

## A Methodological Study To Develop Mobile App On Immunization Of Under Five Children And Assess It's Acceptability By Their Parents In Selected Community Of Greater Noida, Uttar Pradesh

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Submitted: 10-02-2022

Revised: 22-02-2022

Accepted: 25-02-2022

### ABSTRACT:

Each year 27 million children born and only 44% of them receive full vaccines. There are many reasons behind it like due to lack of knowledge and information regarding under five immunization. Immunization is an effective way to prevent or resist in infectious diseases in children and immunization app helps in proper tracking and due to the development in technology nowadays mobile application in on trends and it helps to improve health outcome and quality of health care services. The current Covid 19 pandemic has negatively impact in each and every aspect of life. The economic, education including immunization for under five children has been disrupted, putting women and child at risk.

The objectives of the study were to design and develop the mobile app on immunization of under five children, to assess the acceptability of the app by the parents of under five children in the selected community of Greater Noida and to find out the association between acceptability of mobile app with selected demographic variables i.e gender, age of the parents, type of family, socio-economic status, no. of children and religion.

A Quantitative research approach was used and the research design adopted for the present study was methodological research design. The target population for the study was parents of under five children in selected community of Greater Noida. Sample size was 50 data analysis was done by the basis of objective and hypothesis of study.

The feasibility of the study and the tools were assessed through a pilot study. The tool taken for the study was 5 point likert scale for acceptability of mobile app. The data collection for the main study was done from 12<sup>th</sup> – 20<sup>th</sup> July 2021.

The study was conducted in old age homes at sector Zeta 1, AVJ heights, Greater Noida U.P. Simple random sampling technique was used for selection of subjects. The target population selected for the study was parents of under five children who met the inclusion criteria.

The collected data was analyzed by using descriptive and inferential statistics. This study showed that the acceptability of mobile app on immunization of under five children was 100% accepted by parents. Chi square values of this study revealed that there was no significant association between acceptability of mobile app with selected demographic variables i.e age of the parents, gender, type of family, religion, socio economic status and no. of children where p value was greater than 0.05 ( $p > 0.05$ ).

### Objectives:

1. To design and develop the mobile app on immunization of under five children.
2. To assess the acceptability of the app by the parents of under five children in the selected community of Greater Noida.
3. To find out the association between acceptability of mobile app with selected demographic variables i.e gender, age of the parents, type of family, socio-economic status, no. of children and religion.

### Methodology:

A quantitative research approach was adopted for the study and methodological research design was used for this study. The study was conducted among parents of under five children. A 26 item tool was developed which includes demographic data and 5 points likert scale was developed to assess the acceptability of mobile application. The target population for the study were Parents of Under five children in selected community of

Greater Noida. A total of 50 sample were recruited for the study by using simple random sampling technique. Demographic data was collected through telephonic interview schedule was adopted. The investigator developed Mobile application

Link  
[https://drive.google.com/file/d/1DMweqOKVW\\_AFMoe4KLsh6d-rru5CW7gs/view?usp=drivesdk](https://drive.google.com/file/d/1DMweqOKVW_AFMoe4KLsh6d-rru5CW7gs/view?usp=drivesdk)

which was shared by different medias and to know the acceptability of mobile application 5 point likert scale was adopted. Barbara Wejnert (2002) integrating models of diffusion and innovation theory was used to develop conceptual framework.

**Results :-**The collected data was analyzed by using descriptive and inferential statistics. This study showed that the acceptability of mobile app on immunization of under five children was 100% accepted by parents. Chi square values of this study revealed that there was no significant association between acceptability of mobile app with selected demographic variables i.e age of the parents, gender, type of family , religion, socio economic status and no. of children where p value was greater than 0.05 ( $p > 0.05$ ).

**Conclusion:**The finding shows that the study was effective towards acceptability of mobile app on immunization of under five children among parents.

