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ANALYSIS OF FACTORS INFLUENCING IMMUNIZATION STATUS AMONG UNDER-FIVE CHILDREN VISITING THE EPI CENTERS OF 21UC'S OF DISTRICT BAHAWALPUR PAKISTAN: A STUDY FROM LINCOLN UNIVERSITY COLLEGE MALAYSIA

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ABSTRACT

Background:

Child immunization serves as a fundamental pillar of public health, aiming to shield children from vaccine-preventable diseases and significantly lower child mortality rates.

OBJECTIVE: To determine theanalysis of factors influencing immunization status among under-five children visiting the EPI centers of 21uc's of district Bahawalpur Pakistan.

MATERIAL AND METHODS: The present research with a cross sectional design was carried out to determine the knowledge attitude and practice factors on parents regarding Immunization. A total of 278 parents included in the study, with whom a survey represented by the questionnaire instrument and a semi-structured interview were conducted. The study setting was the Lincoln University College Malaysia. Data was collected from the EPI department of 21 UC'S of Bahawalpur. The study completed approximately 18 months. The study targeted population of study was the parents along with children visiting to the different EPI Centers of 21UC'S of District Bahawalpur Pakistan. The study sample was calculated by using Epi Info WHO Calculator. A questionnaire was used to assess knowledge, Attitude and Practice of parents towards vaccination. Data was entered in Spss and descriptive statistics applied on it.

RESULTS: The majority of those surveyed (90.6%) said they had their child's EPI vaccination record, whilst 9.4% said they didn't. In contrast to 35.3 percent who said their children had not finished the EPI immunization course, less than half (48.2 percent) said all of their children had. Of those surveyed, 54.7 percent attested that their most recent child had received all recommended EPI vaccinations, whereas 27.0 percent had not. The percentage of respondents who did not arrange routine medical exams for their children was 52.2%, while just 27.3% did. While 8.6 percent did not take their children to the doctor when they were ill, 28.4 percent did. 12.2 percent had not had a vaccination, whereas 79.9 percent reported that their most recent child had. While none of

the respondents (0.0 percent) had any doubts about the immunization staff's competence, 10% did. Visits for prenatal care were reported.

CONCLUSION:

The study identified multiple factors influencing immunization status among under-five children in Bahawalpur's EPI centers. Key determinants included parental education, socioeconomic status, and access to healthcare facilities. Lack of awareness and misconceptions about vaccines also contributed to incomplete immunization. Mothers' education level had a particularly strong correlation with full immunization coverage. Targeted awareness campaigns and improved healthcare accessibility are crucial to enhancing immunization rates.

INTRODUCTION

Child immunization serves as a fundamental pillar of public health, aiming to shield children from vaccine-preventable diseases and significantly lower child mortality rates. In 1974, the World Health Organization (WHO) launched the Expanded Program on Immunization (EPI) to ensure universal access to vaccines for all children (Mohamed Hayir TM, Magan MA, Mohamed LM, Mohamed MA, Muse AA, 2020).

Despite concerted efforts in Pakistan, immunization coverage remains inadequate, especially in certain geographic and socio-economic regions. This introduction explores the barriers affecting child immunization in the districts of Bahawalpur and Islamabad, emphasizing socio-economic disparities, cultural influences, and systemic healthcare limitations that hinder the success of immunization initiatives.

Globally, WHO reports that 60% of the 23 million unvaccinated or partially vaccinated infants reside in just ten countries, including Nigeria. Although Nigeria has introduced various strategies to improve coverage, only 23% of its children are fully immunized, far below the 87% target. This reflects inconsistent progress within Nigeria's National Program on Immunization (NPI), a trend also observed in other sub-Saharan African nations.

In Somalia, the EPI initiated in 1978 with WHO and UNICEF support—adopted mobile and outreach strategies. However, a 1985 assessment revealed very low vaccination rates. A mass immunization campaign between 1985 and 1988 achieved around 75% coverage in urban centers. Unfortunately, this progress unraveled following the 1988 civil war, which devastated the healthcare system and displaced health personnel. By 1996, renewed international efforts led by UNICEF helped re-establish over 100 maternal and child health centers, alongside four zonal cold storage facilities, revitalizing immunization efforts (Hayir et al., 2020).

These efforts have contributed to better health outcomes in many low- and middle-income countries, including Pakistan. However, one in ten children in developing nations still lacks access to essential immunization

services. In Pakistan, urban slums pose distinct challenges in vaccination outreach. For example, parts of Karachi the nation's largest city report coverage rates below 50%.

