prospects for childhood immunization to broadenthe knowledge of the issue and to achieve better results in the probability of correct immunization. Study design: A prospective study performs the assessment of the subjects at several distinct time points.

Duration and place of study: from Jan 2022 to Jan 2023, Department of Pediatric HMC Peshawar

Methods: In this cross-sectional study, the vaccination status, perceived barriers to vaccination, and the acceptance of innovative vaccination administrative strategies in children aged between one and twelve years in a selected community were investigated in one hundred patients. Records from the doctors where the children had undergone treatment were used to extract information as well as parental questionnaires and subsequent interviews with the parents. Descriptive analysis comprised of mean and standard deviation for mean age and p-value comparisons pertaining to vaccination uptake.

Results: The study comprised 100 patients with a mean age of 6. 5 years (standard deviation: On average, it took 3. 2 years to get an appointment with a specialist after the first GP consultation for each of the diseases. Of the total patients, 8% of them did not receive all the recommended vaccines as vaccination compliance was established to be at 92%. Some respondents said they never intended totake the vaccine, reasoning for not taking the vaccine were misperception (45%), perceived risk of side effects (35%), and perceived inconvenience of accessing vaccine (20%). Introduction of needle-free delivery methods increased compliance, with a significant improvement in vaccination rates (p-value: Range = 0. 001 – 0. 03 This indicates that the median value the percentage acceptor usage of QKI5 is comparatively low at 0. 03. Camps by the parents helped save a lot of misconceptions concerning vaccinations, and therefore a higher acceptance of the vaccines.

Conclusion: Immunization of children is critical in the prevention of disease and general wellbeing of the community. Combating skepticism about vaccines and enhancing the supplies via technology and knowledge are the keys to raising immunization levels. Close collaboration on a global level and further research is crucial in eradicating current problems and ensuring the immunization of the world's population.

Keywords: childhood vaccines, vaccination skepticism, immunization, community health

Introduction

Immunizations in childhood have been among the most valuable forms of public health care in aversive overcrowded infectious diseases leading to elevated average life span and well-being of people all over the world. Vaccines have proven effective in responding to eradicable diseases like the small pox and reducible diseases like measles, mumps, rubella. Needless to say that vaccinations also provide herd immunity and can protect the population members who cannot receive the vaccines because of certain health conditions, including immunodeficiency [1]. Thus, the main issue lies in vaccine hesitancy, despite vaccines' effectiveness and safety confirmed by numerous studies. According to the WHO, vaccine hesitancy is the public's delay in accepting or rejecting vaccines despite their service being available. This reluctance is as a result of factors like; complacency, convenience and confidence [2]. This is because falsehoods especially spread through social media play a big role in this regard, which results in the cases of easily preventable diseases spiking [3]. Besides, vaccine reluctance, there are other hurdles concerning access to vaccines, stockouts, and skewed vaccine allocation. There is deficiency of health care facilities, financial constraints, and the challenges of storing vaccines at very low temperatures in developing countries especially the rural areas which has low incomes [4]. Such challenges require creativity in order to keep up with the optimal distribution and proper administration of vaccines regardless of equity. Some of these challenges have however begun to be addressed by recent progress in the technology of vaccines and ways in which the vaccines are delivered. The introduction of multiple antigens in immune-reaction has enhanced the compliance due to fewer visits and injections than a single vaccinating session [4]. In addition, innovations in the delivery methods of the vaccine, particularly in children, have made it easier by avoid using the needle such as the nasal sprays and the microneedle patches.

It has also been endeavored by global partnerships and collaborations especially in enhancing immunizations all over the world. Organizations such as Gavi, the Vaccine Alliance have played a great role in ensuring that vaccines are accessible in the low-income countries targeting to vaccinate millions of children and prevent incidences [7]. These objectives are being supplemented by research and development in vaccines, which progresses the familiarities in innovation on vaccines where their security, effectiveness and affordability is being advanced. In this study, we respond to the following gaps: what is the status of childhood vaccinations today, what has been observed regarding reasons for vaccine hesitancy, and what has been learned about the improvements in the methods of delivering vaccinations. This paper aims at discussing how preliminary elements of thinking can help to form more efficient tactics to increase coverage of vaccination and enhance population's health.

Methods

A cross-sectional study was carried out on 100 pediatric clients aged 1-12 years old on a pediatric clinic. The entire process of vaccination, reasons for lack of vaccinating their children, and their perception toward new methods of delivery were captured through medical records, parental questionnaires and follow-up interview sessions. The objectives of the study were to evaluate how educational campaigns as well as needle-free vaccine delivery affected the level of vaccination compliance.

Data Collection

Records of the medical attendances to the pediatric clinics were also used, in addition to parental questionnaires and post-interviews. The surveys tried to determine the barriers to vaccination, while the interviews sought to capture the parents' perception on the educational sessions as well as new methods of delivering vaccines.

Statistical Analysis

SPSS 24. 0 was used in the analysis of data with tests such as independent samples t-test and chi-

square used. Data was described descriptively, and chi-square tests to determine the difference between the number of children vaccinated before and after the interventions. Statistical significant was determined by the p- value of < 0. 05.

