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# Cross Sectional Assessment of Knowledge of Mothers of Under Five Children Regarding Infant and Young Child Feeding and Immunization in Ujjain Block

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## ABSTRACT

**Background**: UNICEF has advocated use of under five mortality rate as an indicator of development .Under National Health Policy 2017 ,goal is to achieve 23 Per 1000 under five mortality by 2025.Optimal IYCF (Infant and young child feeding) and immunization practices are identified as interventions to reduce the under -5 mortality rate.

**Material and Method**: Cross-sectional community based study was conducted in Ujjain block on 400 mothers, with the help of proforma. Knowledge was assessed regarding12 aspects of IYCF and 4 aspects of immunization.

**Results:** Odds ratio was calculated and t-test was applied for analysis. Overall mean IYCF knowledge score was found to be 5.12 out of 12.Overall mean immunization knowledge score was found to be 2.53 out of 4.Better knowledge, was found to be statistically significantly associated with Residence & literacy of mothers, as the mean knowledge score were significantly higher for literate and mothers from urban area.

**Conclusion**: Knowledge of under five mothers was not found satisfactory. Urban and literate mothers had more knowledge regarding IYCF and immunization.

**Key words**: Knowledge IYCF, Immunization, under five mothers

## INTRODUCTION

According to a report of national health mission INDIA contributes 21% of global under five mortality. Four stats Madhya Pradesh, Uttar Pradesh, Rajasthan and Bihar contribute 56% of child mortality. Under -5 mortality in India is 50 per 1000 live birth (34 in urban and 56 in rural) [1]. "Prof Amartya sen has described the nutritional status of children under 5 year as the most sensitive indicator of development of particular area". Promoting IYCF and immunization are known to improve child survival. Relationship between IYCF practices, immunization and under five mortality is well established. Malnutrition is responsible directly / indirectly for 60% child death. Over 2/3rd death associated with faulty IYCF practices and poor immunization coverage. Under five mortality indicates the nutritional and health knowledge of mothers, level of immunization and ORT use, availability of maternal and child health services, income and food availability in family[2].

Poor feeding practices in infancy and childhood is not only important cause of mortality but may also cause - Malnutrition, Impaired cognitive and social development, Poor school performance decreased productivity in later life**.** Infant and Young Child Feeding (IYCF) is a set of well-known and common recommendations for appropriate feeding of newborn and children specially for under two years of age. A) Early initiation of breastfeeding; immediately after birth, preferably within one hour. B) Exclusive breastfeeding for the first six months of life.

C) Timely introduction of complementary foods D) Continued breastfeeding for 2 years or be-yond E) Age appropriate complementary feeding. F) Active feeding for Children during and after illness.[3]

Immunization coverage is also an important factor that can affect the under five mortality**.** Each year, vaccines prevent more than 2.5 million child deaths globally. An additional 2 million child deaths could be prevented each year through immunization.Now over 20 vaccine-preventable diseases are there.[4] IYCF practices and immunization coverage were not found satisfactory in India, early initiation of breast feeding was done in 41.6 % of newborn (42.8% -urban, 41.1% -rural), exclusive breast feeding was done in 54.9%(52.1-urban, 56 % -rural) of children up to 6 month of life ,timely introduction of complementary feeding was started only in 42.7 %(50.1%-urban, 39.9 % -urban) children. Fully immunized children were 62% (63.9%-urban, 61.3%-rural)[1]. Inadequate knowledge is the one of the important reason of poor immunization coverage and inadequate IYCF practices.

Knowledge about IYCF practices and immunization assessment study on under five mothers was not been previously conducted in Ujjain block that's why we planned current study with the objectives to assess knowledge of different IYCF practices and immunization in under five children's mothers and to find out the association between knowledge and various socio demographic factors of mothers.

## METHODOLOGY

Quantitative cross sectional observational study was employed to assess the knowledge of under five mother regarding IYCF and immunization**.** The approval to conduct the study has been obtained from Institutional ethical committee of R.D.Gardi Medical College Ujjain (M.P.).In addition, informed written consent was obtained from mother's of under five children**.** The study was conducted on under five years children's mothers.

