Short Communication

# Mothers' Knowledge and Noncompliance of Childhood Vaccination in Primary Health Care Centers at Mosul City

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## Abstract

**Background:** A vaccine ensures children that they are immune to or resistant to an infectious disease. **Objectives:** The study aimed to assess mothers' knowledge. In addition, identify the reasons for noncompliance with vaccination of their children, and the relationship between the mothers' knowledge with their educational level. **Materials and Methods:** A descriptive study was designed for a sample of 250 mothers attending primary health care centers between September 15, 2022, and December 20, 2022, for their children's immunizations. The tool of the study contains questions about the sample's sociodemographic characteristics. As well as 7 questions about the mother's knowledge and 12 questions about reasons for children's inadequate immunizations. Descriptive and inferential statistics were performed. **Results:** The results revealed that regarding mothers' knowledge about immunization, the study revealed that most mothers do not have sufficient knowledge about vaccinations for their children. Most of them believe that vaccines can be harmful to the child (81.2%). The study found a linkage between mothers' knowledge of vaccinations with their educational level. **Conclusion:** This study concludes that insufficient knowledge of mothers about vaccination and the reasons for fear of side effects and the unavailability of the vaccine entails effective dissemination of information, campaigning, and family involvement.

**Keywords:** Mothers' knowledge, noncompliance, primary health care center

## Introduction

Child vaccines are the greatest discoveries in the ages that have gone by and are still developing, advancing the service of the child and family together that protect children from diseases and reducing mortality rates as well.[1,2] Vaccines activate the body's natural defenses to protect from further infection or sickness.[3] Vaccines guarantee life for many children around the world, as they prevent the occurrence of two million deaths annually, but in developing countries, there are still large death rates due to the lack of adequate vaccines, therefore, the a need for more vaccines in these countries.[4-6] According to vast statistics and research from around the world, vaccination has considerably reduced the occurrence of communicable diseases. The death rate for children under the age of 5 years has dropped as a result of these diseases, immunization protects children from infectious diseases.[7] The main obstacles to vaccinating children are misconceptions about vaccines and their harms and mothers' fears that the vaccine is the cause of the disease, and contraindications, poor perceptions of immunization in mild illnesses.[8] Parents typically handle and make health decisions on their children's behalf, and deal with concerns about childhood vaccination.[9-11] Several studies have found a link between parental knowledge and children's vaccination rates.[12] Therefore, parents must have comprehensive knowledge about vaccines and their importance in preventing the occurrence of diseases in their children.[1] Little emphasis has been placed on mothers' characteristics such as knowledge, perception, attitudes, and practices related to vaccinations. Instead, efforts have concentrated on the healthcare provider, health services, and the healthcare system.[13] In addition, the

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role of health workers in health centers highlights the increase in awareness programs in all its means: health teams roaming, television, social media, and all ways that increase mothers' awareness of the importance of childhood vaccinations in the first years of life for their children.[14,15] Whereas, the study aimed to assess mothers' knowledge of routine vaccination in Mosul City. In addition, identify the reasons for incomplete vaccination of their children, and the relationship mother's knowledge with their educational level.

## Materials and Methods

### Study design and participants

A descriptive study design was conducted with 250 mothers who visited the primary health care centers in Mosul city for immunization of their children between September 15, 20222, and December 20, 2022. Two hundred and fifty mothers have children aged from 1 month to 5 years who lived in Mosul City were invited to participate in filling out the questionnaire. While excluding mothers who refused to participate in the study, aged less than 1 month or more than 5 years. The tool study contains a three-part on incomplete vaccination coverage for children in Mosul.

Part 1 includes information related to the sociodemographic characteristics of the sample (age, occupation, child gender, educational status, residence area, and birth order of child). As well as in part 2 includes 7 questions about mothers' knowledge of vaccination, and part 3 includes 12 questions about noncompliance for incomplete vaccinations of children. Approvals were obtained from the ethical research committee in the Nineveh Health Department. The prominence of the study, the confidentiality of the data, and the right to withdraw at any moment were explained to the mothers who agreed to participate. The tool was presented to five experts in the field of specialization to show its validity concerning the reliability of the tool it was 0.862 using Cronbach's alpha, in the pilot study there were 30 participants, and they were excluded from the study. A random sample of selected mothers visit the primary health care centers, and at least one child under the age of 5 years is present. The mothers have completed the questionnaire.

### Statistical analysis

Descriptive and inferential types of statistics were employed to discover differences at a probability equal to or less than 0.05 after the data were gathered, coded, and entered into Statistical Package for the Social Sciences version 26 (SPSS, IBM Company, Chicago, IL, USA).