**Key words:** Mobile App, Immunization, Parents, Acceptability

## I. BACKGROUND OF THE STUDY

**“Keep your face always toward the sunshine- and shadow will fall behind you”**

**Walt Whiteman**

Childhood immunization is one of the key component of World Health Organization and The United Nations Children’s Emergency Fund. Immunization is a process of protecting an individual from a disease through introduction of a live, killed or weak (attenuated) organism into the individual to gain immunity against certain diseases by producing antibodies within the body.<sup>1</sup>

Expanded Programme on Immunization was launched in 1978 and renamed as Universal Immunization Programme (UIP) in 1985 which is one of the largest, cost effective and provides vaccines to under 5 children against 11 life threatening diseases i.e Tuberculosis, Hepatitis, Polio, Diptheria, Pertusis, Tetanus, Haemophilus Influenza B, Meseales, Rubella, Japanese encephalitis, Pneumonia and Rota virus.<sup>2</sup>

The timing , dose and amount of vaccines are different for different age group and mild side

effects can be seen in children like superficial ulceration on BCG, Fever, pain and redness in injection site for DPT. So after care of children is most important.<sup>3</sup>

New vaccines Inactivated Polio Vaccine, Rota Virus Vaccine, Meseales Rubella, Pneumococcal Conjugate Vaccine are introduced in different time period. IPV was introduced in 2015, Rota Virus Vaccine was launched in 2016 in 11 states including Uttar Pradesh and this vaccine was expanded across country in 2019- 2020. Likewise Pneumococcal Conjugate Vaccine was launched in 2017 in 19 states including Uttar Pradesh.<sup>4</sup>

The GAVI Alliance (formerly the Global Alliance for Vaccines and Immunization) which is a global health partnership of public and private sector organizations dedicated to “immunization for all”. It provides a unique opportunity for a wide-range of partners to build consensus around policies, strategies, and priorities and to recommend responsibility of implementation to the partner with the most experience and insight in the area. GAVI has developed innovative approaches to international health and development. GAVI has been providing since 2007.<sup>5</sup>

India’s vaccination reminder app is developed by Indian Academy of pediatrics which is world’s largest vaccination reminder service which is available free of cost to parents in all over India and this project is supported by Vodafone. This project was launched in March 2014 in Delhi by Chief Guest Shri C K Mishra, Additional Secretary, Ministry of Health and Family Welfare, Government of India. The main Aims of this project is to prevent a hundred thousand child deaths and disabilities by 2020. The mission of this project is to enroll 20 million children by 2020. To achieve this target this project has expanded the SMS service in November 2017 by launching the IAP immunize India sends free of cost reminders to parents for 12years children.<sup>6</sup>

## II. METHODOLOGY

### RESEARCH APPROACH

The present study aimed to assess the acceptability of mobile application on immunization of under five children among parents The research approach indicates the basic procedure for conducting the research. With a view to accomplish the research objectives, quantitative approach was adopted for this study.

### RESEARCH DESIGN

The research design selected for the study was Methodological research design. Methodological studies, address the development and assessment of

research tool or methods. The goal is to develop a high quality instrument for others to use in clinical or research application. The investigator is concerned with the development, validation and assessment of methodological tools and strategies.

#### RESEARCH SETTING

The research setting is the location in which the research is conducted. The present study was conducted in the sector Zeta I areas of Greater Noida.

#### POPULATION

The entire set of individuals or objects having some common characteristics.<sup>7</sup> The present study was conducted among Parents who are residing in AVJ heightin Zeta I, areas of Greater Noida, UP.

#### SAMPLE SIZE

The sample size for this study was 50.

#### SAMPLE TECHNIQUE

Sampling is a process of selecting a portion of the in which the entire population is represented. In this study simple random sampling techniques was adopted for the selection of sample.

#### SAMPLING CRITERIA

Sample criteria is a list of the characteristic (essential for includes or exclusion of the targeted population) of elements that we have determined before and they are essential for eligibility to become part of the ample.

#### Inclusion criteria

- Parents who have children below the age of five years.
- Parents who can understand English.
- Parents who use mobile based on android operating platform with internet connection.

#### Exclusion criteria:

- Parents who belongs to medical profession are not included in this study.

#### DEVELOPMENT OF TOOL

Mobile application was developed (link is kept below)after preparing blueprint of mobile application and given to the person who develop that app. The primary and secondary sources of literature were reviewed to develop the appropriate tool at appropriate time. Validity was obtained from the 7 experts from different department of nursing, Statistician. Their opinions and valuable

suggestion were incorporated in the tool and it was finalized. Following is the link of mobile app.