To calculate the sample size based on prevalence we used the formula $n=z^{2*} p*q/e^2$, where z=1.96 at 95 % confidence interval (found in z table), p=58%[5], q=1-p and e=desired level of precision (margin of error/absolute error 5%) the calculated sample size was 375 mothers which was rounded up to 400. Final sample size was 400. Non probability, quota sampling was found most appropriate sampling technique for current study. Participant's recruitment was done by fixing inclusion and exclusion criteria. Mothers having children less than five years of age, who gave consent for participation, were included in study. Mothers having mental illness/ serious medical illness, due to that unable to answer the study questionnaires were excluded from study. Dependent/outcome variable in current study was knowledge about infant and young child feeding and immunization of under five children's mother. Independent variables /predictors /experimental variables were various Socio demographic factors of under five children's mother. We conducted a cross-sectional community based study in Ujjain block. The Study subjects were 400 mothers comprising of 200 rural and 200 urban mothers. The research protocol was approved by the institutional ethical committee of RD Gardi Medical College.

All anganwadi of Ujjain block were enlisted and 10 anganwadi from rural and 10 anganwadi from urban areas were selected by quota sampling. House to house visit was done to locate the mothers, having children of under 5 year of age. After telling them about the nature and purpose of study valid informed written consent was taken. When participants had returned completed, signed inform consent form, data were collected through in depth interview with the under five children's mothers.

Proforma was used containing semi structured questionnaires. Questionnaires include mother's scoio-demographic profile and different aspects of IYCF and immunization knowledge.

**Table 1 Socio-demographic characteristics of the participants**

| Characteristics n=400 | Frequency (%) |
|---|---|
| **Occupation** | |
| Working | 199 (49.75) |
| Housewife | 201 (50.25) |
| **Cast** | |
| General | 73 (18.5) |
| OBC | 189 (47.25) |
| SC | 93 (23.25) |
| ST | 45 (11.25) |
| **Residence** | |
| Urban | 200 (50) |
| Rural | 200 (50) |
| **Literacy** | |
| Literate | 300 (75) |
| Illiterate | 100 (25) |
| **Type of family** | |
| Nuclear | 266 (66.5) |
| Joint | 134 (33.5) |
| **SES** | |
| APL | 222 (55.5) |
| BPL | 178 (44.5) |
| **Number of under -5 children** | |
| 2 or <2 | 393 (98.25) |
| >2 | 7 (1.75) |
| **Total number of children** | |
| 2 or <2 | 327 (81.75) |
| **>2** | 73 (18.25) |

**IYCF knowledge** of under five children's mother regarding colostrum, prelacteals, early initiation of breast feeding, frequency of the breast feeding, good signs of attachment, burping, exclusive breast feeding, timing of introduction of complementary feeding, frequency of complementary feed, options of complementary feed ,total duration of breast feeding, benefits (at least 2) of breast feeding was assessed. **Immunization knowledge** regarding purpose of immunization, name (at least 4) of vaccine preventable diseases, next due date of immunization of their child, names of optional vaccines (at least 2) was assessed.

Information collected in the proforma was coded and entered in statistical package for the social sciences (SPSS Inc. SPSS for windows version 20). The qualitative variables were expressed in frequency and percentages & quantitative variables were summarized by mean where ever applicable. The difference in proportion was analyzed by univariate analysis calculating the odds ratio .Alfa error was set at 5% with 95% of confidence level. It was taken as cut off for commenting statistically significant association. The Knowledge of under five children's mothers regarding IYCF and immunisation was commuted separately as well as overall. like each knowledge component of IYCF and immunization was explored individually as well as over all knowledge was calculated .For assessing overall knowledgeWe made scoring system according to that we have assigned 1 score for each question considering all as same weightage. Knowledge score of IYCF and immunization was calculated separately so the IYCF knowledge scoring was done out of 12 as there were 12 questions in IYCF section and immunization knowledge scoring was done out of 4 as four questions were there in immunization section. For assuring quality control specific inclusion & exclusion criteria were defined at design stage 1. There were chances **of** selection bias, non response bias .To deal with selection bias we have done quota sampling, for non response bias in-depth interview was done and it was made sure that every question was answered.