### Ethical approval

The ethical aspects of the study were approved by the ethical consideration committee of the College of Nursing at the University of Mosul to address ethical issues and to get the agreement to conduct this study on September 6, 2022.

## Results

Table 1 shows the average age of the majority of the mothers ranged in age less than 21 years. Unemployed of mothers was 61.2%. About a third of the sample (29.2%) had a diploma, whereas 27.5% had secondary education. Mothers having one child was 37.2%. Whereas more than two-thirds of the sample (69.6%) of urban regions.

Table 2 shows that there is a majority of mothers have insufficient knowledge about vaccinations for their

**Table 1: Sociodemographic characteristics of the sample ($n$ = 250)**

| Variables | Items | Frequency | Percentage (%) |
|---|---|---|---|
| 1. Age of mother (years) | ≤20 | 109 | 43.6 |
| | 21–30 | 67 | 26.8 |
| | ≥31 | 74 | 29.6 |
| 2. Mother's occupation | Employed | 97 | 38.8 |
| | Housewife | 153 | 61.2 |
| 3. Child gender | Male | 113 | 45.2 |
| | Female | 137 | 54.8 |
| 4. Education status of the mother | Illiteracy | 27 | 10.8 |
| | Primary | 55 | 22 |
| | Secondary | 69 | 27.6 |
| | Diploma | 74 | 29.2 |
| | University | 28 | 11.2 |
| 5. Area of residence | Rural | 76 | 30.4 |
| | Urban | 174 | 69.6 |
| 6. Birth order of child | First | 93 | 37.2 |
| | Second | 62 | 24.8 |
| | Third | 64 | 25.6 |
| | More | 31 | 12.2 |

**Table 2: Mothers' knowledge about vaccinations ($n$ = 250)**

| S. no. | Mothers knowledge | Yes (%) | No (%) | Do not know (%) |
|---|---|---|---|---|
| 1. | Did you know about vaccinations at an early age? | 55.14 | 17.84 | 27.2 |
| 2. | Does the vaccine prevent diseases? | 67.3 | 13.7 | 19 |
| 3. | Should the vaccine be given at birth? | 73 | 9 | 18 |
| 4. | Is the vaccine dangerous for children's health? | 81.2 | 7.7 | 11.1 |
| 5. | If a child has the flu, does he get vaccinated? | 33 | 51 | 16 |
| 6. | If the child has a high temperature, will he get vaccinated? | 17 | 68 | 15 |
| 7. | Can a child get vaccinated if he has diarrhea? | 66 | 13 | 21 |

**Table 3: Reasons for noncompliance with vaccination in childhood**

| S.no. | Items | Total | Percentage (%) |
|---|---|---|---|
| 1. | The mother was very busy | 18 | 7.2% |
| 2. | The vaccine was delayed due to family problems | 21 | 8.4 |
| 3. | The vaccine is not available at the time | 36 | **14.4** |
| 4. | The vaccination was not timed right | 17 | 6.8 |
| 5. | Inadequate knowledge of the vaccine date | 38 | **15.2** |
| 6. | He was not taken to the health center due to illness | 42 | **16.8** |
| 7. | There was no need for a second or third dose of the vaccine | 13 | 5.2 |
| 8. | I did not know the need for this vaccine | 19 | 7.6 |
| 9. | The mother was afraid of the side effects of the vaccine | 26 | **10.4** |
| 10. | There was a long queue | 3 | 1.2 |
| 11. | I was aware that vaccinations are optional | 17 | 6.8 |
| 12. | Asking the mother to buy vaccines? | 0 | 0 |

Highly significant values are represented in bold

**Table 4: Relationship between mothers' knowledge about vaccination and their level of education**

| Level of education | Complete | | Incomplete | | Total | $\chi^2$ | *P* value |
|---|---|---|---|---|---|---|---|
| | *N* | % | *N* | % | | | |
| Illiteracy | 11 | 40.8 | 16 | 59.2 | 27 | **0.443** | **0.05 Sig.** |
| Primary | 34 | 61.8 | 21 | 38.2 | 55 | | |
| Secondary | 51 | 73.9 | 18 | 26.1 | 69 | | |
| Diploma | 59 | 79.7 | 15 | 19.3 | 74 | | |
| University | 16 | 57.1 | 8 | 42.9 | 28 | | |

*N*: number, %: percentage, $\chi^2$: Chi-square, *P*: probability, Sig.: significant
Highly significant values are represented in bold