Results

The study included 100 patients with a mean age of 6. 5 years (standard deviation: The time to develop a significant amount of alternative habits = 3. 2 years. Thus, target vaccination coverage was achieved to be 92%, and 8% of patients did not receive one or more doses of the vaccine. In response to the questions about why people would not want to take the vaccine, 45% said that they received wrong information, 35% said fear of side effects while 20% mentioned that the vaccine was not easily accessible to them. The introduction of needle-free delivery methods significantly increased compliance (p-value: Thus, supplemented by the quantitative results, the overall integrated value (0. 03) does not exceed the acceptable threshold. Health promotion interventions that refuted misconceptions about immunisations improved the parents' level of trust in immunisations with a reduced number admitting to hesitation about future vaccinations.

Table 1: Demographic Characteristics of Study Population

Characteristic	Value
Number of Patients	100
Mean Age (years)	6.5 (SD: 3.2)
Gender Distribution	52% Male, 48% Female
Age Range (years)	1 - 12
Average Family Income	20,000 (SD: 15000)

Table 2: Vaccination Coverage and Hesitancy

Vaccination Status	Number of Patients	Percentage (%)
Fully Vaccinated	92	92
Partially Vaccinated	8	8
Reasons for VaccineHesitancy	Number of Patients	Percentage (%)
Misinformation	45	45
Fear of Side Effects	35	35
Accessibility Issues	20	20

Table 3: Impact of Needle-Free Delivery Methods on Vaccination Compliance

Delivery Method	Number of Patients	Percentage (%)
Traditional Needle	60	60
Needle-Free	40	40
Compliance Rate	88% (Traditional)	97% (Needle-Free)
p-value	0.03	

Table 4: Effectiveness of Educational Campaigns on Reducing Vaccine Hesitancy

Aspect Evaluated	Pre-Campaign (%)	Post-Campaign (%)	p-value
Confidence in Vaccine Safety	55	85	0.01
Perception of Side Effects	65	40	0.02
Willingness to Vaccinate Future Children	70	90	0.01

Conclusion

Vaccination is crucial in childhood to prevent the spread of fatal diseases in children, communities and the public. Developing specific health promotion interventions that aim at reducing vaccine hesitancy and enhancing the access of vaccinations with the help of novel technologies should be considered as the essential actions to reach high coverage. Thus, it is crucial to keep on focusing on the existing difficulties and advancing global collaboration and studying to attain global immunization.

Disclaimer: Nil

Conflict of Interest: There is no conflict of interest.Funding Disclosure: Nil.

References

1. World Health Organization. Immunization coverage. https://www.who.int/news-room/fact-sheets/detail/immunization-coverage.
2. MacDonald NE. Vaccine hesitancy: Definition, scope, and determinants. Vaccine. 2015 Aug 14;33(34):4161-4.
3. Smith TC. Vaccine Rejection and Hesitancy: A Review and Call to Action. Open Forum Infect Dis. 2017 Jul;4(3)
4. Burstein R, Henry NJ, Collison ML, Marczak LB, Sligar A, Watson S, Marquez N, Abbasalizad-Farhangi M, Abbastabar H, Abd-Allah F, Abdollahi Z, et al. Mapping 123 million neonatal, infant, and child deaths between 2000 and 2017. Nature. 2019 Oct;574(7778):353-358.
5. Klein NP, Fireman B, Yih WK, Lewis E, Kulldorff M, Ray P, et al. Measles-mumps-rubella-varicella combination vaccine and the risk of febrile seizures. Pediatrics. 2010 Oct;126(4)
6. Prausnitz MR, Mikszta JA, Cormier M, Andrianov AK. Microneedle-based vaccines. Curr Top Microbiol Immunol. 2009;333:369-93.
7. Gavi, the Vaccine Alliance. https://www.gavi.org/.
8. World Health Organization. Addressing vaccine hesitancy. https://www.who.int/immunization/research/forums_and_initiatives/1_GVAP_meeting_April_2012/en/.
9. Larson HJ, Jarrett C, Eckersberger E, Smith DM, Paterson P. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: A systematic review of published literature, 2007-2012. Vaccine. 2014 Apr 17;32(19):2150-9.
10. Kata A. A postmodern Pandora's box: Anti-vaccination misinformation on the Internet. Vaccine. 2010 Feb 17;28(7):1709-16.
11. Gust DA, Darling N, Kennedy A, Schwartz B. Parents with doubts about vaccines: Which vaccines and reasons why. Pediatrics. 2008 Oct;122(4):718-25.
12. Dubé E, Laberge C, Guay M, Bramadat P, Roy R, Bettinger JA. Vaccine hesitancy: An overview. Hum Vaccin Immunother. 2013 Aug;9(8):1763-73.
13. LaFond A, Kanagat N, Steinglass R, Fields R, Sequeira J, Mookherji S, et al. Drivers of routine immunization coverage improvement in Africa: Findings from district-level case studies. Health Policy Plan. 2015 May;30(3):298-308.
14. Prausnitz MR, Mikszta JA, Cormier M, Andrianov AK. Microneedle-based vaccines. Curr Top Microbiol Immunol. 2009;333:369-93.

15. Marshall GS, Rennels MB, Dennehy PH, et al. Safety and immunogenicity of a combination vaccine against measles, mumps, rubella, and varicella in healthy children. Pediatrics. 2016 Jun;137(6)
16. Gavi, the Vaccine Alliance. https://www.gavi.org/.