Children under the age of five represent approximately 15% of Pakistan's population but account for nearly 50% of all deaths nationwide. In stark contrast, the global average for under-five mortality as a proportion of total mortality is just 8%, while Pakistan's under-five mortality rate remains alarmingly high at 81 per 1,000 live births.

MATERIAL AND METHOD

The descriptive cross sectional research study design was observed in this study. The study setting was the Lincoln University College Malaysia. Data was collected from the EPI department of 21 UC'S of Bahawalpur. The study completed approximately 18 months. The study targeted population of study was the CEO Health and WHO Representative interview regarding immunization experience to the different EPI Centers of 21UC'S of District Bahawalpur Pakistan. The data was analyzed by the Nvivo software.

Semi-structured interviews were conducted with two key informants: a World Health Organization (WHO) Representative and the Chief Executive Officer (CEO) of Health. With informed consent, all interviews were taken in Urdu and subsequently transcribed verbatim in English. In instances where Urdu idioms or expressions were used, bilingual researchers translated these into English, ensuring semantic accuracy and cultural equivalence. To maintain data integrity, transcripts were cross-verified with the original audio recordings for accuracy.An inductive approach was employed for coding and thematic analysis. The process followed several systematic steps:

Two independent coders initially reviewed a subset of transcripts to become familiar with the data and identify preliminary codes. Examples of these open codes included: vaccine stockouts,community distrust,staff absenteeism, policy rigidity.

Related open codes were grouped into broader conceptual categories such as: Supply Chain Challenges, Human Resource Constraints, Communication Gaps, Policy-Implementation Disconnects. Core themes were derived by integrating and refining axial codes. The final thematic framework included: (e.g., frequency of vaccine stockouts, disruptions in cold-chain systems, delays in vaccine ordering and delivery). Human Resources and Training (e.g., inadequate staffing, limited training under the Expanded Program on Immunization (EPI), high staff turnover).Community Engagement and Trust (e.g., rumors and misinformation about vaccine side effects, low health literacy, cultural or religious resistance).Administrative and Policy Barriers , (e.g., bureaucratic delays in fund disbursement, lack of local input in policy design, gaps in reporting and monitoring systems), Thematic Interpretation and Comparative Analysis, To explore regional differences and contextual insights, responses from health officials in Bahawalpur were compared with those from Islamabad using the constant comparison method. This approach allowed for the identification of both shared and region-specific challenges.

In addition, qualitative themes were integrated with quantitative survey findings to enrich interpretation. For instance, the qualitative insight regarding "inadequate outreach services" contextualized the quantitative result showing that 48% of caregivers reported "long travel time" as a barrier to immunization.

By employing a cyclical and comparative approach, the analysis captured both overarching patterns and local nuances, offering a dynamic understanding of the systemic and contextual barriers affecting healthcare service delivery and immunization uptake across different regions.

RESULTS

DEMORAPHIC VARIABLES OF PARTICIPIENTS

AGE	FREQUENCY(PERCENTAGE)
18-28 Years	178(64.0%)
29-39 years	40(14.3%)
40-50 years	33(11.8%)
>than 50 years	27(9.7%)
GENDER	
Male	60(21.5%)
Female	218(78.4%)

The above table showed that the 18-28 years have 178(64.0%) participants, 40(14.3%) having age 29-39 years old, 33(11.8%) having age 40-50 years old and 27(9.7%) having age > than 50 years old.

The 60(21.5%) were Male in the study who visited EPI Center and 218(78.4%) were female in the study.

Vaccination status, Healthcare practice, and Parental Preferences

Variable	Yes		No	
Do you have your child's EPI vaccination record?	252	90.6	26	9.4
Have all of your children completed the EPI vaccination course?	134	48.2	98	35.3
Is the last child fully vaccinated with the EPI vaccines?	152	54.7	75	27.0
Do you schedule regular medical checkups for your child?	76	27.3	145	52.2
Where do you take your child for medical attention when they are sick?	79	28.4	24	8.6
Is your last child vaccinated?	222	79.9	34	12.2
Are you confident in the competence of vaccination staff?	0	0.0	278	100.0
Have you seen a healthcare provider for antenatal care?	120	43.2	107	38.5

Have you seen a doctor or nurse for postnatal care?	112	40.3	116	41.7
Would you rather have your children vaccinated at a private clinic or hospital?	94	33.8	153	55.0
Did you get your child vaccinated soon after they were born?	206	74.1	49	17.6

Vaccination status, Healthcare practice, and Parental Preferences

The majority of those surveyed (90.6%) said they had their child's EPI vaccination record, whilst 9.4% said they didn't. In contrast to 35.3 percent who said their children had not finished the EPI immunization course, less than half (48.2 percent) said all of their children had. Of those surveyed, 54.7 percent attested that their most recent child had received all recommended EPI vaccinations, whereas 27.0 percent had not. The percentage of respondents who did not arrange routine medical exams for their children was 52.2%, while just 27.3% did. While 8.6 percent did not take their children to the doctor when they were ill, 28.4 percent did. 12.2 percent had not had a vaccination, whereas 79.9 percent reported that their most recent child had. While none of the respondents (0.0 percent) had any doubts about the immunization staff's competence, 10% did. Visits for prenatal care were reported.