[https://drive.google.com/file/d/1DMweqOKVW\\_AFMoe4KLsh6d-rru5CW7gs/view?usp=drivesdk](https://drive.google.com/file/d/1DMweqOKVW_AFMoe4KLsh6d-rru5CW7gs/view?usp=drivesdk)

#### DESCRIPTION OF THE TOOL

This questionnaire consisted of 2parts :

**Section A:**Socio-demographic tool

**Section B:** 5 point Likert scale used to assess the acceptability of mobile application of under five children among parents.

#### ETHICAL CONSIDERATION

The ethical clearance was obtained prior to the commencement of data collection and areas listed below:

- Ethical Clearance was obtained from Institutional Ethics Committee, Sharda University
- Principal, School of Nursing Science and Research, Sharda University.
- Permission from AVJ heights Apartment, Zeta – 1, Greater Noida, U.P.

#### DATA COLLECTION PROCEDURE

Data collection is the gathering of information needed to address the research problem. The word “data” means information that is systematically collected in the course of a study.<sup>8</sup> The areas were selected for the study was sector Zeta 1, AVJ heights, Greater Noida U.P. The procedure of the study will be explained to the study participants. Parents of under five children will be selected as sample according to the inclusion and exclusion criteria.

### III. DATA ANALYSIS

The data were collected, coded, tabulated and analyzed in terms of the objectives of the study using descriptive and inferential statistics.

Descriptive statistics were applied and data was analyzed using frequency and percentages. Inferential statistics were applied and data was analyzed using Chi- square test to find out the association between acceptability of mobile app with selected demographic variables. Statistical significance was set at 0.05% level of significance ( $p < 0.05$ ). Data entry and analysis was carried out with the help of Statistical Package for Social Science ( IBM- SPSS 20).

#### IV. RESULT AND ANALYSIS

##### Section A: Frequency and percentage distribution according to demographic variables (n=50)

S.NO	DEMOGRAPHIC VARIABLES	FREQUENCY	PERCENTAGE (%)
1	<b>Gender</b>		
	Male	14	28
	Female	36	72
2	<b>Age in years</b>		
	18-22	7	14
	23-27	20	40
	28-32	5	10
	33-37	15	30
	38-42	3	6
3.	<b>Age of child in years</b>		
	Birth – 11 months	6	12
	12months -23months	18	36
	24months-35months	12	24
	36 months-47months	10	20
	48months-59months	4	8
4.	<b>Number of Children</b>		
	1	27	54
	2	23	46
	3	0	0
	3 and above	0	0
5	<b>Religion</b>		
	Hindu	35	70
	Muslim	9	18
	Christian	6	12
	Others	0	0
6	<b>Type of Family</b>		
	Nuclear	42	84
	Joint	8	16
	Extended	0	0
7.	<b>Fathers Education</b>		
	Profession or honours	11	22
	Graduate	27	54
	Intermediate or diploma	2	4
	High School Certificate	0	0
	Middle School Certificate	10	20
	Primary School Certificate	0	0
	Illiterate	0	0
8	<b>Mothers Education</b>		
	Profession or honours	1	2
	Graduate	20	40
	Intermediate or diploma	20	40
	High School Certificate	9	18
	Middle School Certificate	0	0
	Primary School Certificate	0	0
	Illiterate	0	0
9	<b>Fathers Occupation</b>		
	Legislators, Senior officials and managers	5	10
	Professionals	19	38

	Technicians and Associate Professionals	12	24
	Clerks	4	8
	Skilled workers and shop and market sales workers	0	0
	Skilled Agricultural and Fishery workers	0	0
	Craft and related trade works	10	20
	Plant and Machine Operators and Assemblers	0	0
	Elementary occupation	0	0
	Unemployed	0	0
10	<b>Mothers Occupation</b>		
	Legislators, Senior officials and managers	0	0
	Professionals	0	0
	Technicians and Associate Professionals	0	0
	Clerks	22	44
	Skilled workers and shop and market sales workers	0	0
	Skilled Agricultural and Fishery workers	0	0
	Craft and related trade works	0	0
	Plant and Machine Operators and Assemblers	0	0
	Elementary occupation	0	0
	Unemployed	28	56
11	<b>Monthly Family Income</b>		
	≥123,322	13	26
	61,663-123,321	18	36
	46,129-61,662	19	38
	30,831-46128	0	0
	18,497-30,830	0	0
	6,175-18,496	0	0
	≤6174	0	0
12	<b>Economic Status of Family</b>		
	Upper (I)	14	28
	Upper Middle (II)	26	52
	Lower Middle (III)	10	20
	Upper Lower (IV)	0	0
	Lower (V)	0	0

**Section B:** To assess the acceptability of the mobile app by the parents of under five children in the selected community of Greater Noida. U.P.

