



## KNOWLEDGE OF MOTHERS REGARDING IMMUNIZATION

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**(ABSTRACT)** **Introduction:** According to WHO, immunization interventions have proven to be a success across the globe and today reach out to over 100 million children and prevent 2.5 million deaths per year. As new global health paradigms emerge, fresh perspectives and priorities are emerging in immunization as well. There are at least ten new antigens now available that can be added to the traditional EPI interventions including vaccines against Hepatitis B, Rotavirus, Japanese Encephalitis, and Human Papilloma Virus. **Methodology:** All the mothers coming for BCG immunization of their infants were interviewed for assessing their baseline knowledge and attitude towards immunization and AEFI. Knowledge of the mothers was assessed with 0 and 1 scale, with 0 as not correct knowledge and 1 for correct knowledge. **Results:** It was observed from this study that the Mean  $\pm$  SD of pre-test knowledge score on immunization was  $2.86 \pm 2.12$  and post-test knowledge score on immunization was for  $6.53 \pm 2.17$ . There was a statistically highly significant difference ( $t = 13.675$ ,  $P < 0.001$ ) between pre-test and post-test knowledge score on immunization. **Conclusion:** This implies that there was improvement of knowledge on immunization following health education in study subjects.

**KEYWORDS :** Knowledge, Mothers, Immunization

**INTRODUCTION:**

Immunization is one of the most cost-effective interventions that protects from vaccine preventable diseases. Moreover, an effective, equitable immunization program and its impact on reducing the burden of vaccine-preventable diseases will greatly contribute to achieving the Millennium Development Goal 4 (MDG4 by 2015) by leading to reduction of child mortality by two-third.<sup>1</sup>

India's Universal Immunization Programme (U.I.P.) is one of the largest immunization programmes in the world and a major public health intervention in the country.<sup>1</sup>

According to WHO, immunization interventions have proven to be a success across the globe and today reach out to over 100 million children and prevent 2.5 million deaths per year. As new global health paradigms emerge, fresh perspectives and priorities are emerging in immunization as well. There are at least ten new antigens now available that can be added to the traditional EPI interventions including vaccines against Hepatitis B, Rotavirus, Japanese Encephalitis, and Human Papilloma Virus.<sup>2</sup>

The success of smallpox eradication in the 70s brought attention to the immunization program globally as well as in India. The Expanded Program on Immunization (EPI), a national policy of immunizing all children during the first year of life with DPT, OPV, BCG and typhoid-paratyphoid fever vaccines was launched in 1978. Immunization of pregnant mothers with TT vaccine was introduced in 1983. In 1985, the name of EPI was changed to the Universal Immunization Program (UIP) with activities phased in to the entire country by 1990. UIP was given the status of a one of the five 'National Technology Missions' in 1986. Subsequently in 1992, UIP became a part of Child Survival and Safe Motherhood (CSSM) program and then of Reproductive and Child Health (RCH) program in 1997.<sup>3</sup>

In the 12th Five Year Plan, the Government of India has proposed a National Health Mission for improving healthcare in rural as well as urban areas. UIP is an integral component of NRHM. In 2010, the Government of India decided to introduce a second dose of measles containing vaccine (MCV2) in UIP.<sup>4</sup>

The choice of newer vaccines to be included in the UIP will be determined and periodically reviewed by the MoHFW, taking guidance from the NTAGI. The NTAGI is the highest advisory body tasked to review the available evidence on disease burden, potential impact, safety, efficacy etc to assess the new vaccines and prioritize vaccines for inclusion in the program. According to the recommendation by NTAGI, Government of India introduced the pentavalent vaccine

(PVV) all over the country in a phased manner by 2015. The globally synchronized switch from the use of OPV to bOPV was on April 2016 across India. Rotavirus vaccine was approved by the Government of India for inclusion in to the UIP with the phase 1 launch of the vaccine in 4 states (Himachal Pradesh, Odisha, Andhra Pradesh and Haryana) in February, 2016. Rubella vaccine was approved for introduction as MR vaccine, thus replacing the measles containing vaccine first dose (MCV1) at 9 months and second dose (MCV2) at 16-24 months in February 2017. Pneumococcal conjugate vaccine (PCV) was introduced in Himachal Pradesh and parts of Bihar and Uttar Pradesh in the first phase in May 2017.<sup>5</sup>

The UIP strategic plan 2013- 2017 derives its essence from the National Vaccine Policy 2011 and is underpinned by the goals ascribed in the National Health Policy 2002 and National Rural Health Mission 2005. The plan framework consists of an overarching Goal and a set of six Key Objectives (KO).<sup>6,7</sup>

**Methodology:****Study Design:**

It was a descriptive study.

**Sample size:**

110 infants and their mothers

**Study subjects:**

Infants and their mothers

**Inclusion Criteria:**

- Infants receiving primary immunization as per National immunization schedule.
- Parents willing to give consent to participate in the study.
- Infants receiving newer vaccines introduced by the Government.