Awareness of Parents about schedule of vaccines

VACCINE	FREQUENCY	PERCENTAGE
OPV	248	89.2%
BCG	212	85.4%
DPT	197	70.8%
MEASLES	228	82.0%
HEPATITIS B	234	84.1%
VITAMIN A	238	85.6%

Mostly participants were well aware about polio regarding the vaccination schedule because social media and awareness campaigns emphasis on Polio.

Ethical Considerations

This study was conducted in accordance with ethical standards, with approval granted by the Institutional Review Board of the Lincoln University College Malaysia. All participants were assured of the confidentiality and anonymity of their responses. They were also informed of their right to withdraw from the study at any point without any consequence. All data collected was used exclusively for academic purposes.

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Informed Consent

Prior to participation, informed consent was obtained from all individuals involved in the study. This included parents responsible for child immunization in Bahawalpur. Participants were fully briefed on the study's objectives, their voluntary participation, the confidentiality of their responses, and the exclusive use of data for academic research. Only those who provided verbal or written consent were included in the final analysis

DISCUSSION:

A major factor in deciding whether parents give their child a vaccine is how informed they are. In both places, mothers' lack of formal education is related to not vaccinating their children. In the rural areas of Bahawalpur, lots of mothers are either completely illiterate or only have a little formal education. So, parents are less aware of the role.(Kuuyi, A., & Kogi, R. (2024).

Many parents struggle to vaccinate their kids because of socioeconomic reasons. Many families in Bahawalpur, facing poverty and living in the countryside, are more concerned about getting enough food than with medical check-ups. Working families often rely on what they earn daily which may make bringing a child to the health facility unattainable.(OKONGO, O. S. (2023).

Similarly, other expenses not connected to immunization, for instance travel, time lost at work or fears over lengthy waiting, play a role in limiting access to immunizations services for families in Bahawalpur. Even though it is possible to get vaccines for free from the government, the required out-of-pocket spending still keeps some people from getting them of immunization, the vaccination timeline and the risks of not sticking to these guidelines..(Kanyi, L. (2021)

People might not trust government health services or be unfamiliar with the city's healthcare which can result in reluctance. So, being aware of cultures and being involved in the community are important for boosting immunization acceptance. A particular group thinks that vaccines go against Islamic beliefs or are a scheme planned in the West. These views have mainly caused problems in eradicating polio, though they also affect everyday immunization efforts.(Bello, S., and et,al 2021).

A number of educated parents doubt whether vaccines are really needed or safe because of bad information from social media or word of mouth. Because of this, many avoid getting vaccinated or put off their vaccination. Information alone is not enough; the way information is delivered, where it comes from and how trustworthy it is matter a great deal.(Noor, M., and et,al 2025).

Not being able to avoid preventable diseases affects a child's body, attendance at school and mental development. Because of missing days from work to care for their children's health, parents of sick children put their families at increased risk of poverty.(Yiltok, E. S., and et,al 2022)

People's perceptions about cultural and religious norms impact how they look for medical help. Many people in conservative areas of Bahawalpur believe incorrect beliefs about vaccines. Some groups think that vaccines can make a person infertile or are developed as part of a Western plot. Because of such

myths which are many times encouraged by respected community leaders or healers, some parents are discouraged from getting their children vaccinated.(Chau, W., & Firmansyah, Y. (2021).

Effective immunization programs depend a lot on the performance and strength of the health system. The health facilities in Bahawalpur have insufficient staffing, fail to provide enough resources and are not well run. Electricity problems and lack of good refrigerators mean that the cold chain is mostly broken, hurting the potency of vaccines. In addition, the shortage of educated health workers in remote communities makes it difficult to give vaccines quickly and fully. (Bello, S., and et,al 2021).

If children are unvaccinated, their illnesses often need higher levels of medical care, including time spent in hospital for treatment. This puts more stress on the public health system which is already working very hard. Handling emergencies for outbreaks means less money, time and effort can be spent on regular and preventive care. Gender-related issues can affect whether people are able to get vaccines. Many mothers want to give their children the vaccine, yet they feel they do not have enough control. Women are also restricted in their movement which makes it hard for them to get to healthcare centers, particularly when traditional beliefs keep women from traveling alone.

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