**Table 4.13 Frequency and Percentage distribution of parents according to their acceptability of mobile app n=50**

S.no	Mobile App	Frequency	Percentage
4.13	Acceptability	50	100%

**Section C:** To find out the association between acceptability of mobile app with selected demographic variables i.e gender, age of the parents, type of family, socio-economic status, no. of children and religion.

**Table 4.14: Shows the association between the acceptability of mobile app with selected demographic variables i.e gender, age of the parents, type of family, socio-economic status, no. of children and religion n=50**

S.no	Demographic Variables	Frequency of Acceptability		Chi-Square ( $\chi^2$ ) Value	P-Value
		Above mean	Below mean		
1	<b>Age of the Parents (in Years)</b>			3.899	0.420 NS
	18-22	3	4		
	23-27	15	5		
	28-32	3	2		
	33-37	8	7		
	38-42	1	2		
2	<b>Gender</b>			0.149	0.700 NS
	Male	9	5		
	Female	21	15		
3	<b>Type of Family</b>			3.001	0.083 NS
	Nuclear	23	19		
	Joint	7	1		
4	<b>Religion</b>			1.554	0.460 NS
	Hindu	20	15		
	Muslim	7	2		
	Christian	3	3		
5	<b>Economic Status</b>			2.857	0.240 NS
	Upper (I)	9	5		
	Upper Middle(II)	13	13		
	Lower Middle (III)	8	2		
6	<b>No. of Children</b>			1.624	0.203 NS
	1	14	13		
	2	16	7		

P<0.05= Significant Level, S: Significant, NS: Non – Significant.



## V. DISCUSSION

The present study findings were discussed based on the objectives of the study and statistical findings and with similar study findings.

### Description of sample characteristics

The present study showed that majority of the participants were females 36(72%), most 20(40%) of them were in the age group of 23-27, 18(36%) of participants had child which falls under (12-23)months of age group, most 27(54%) of the participants had one child, 35(70%) were to Hindu, 42(84%) were Nuclear family, 27(54%) of fathers were Graduate and 20(40%) of mother were graduate and intermediate, 19(38%) of father were professionals and 28(56%) of mother were unemployed, 19(38%) participants monthly family income were Rs 46,129-61,662 and 26(52%) were from upper middle (II) status.

### Findings related to acceptability of mobile app

All samples had accepted the mobile application on immunization of under five children i.e 100%.

The present findings was supported by the study conducted by Abdul et al. in the year 2021 revealed that acceptability of mobile app was 95.2%.

### Findings related to find out the association between the acceptability of mobile app with demographic variables i.e gender, age of the parents, type of family, socio-economic status, no. of children and religion

Chi square values were calculated to the find out the association between acceptability with selected demographic variables. It was revealed that there was no significant association between acceptability with selected demographic variables i.e gender, age of the parents, type of family, socio-economic status, no. of children and religion as p value was greater than 0.05. Hence research hypothesis was rejected.

The present study findings were supported by A randomized controlled trial conducted by Chen et al. in the year 2016 revealed that smart phone app aid better delivery of immunization services.<sup>26</sup>

## VI. CONCLUSION

The finding of this study concluded that everyone has accepted the mobile app. there was no significant association between acceptability of mobile app on immunization with selected demographic variables i.e gender, age of the parents, type of family, socio-economic status, no.of children and religion.

Now days in urban areas many people uses mobile app for different purpose and this

mobile app on immunization of under five children was effective and benefits for routine immunization. New technology like mobile app is easily accepted by parents as it was easy to use, get information regarding vaccination, reduces the chances of misplacement of vaccination records of the child.

## LIMITATIONS

The study is limited to:

- Parents who have children below the age of five years.
- Parents who can understand English.
- Parents who use mobile based on android operating platform with internet connection.

## RECOMMENDATIONS

A few recommendations that can be made in this study include:

- The study can be conducted with large samples to generalize the findings
- A similar study can be conducted in different settings.
- App can be prepared with the collaboration of hospital and IT section to make huge project.
- Comparative study can be done between rural and urban setting.

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