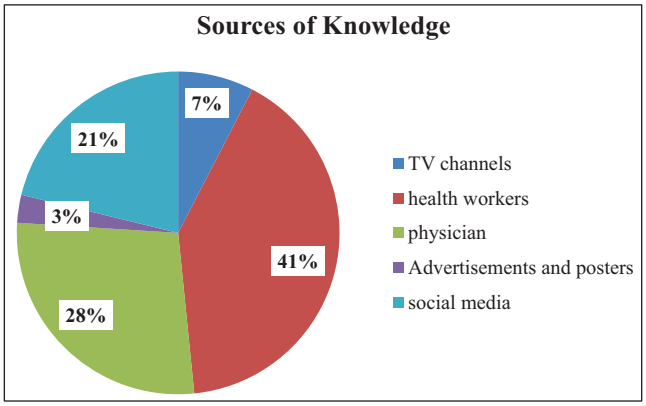


**Figure 1:** Types of mothers' sources for knowledge about vaccination among children

children. Most of them believe that the vaccine can be harmful to the child (81.2%) and 33% of mothers answered can be a child vaccinated if have flu.

Table 3 shows that the majority of the reasons are the failure to take the child to the health center because of vaccine was not available at the time (14.4%), forgetting the vaccine date (15.2%), the disease was (16.8%), and as well as the mothers' fear of the side effects of vaccines (10.4%).

Table 4 finds a relevance between the educational levels of mothers with their knowledge about children's immunizations, and these disparities are statistically significant. According to the study, there are more fully immunized children in diploma and university settings (79.7% and 57.1%, respectively), the higher the mother's educational degree.

Figure 1 indicates that the majority of mothers source their information from healthcare workers (415). While posters and television channels were fewer uses among mothers to gain knowledge (3% and 7%), respectively.

## Discussion

The use of vaccination is a technique that many nations have implemented to lower and control the morbidity and mortality linked to infectious pediatric disorders.[16,17] Therefore, children should have all of their recommended immunizations at the specified times and the proper ages.[18] Mothers' lack of understanding of the recommended immunization schedule and diseases that can be prevented by vaccination is described as one of the knowledge-related factors for incomplete immunization.[19] In the current study, the level of knowledge of the mothers is discussed and the reasons for Incomplete vaccinations are explained. The study findings of the ages less than 21 years represented most of the mothers in the sample. More than half of mothers are unemployed (61.2 %). A nonworking mother with a low education level is inevitably limited in knowledge, as she does not have contact with others and knowledge of information about everything new about health in general. The majority of them completed a diploma (27.6%), followed by middle school education (29.2%). A total of (69.6%) of urban areas, as in [Table 1]. This implies that a mother's educational level is critical for her to have significant knowledge about vaccinations for her children. The majority of them believe that the vaccine can be hazardous to children (81.2%) and can occasionally cause sickness in general. There is a large number of women who are unaware of the importance of immunizations for their children, [Table 2] explains that. Other studies indicate that mothers continue to be generally unaware of factors that may harm their children, and many do not think that immunizations can

stop the spread of disease.[20] The important reasons for incomplete vaccinations for children are the failure to take the child to the health center because of the disease (16.8%), mothers' inadequate knowledge, and forgetting the vaccination date (15.2%), as well as the mothers' fear of the side effects of vaccines, such as a high fever and diarrhea, and other causes, such as the parents busy, are shown in Table 3. According to the findings, as a result, they miss the immunization deadline. According to a study by Riaz *et al.*,[21] inadequate vaccination has been linked to mothers who are uninformed of the necessity for immunization, fear of side effects, and distance from vaccination clinics. One of the main obstacles to childhood immunization is thought to be mothers' or one parent's ignorance of the side effects of vaccination and the vaccine contraindications.[22] There are statistically significant discrepancies between mothers' educational levels and their knowledge of their children's vaccines. The study found that the greater education of mothers leads to an increased number of children being fully vaccinated (diploma—79.7% and university—57.1%) [Table 4]. The vaccination routine of children is related to mothers' knowledge and is essential to improve the coverage and completeness of vaccination.[23,24] Furthermore, studies support the results that mothers' knowledge may be affected by their education level, with immunization knowledge being more strongly correlated with education levels.[25,26]

## Conclusion

The study concluded most mothers' vaccination knowledge is insufficient. Mothers frightened of vaccination, and suspension of vaccination due to mild illness, greatly influence immunization status. This would necessitate effective information dissemination, campaigning, and family participation.

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### Disclaimer

The scientific committee in the Nursing Department and the Council of the College of Nursing at the University of Mosul approved the study in 2022.

### Conflict of interest

There are no conflicts of interest.

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