ORIGINAL ARTICLE

# DETERMINATION OF IMMUNIZATION STATUS AND ITS INVOLVED CHALLENGES AMONG HOSPITALIZED CHILDREN

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## ABSTRACT

**OBJECTIVE:** To determine the immunization status and its involved challenges among hospitalized children.

**Material and Methods:** This cross-sectional study was conducted in the pediatrics department of Hayatabad Medical Complex Peshawar from February 2017 to September 2017. All children less than 5 years admitted via the outpatient department were included in the study. Their guardians were explained the purpose of the study and informed consent was obtained. A complete medical record of each individual including name, age, gender, detailed history, and examination was recorded in a predesigned Proforma. It also included details of immunization (fully immunized, partially immunized, or not immunized at all), Parental education (less than Primary and above Primary), socioeconomic status (poor, middle, and upper middle), and residential status (urban/rural).

**Results:** A total of 497 children were included in the study, out of which 422 were males (85%). A total of 419 (84.30%) were completely immunized, 65 (13.07%) were partially immunized and only 13 (02.61%) were not immunized. Among 84.30% of children who were completely immunized, their parents had an education status above primary schools. Thirty-six percent of fully immunized children belonged to poor socioeconomic status. Two third of the participants belonged to an urban community.

**Conclusions:** Ninety-seven percent of study participants were found to be completely/partially immunized. Most of the parents of immunized children had education status beyond primary school and were of upper and middle socioeconomic background. Most of them belonged to urban areas of the province.

**Keywords:** complete Immunization, partial immunization, Vaccination.

**This article may be cited as:** Karim R, Afridi JK, Ali A, Jan R, Zaman MB, Amjad A. Determination of Immunization Status and its Involved Challenges among Hospitalized children. J Med Sci 2022 July;30(3):181-184

## INTRODUCTION

Vaccines have brought a revolution in the twentieth century by decreasing the morbidity and mortality due to infectious diseases and have improved life expectancy [1,2]. The EPI program was launched in Pakistan in 1978 to avoid vaccine-preventable deaths and illnesses (tuberculosis, diphtheria, pertussis, tetanus, polio, and measles). [3] Later on, it was extended and further vaccines were also added to the schedule against (Hepatitis B, H. Influenza, Pneumococcus, and Rotavirus). The targets were to eradicate polio by 2000, measles, and tetanus by 2015. [4-6] Unfortunately national immunization program coverage has increased but is consistently low. [7]

Our country ranks third in the world with unimmunized children and second in South Asia. Vaccine-preventable diseases account for 2-3 million deaths globally each year. [8] Fifteen percent of Pakistan's population is under 5 years and contributes to 50% of mortality. The death rate in children under 5 years is 8% worldwide. [9] Pakistan and Afghanistan have been unable to eradicate polio. [10] Therefore, efforts should be made to analyze the hurdles faced by Pakistan for the failure of adequate immunization.

Low immunization status in Pakistan has been linked to parental poverty, the father's profession, large family size, mothers' ignorance about health facilities, and the absence of antenatal care. [11, 12] Tetanus is the second leading cause of death in Pakistani infants (21.6%). [13] People have vaccine hesitancy due to misconceptions that it

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**Date Received:** 23-12-2021
**Date Revised:** 21-09-2022
**Date Accepted:** 25-09-2022

may harm or sterilize their child. [14] Pakistan's 70% population belongs to rural areas and the vaccination profile is lower than urban. [11, 15]

Lower immunization status among the rural population may be due to difficulty in access to health care and utilization of services. If the vaccination center is within the range of 7 km, children are more likely to be vaccinated but if the distance increases, the chances of vaccination decline.[16]

The current study is conducted to determine the immunization status and its involved challenges among hospitalized children belonging to urban/rural areas around Peshawar. The results will help healthcare providers and policymakers address the issues identified.

## MATERIALS AND METHODS

This cross-sectional study was conducted in the pediatrics department of Hayatabad medical complex Peshawar, Pakistan which is a 1200 beds tertiary care hospital in Peshawar, from February 2017 to September 2017. All children, of either gender, between 1 to 5 years admitted via outpatient department were included in the study. Their Parents/guardians were explained the purpose of the study and informed consent was obtained.

A complete medical record of each individual including name, age, gender, detailed history, and examination was recorded in predesigned Proforma. It also included details of immunization (fully immunized, partially immunized, or not immunized at all), Parental education (less than Primary and above Primary), socioeconomic status (poor, middle, and upper middle), and residential status (urban/rural).

A sample size of 497 was determined using the WHO sample size estimation software. The sampling was done through a non-probability consecutive sampling technique.

After the approval of the hospital ethical and research committee, data collection was started in the pediatrics unit. The collected data were analyzed in SPSS version 20 for windows. Percentages and chi-square test were calculated for categorical variables Immunization status was stratified among gender, parental education, and socioeconomic status to see the impact of modifications. All results are presented in the form of tables.

## RESULTS

A total of 497 children were included in the study, out of which 42.4% of children were 1 to 2 years of age while 422 were males (85%) and the rest were females (table 1 and 2). A total of 419 (84.30%) were completely immunized, 65 (13.07%) were partially immunized and only 13 (02.61%) were not immunized. Among 84.30% of children who were completely immunized, 73.8% of parents had education status above primary schools (table 3). Thirty-six percent of fully immunized children belong to poor socioeconomic status (table 4). Two-thirds of the participants belonged to the urban community.