**Exclusion criteria:**

- Infants contraindicated for immunization after birth.
- Infants not available for 1 year follow up.
- Infants receiving vaccines in private sector.

**Sampling method:** Purposive sampling

All mothers who delivered during the study period and gave consent to participate in the study were enrolled for the study after fulfilling inclusion criteria. They were interviewed on the day of immunization of their new born babies with birth dose of vaccine i.e. BCG + OPV<sub>0</sub> + Hep B vaccine.

All the mothers coming for BCG immunization of their infants were interviewed for assessing their baseline knowledge and attitude towards immunization and AEFI. Knowledge of the mothers was assessed with 0 and 1 scale, with 0 as not correct knowledge and 1 for correct knowledge. The attitude was assessed using 5 point Likert scale. The positive attitude was coded from 1 to 5, for the responses, Strongly disagree, Disagree, Undecided/Can't say/Do not know, Agree, Strongly agree respectively. For negative attitude the scores were in the reverse order 5 to 1 i.e., Strongly disagree, Disagree, Undecided/Can't say/Do not know, Agree, Strongly agree respectively.

**RESULTS:**

**Table 1: Correct responses of mothers regarding knowledge on immunization before and after health education (n=110)**

Knowledge on Immunization	Correct response	
	Pre test	Post test
Are you aware of immunization?	85(77)	104(94.5)
Are you aware of diseases prevented by vaccines?	66(60)	104(94.5)
Which are the VPDs you know? (any 2)	45(41)	102(92.7)
Can missed vaccine be given to infants?	53(48)	89(80.9)
Are there any contraindication for vaccinating infants?	35(32)	84(76.3)
Which are the contraindications?	21(19.1)	74(67.2)
Are you aware of IPV?	10(9)	85(77.3)
What is the number of doses of IPV?	0	76(69.1)

**Note:** Figures in parenthesis indicate percentage

Mothers of study subjects who were interviewed at the onset of study, 85(77%) of them had awareness on immunization and 66(60%) knew about VPD . 45(41%) mothers were able to name more than one VPD. 53(48%) mothers opined that missed vaccine can be given to infants. 35 (32%) mothers believed that there is contraindication for vaccinating infants. 21(19.1%) had awareness on at least one of the contraindications for vaccination i.e. high fever (>102 °F), seizure and severe allergy to previous dose. Only 10(9%) mothers were aware of IPV. None of the mothers knew about the correct doses of IPV (i.e. two doses).

After health education ; 104(94.5%) majority of mothers had awareness on immunization and VPD . 102(92.7%) mothers were having knowledge of more than one VPD. 89(80.9%) mothers opined that missed vaccine can be given to infants. 84(76.3%) mothers believed that there is contraindication for vaccinating infants. 74(67.2%) had name at least one of the contraindications for vaccination. Only 85(77.3%) mothers were aware of IPV. 76(69.1%) of the mothers knew about the correct doses of IPV.

Among the 85(100%) mothers who were aware of immunization; 65(76.5%) family member followed by 31(36.5%) friend, 24(28.2%) media, 26(30.6%) doctor and 10(11.8%) health worker were the source of information regarding immunization.

**Table 2: Distribution of knowledge regarding vaccine preventable diseases among mothers**

Vaccine preventable disease	Frequency*(n=66)
Polio	66(100.0)
Tuberculosis	08(12.1)
Diphtheria	06(9.1)
Pertussis	06(9.1)
Measles	21(31.8)
Hepatitis	22(33.3)
Tetanus	04(6.1)
Influenza B	01(1.5)

\*multiple response

**Note:** Figures in parenthesis indicate percentage

Among 66(100%) mothers who were aware of VPDs .All of them 66(100%) knew about polio, followed by 22(33.3%) hepatitis B, 21 (31.8%) Measles, 8(12.1%) tuberculosis, both diphtheria and pertussis 6(9.1%) and 1(1.5%) influenza B.

The mean difference between pre-test and post-test knowledge on Immunization was normally distributed (Kolmogorov-Smirnov test, P>0.054). Hence, Student's paired t-test was applied to test the difference.

**Table 3: Comparison between Knowledge on immunization pre and post test**

Knowledge score on Immunization	Pre-test score		Post-test score		t - value	P - value
	Mean	SD	Mean	SD		
	2.86	2.12	6.53	2.17	13.675	< 0.001

It was observed from this study that the Mean ± SD of pre-test knowledge score on immunization was 2.86 ± 2.12 and post-test knowledge score on immunization was for 6.53 ± 2.17. There was a statistically highly significant difference (t = 13.675, P < 0.001) between pre-test and post-test knowledge score on immunization. This implies that there was improvement of knowledge on immunization following health education in study subjects.