## RESULTS & OBSERVATION

**Table 1** shows in present study age of mother ranges from 20 to 35 years with an average age of 25.67**+** 3.34. 50% Mothers were working rest were house wives, 47.25 % mothers belongs to OBC category, 23.25% belongs to SC category, 18.5% belongs to general category, 11.25 % were from ST category.

**Table 2 Knowledge of under five mother regarding various aspects of IYCF and immunization according to residence of mother**

| Factors knowledge about | Adequate knowledge | Rural (n=200) | Urban (n=200) | Total (n=400) | OR | CI at 95% | P value |
|---|---|---|---|---|---|---|---|
| Colostrum | Yes | 46 (23) | 98 (49) | 144 (36) | 0.31 | 0.20-0.47 | <0.0001 |
| | No | 154 (77) | 102 (51) | 256 (64) | | | |
| Pre-lacteals | Yes | 11 (5) | 50 (25) | 61 (15) | 0.17 | 0.08-0.34 | 0.0001 |
| | No | 189 (94) | 150 (75) | 339 (85) | | | |
| Early initiation of breast feeding | Yes | 32 (16) | 48 (24) | 80 (20) | 0.60 | 0.36-0.99 | <0.046 |
| | No | 168 (84) | 152 (76) | 320 (80) | | | |
| Frequency of breast feeding | Yes | 12 (6) | 156 (78) | 168 (42) | 0.01 | 0.00-0.03 | <0.0001 |
| | No | 188 (94) | 44 (22) | 232 (58) | | | |
| Good signs of attachment | Yes | 107 (53.5) | 142 (71) | 249 (62) | 0.46 | 0.31-0.71 | 0.0003 |
| | No | 93 (46.5) | 58 (29) | 151 (38) | | | |
| Burping after breast feeding | Yes | 182 (91) | 199 (99.5) | 381 (95) | 0.05 | 0.00-0.38 | 0.0039 |
| | No | 18 (9) | 1 (0.5) | 19 (5) | | | |
| Exclusive breast feeding | Yes | 35 (17.5) | 91 (45.5) | 126 (31.5) | 0.25 | 0.16-0.40 | <0.0001 |
| | No | 165 (82.5) | 109 (54.5) | 274 (68.5) | | | |
| Timing of introduction of Complementary Feeding | Yes | 24 (12) | 92 (46) | 116 (29) | 0.16 | 0.09-0.26 | <0.0001 |
| | No | 176 (88) | 108 (54) | 284 (71) | | | |
| Frequency of complementary feed | Yes | 11 (5.5) | 62 (31) | 73 (18) | 0.12 | 0.06-0.25 | <0.0001 |
| | No | 189 (94.5) | 138 (69) | 327 (82) | | | |
| Options of complementary feed | Yes | 55 (27.5) | 101 (50.5) | 156 (39) | 0.37 | 0.24-0.56 | <0.0001 |
| | No | 145 (72.5) | 99 (49.5) | 244 (61) | | | |
| Total duration of breast feeding | Yes | 97 (48.5) | 124 (62) | 221 (55) | 0.57 | 0.38-0.85 | 0.0068 |
| | No | 103 (51.5) | 76 (38) | 179 (45) | | | |
| At least 2 benefits of breast feeding | Yes | 111 (55.5) | 165 (82.5) | 276 (69) | 0.24 | 0.16-0.41 | <0.0001 |
| | No | 89 (44.5) | 35 (17.5) | 124 (31) | | | |
| Purpose of immunization | Yes | 101 (50.5) | 178 (89) | 279 (70) | 0.12 | 0.07-0.21 | <0.0001 |
| | No | 99 (49.5) | 22 (11) | 121 (30) | | | |
| Names of vaccine preventable disease (at-lest 4) | Yes | 73 (36.5) | 98 (49) | 171 (43) | 0.59 | 0.40-0.89 | 0.0118 |
| | No | 127 (63.5) | 102 (51) | 229 (57) | | | |
| Next due date of immunization | Yes | 162 (81) | 189 (94.5) | 351 (88) | 0.24 | 0.12-0.50 | 0.001 |
| | No | 38 (19) | 11 (5.5) | 49 (12) | | | |
| Optional vaccines | Yes | 60 (30) | 153 (76.5) | 213 (53.5) | 0.13 | 0.08-0.20 | <0.0001 |
| | No | 140 (70) | 47 (23.5) | 187 (46.5) | | | |