The age-wise distribution of groups showed that the 1 to 2 Years age group participants were 211 (representing 42.45% of the sample), while 3 to 5 age group participants were 286 (representing 57.54% of the sample). As per frequencies and percentages for immunization status, 419 (84.30%) patients were completely immunized, 65 (13.07%) patients were partially immunized and only 13 (02.61%) patients were not immunized at all. However, with respect to age, the future immunization status of the country is presenting a much more promising prospect, as projected in the figures of this study (table-1).

The education level was categorized in two levels; the one who has done at least primary education is being categorized as educated, while the other below primary is defined as uneducated in our study. Immunization status was high in children whose parents were educated (table no. 3).

**Table 1: Stratification of immunization status with age.**

| Age | Immunization Status | Frequencies | Percentages |
|---|---|---|---|
| 1 to 2 Years | Completely Immunized | 179 | 36.01% |
| | Partially Immunized | 28 | 5.63% |
| | Not Immunized at all | 04 | 0.80% |
| 3 to 5 Years | Completely Immunized | 240 | 48.28% |
| | Partially Immunized | 37 | 7.44% |
| | Not Immunized at all | 09 | 1.8% |

**Table 2: Gender based stratification of immunization status.**

| Gender | Completely Immunized | Partially Immunized | No Immunization | Total |
|---|---|---|---|---|
| Male | 360 (72.43%) | 51 (10.26%) | 11 (2.21%) | 422 (84.9%) |
| Female | 59 (11.87%) | 14 (2.81%) | 2 (0.40%) | 75 (15.09%) |
| Total | 419 (84.3%) | 65 (13.07%) | 13 (2.6%) | 497 |

**Table 3: Parental education and immunization status of children.**

| Status Education | Completely Immunized | Partially Immunized | No Immunization | Total |
|---|---|---|---|---|
| Above primary | 367 (73.8%) | 10 (2.01%) | 2 (0.40%) | 379 (76.25%) |
| uneducated | 52 (10.466%) | 55 (11.06%) | 11 (2.21%) | 118 (23.74%) |
| Total | 419 (84.3%) | 65 (13.07%) | 13 (2.61%) | 497 |

**Table 4: Socioeconomic status and immunization status.**

| Socioeconomic status | Completely Immunized | Partially Immunized | No Immunization | Total |
|---|---|---|---|---|
| Poor | 179 (36.01%) | 48 (9.65%) | 8 (1.60%) | 235 (47.28%) |
| Middle | 188 (37.82%) | 12 (2.41%) | 3 (0.60%) | 203 (40.8%) |
| Upper middle | 52 (10.46%) | 5 (1.006%) | 2 (0.40%) | 59 (11.87%) |
| Total | 419 (84.3%) | 65 (13.07%) | 13 (0.02%) | 497 |

## DISCUSSION

Immunization status reflects the success/failure of the immunization program in any country. Research has shown a lot of discrepancies in vaccine coverage in different areas of Pakistan. Trends vary in different provinces, in Punjab overall immunization coverage was 49% at the start, 66% in 2003, and 84% in 2005 but declined to 53%. Sindh followed the same trend. Sixty Percent of Balochistan's population had their vaccination in 1995 but later on, dropped to 35% by 2007 [7]. Complete immunization of 71.7% was reported from nine union councils of sub-district Gambat, Khairpur, and Sindh Immunization rate of 44.8% was recorded in a study conducted in a peri-urban area of Karachi. Studies conducted in the Faisalabad and Nurpur Shahan areas of Punjab revealed immunization coverage of 63% and 77.4%. [17] Overall efforts for immunization implementation have increased the coverage rate from 5 to84% [9]. A vaccination coverage rate of 59 to73% for all routine vaccines has been observed among 1 to 2 years old children, comparable to the current study. [18]

Gender discrimination is common in Asian countries, it is obvious in our study while another research (demographic and health survey 2006 -07) did not reveal a significant difference among partially vaccinated children male: female (64%:68%) and completely vaccinated 36%:31.4%.[19]

A lower parental educational level results in a lower level of understanding of the vaccination benefits and can be a target for myths (vaccination can sterilize /harm the child). A study conducted in Khyber Pakhtunkhwa Bannu District revealed a parental vaccination refusal rate of 27.9%, 79.3% of mothers and 65.9% of fathers were unable to read or write while in our study parental education rate above primary was 76.25% and may be the reason for the majority of children being completely vaccinated. In the same study, higher social class was linked to a higher vaccination refusal rate in contrast to our study where the majority of children from middle and high-income groups were vaccinated[12].

Seventy percent of Pakistan's population is from some rural areas and has lower vaccination coverage. The reason is poverty, ignorance, lack of knowledge about vaccines, misconceptions as well as failure to reach health services, as the distance increases beyond 7 km becomes difficult to avail .[16]

The current study, although, has localized population statistics can still be a guide for healthcare providers and policymakers to streamline the process of childhood immunization strategies.

## CONCLUSION

Ninety-seven percent of study participants were found to be completely/partially immunized. Most of the parents of immunized children had education status beyond primary school and were of middle and upper socioeconomic background but belonged to urban areas of the province

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**CONFLICT OF INTEREST:** Authors declare no conflict of interest

**GRANT SUPPORT AND FINANCIAL DISCLOSURE:** NIL

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

**Karim R:** Concept, proposal, review

**Afridi JK:** Data collection, writing, review

**Ali A:** Writing, review

**Jan R:** Review

**Zaman MB:** Writing, review

**Amjad A:** Writing, review

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.