**Table 4: Correct responses of mothers regarding knowledge on AEFI before and after health education (n=110)**

Knowledge on AEFI	Correct response	
	Pre test	Post test
Are you aware of AEFI?	43(39)	78(71)
Which is/are the common AEFI?(any1)	18(16.4)	64(58.2)
Did you receive health education on remedies for any anticipated AEFI at end of each immunization session and treatment to be sought if it occurred?	33(30)	58(52.7)
What should be done if an infant has AEFI?	37(33.6)	53(48.2)
At which vaccination centre AEFI is more common?	04(3.6)	32(29.1)
Did you come across AEFI among infant of neighbour/family?	15(13.6)	32(29.1)

**Note:** Figures in parenthesis indicate percentage

Among mothers of study subjects who were interviewed at the onset of study, 43(39%) of them were aware of AEFI. 18 (16.4%) mothers were able to name one of the common AEFI i.e. fever, pain, irritability, swelling, redness, prolonged cry >3 hours and abscess. 33(30%) mothers had received health education on remedies for any anticipated AEFI at end of each immunization session and treatment to be sought if it occurred. 37(33.6%) opined that doctors advice is to be sought if the infant had AEFI . 4(3.6%) mothers told that AEFI is more common following vaccination at mass campaign. 15(13.6%) mothers had come across AEFI among infant of neighbour/family.

After health education; 78(71%) mothers of study subjects were aware of AEFI. 64 (58.2%) mothers were able to name one of the common AEFI i.e. fever, pain , irritability , swelling , redness ,prolonged cry >3 hours and abscess .

Among mothers 58(52.7%) had received health education on remedies for any anticipated AEFI at end of each immunization session and treatment to be sought if it occurred. 53(48.2%) opined that doctors advice is to be sought if the infant had AEFI . 32(29.1%) mothers told that AEFI is more common following vaccination at mass campaign. 32(29.1%) mothers had come across AEFI among infant of neighbour/family.

**Table 5: Distribution of knowledge regarding AEFI among mothers**

Types of AEFI	*Frequency (n=18)
Fever	18(100.0)
Irritability	03(16.7)
Pain	14(77.8)
Swelling	14(77.8)
Redness	03(16.7)
Prolonged crying (>3 hours)	02(11.1)
Abscess	01(5.6)

\*multiple responses

**Note:** Figures in parenthesis indicate percentage

Among 18(100%) mothers who were aware of about AEFI. All of them 18(100%) knew about fever followed by 14(77.8%) pain and swelling, 3(16.7%) irritability, 3(16.7%) redness, 2(11.1%) prolonged cry and 1(5.6%) abscess.

The mean difference between pre-test and post-test knowledge on AEFI is not normally distributed (Kolmogorov-Smirnov test, P<0.001). Hence, Student's paired t-test is cannot be applied to test the difference. The Wilcoxon Signed Rank test is applied test the difference in medians.

**Table 6: Comparison between Knowledge on AEFI pre and post test**

Knowledge score on AEFI	Pre-test score				Post-test score				Z*	P value
	Q <sub>1</sub>	Median	Q <sub>3</sub>	IQR	Q <sub>1</sub>	Median	Q <sub>3</sub>	IQR		
	0	0	3	3	0	4	5	5	5.459	< 0.001

Z\* - is the standard normal test value obtaining by applying Central Limit Theorem as the sample size is large (n=110)

It was noticed in the present study that the Median  $\pm$  IQR of pre-test knowledge score on AEFI was 0  $\pm$  3 and post-test knowledge score AEFI was for 0  $\pm$  5. There is a statistically highly significant difference (Z = 5.459, P < 0.001) between pre-test and post-test knowledge score on AEFI. This implies that there was improvement of knowledge on AEFI following health education in study subjects.

#### DISCUSSION:

In the present study 77% of mothers had awareness on immunization and 60% knew about VPD. All were aware of polio vaccine. 39% of them were aware of AEFI. The source of information regarding immunization were 76.5% family member; followed by 36.5% friend, 30.6% doctor, 28.2% media and 11.8% health worker. A study in a tertiary care hospital in Kollam, Kerala showed that similar results were 93.8% of mothers knew that vaccines are beneficial for their child. 58% were aware about the side effects (AEFI) of few vaccines. Whereas all of them had knowledge about polio vaccine.<sup>45</sup>

A study conducted at Bhubaneswar, Orissa found that 83.2% of mothers have adequate knowledge about routine immunization. Majority (66.4%) of mothers knew about AEFI.<sup>46</sup>

A study at Kashmir was conducted at primary health centre where in health workers were the main source of information (88%). All the mothers knew that vaccines are beneficial and protects their children from diseases. 99.5 % felt that immunization was important for their child. All (100%) mothers were of view that there is no problem with vaccination. All the mothers considered side-effects not dangerous.<sup>47</sup>

#### CONCLUSION:

- Majority 77% mothers had awareness on immunization and 60% knew about VPD. All were aware of polio vaccine. 39% of them were aware of AEFI. The source of information regarding immunization were 76.5% family member; followed by 36.5% friend, 28.2% media, 30.6% doctor and 11.8% health worker
- There was improvement in the knowledge and attitude on Immunization and AEFI among mothers following health education.

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