Figure in the bracket indicate percentage.

**Table 3 Knowledge of under five mothers regarding various aspects of IYCF and immunization according to literacy of mother**

| Factors knowledge about | Adequate knowledge | Literate (n=300) | Illiterate (n=100) | Total (n=400) | OR | CI (95%) | p value |
|---|---|---|---|---|---|---|---|
| Colostrums | Yes | 138(46) | 6(6) | 144(36) | 13.34 | 5.6-31.41 | <0.0001 |
| | No | 162(54) | 94(94) | 256(64) | | | |
| Pre-lacteals | Yes | 56(19) | 5(5) | 61(15) | 4.36 | 1.694-11.21 | 0.0023 |
| | No | 244(81) | 95(95) | 339(85) | | | |
| Early initiation of breast feeding | Yes | 73(24) | 7(7) | 80(20) | 4.27 | 1.89-9.62 | 0.0005 |
| | No | 227(76) | 93(93) | 320(80) | | | |
| Frequency of breast feeding | Yes | 158(53) | 20(20) | 178(44.5) | 4.45 | 2.59-7.63 | <0.001 |
| | No | 142(47) | 80(80) | 222(55.5) | | | |
| Good signs of attachment | Yes | 223(74) | 26(26) | 249(62) | 8.24 | 4.91-13.81 | |
| | No | 77(26) | 74(74) | 151(38) | | | <0.0001 |
| Burping after breast feeding | Yes | 297(99) | 84(84) | 381(95) | 18.85 | 5.36-66.26 | <0.0001 |
| | No | 3(1) | 16(16) | 19(5) | | | |
| Exclusive breast feeding | Yes | 107(36) | 19(19) | 126(31.5) | 2.36 | 1.36-4.10 | 0.0023 |
| | No | 193(64) | 81(81) | 274(68.5) | | | |
| Timing of introduction of Complementary Feeding | Yes | 104(35) | 12(12) | 116(29) | 3.89 | 2.03-7.44 | <0.0001 |
| | No | 196(65) | 88(88) | 284(71) | | | |
| Frequency of complementary feed | Yes | 69(23) | 4(4) | 73(18) | 7.16 | 2.54-20.19 | 0.0002 |
| | No | 231(77) | 96(96) | 327(82) | | | |
| Options of complementary feed | Yes | 128(43) | 28(28) | 156(39) | 1.91 | 1.16-3.13 | 0.0099 |
| | No | 172(57) | 72(72) | 244(61) | | | |
| Total duration of breast feeding | Yes | 196(65) | 35(35) | 221(55) | 3.5 | 2.17-5.62 | <0.0001 |
| | No | 104(35) | 65(65) | 179(45) | | | |
| At least 2 benefits of breast feeding | Yes | 243(81) | 33(33) | 276(69) | 8.655 | 5.21-14.36 | <0.0001 |
| | No | 57(19) | 67(67) | 124(31) | | | |
| Purpose of immunization | Yes | 259(86) | 20(20) | 279(70) | 25.26 | 14-45.60 | <0.0001 |
| | No | 41(14) | 80(80) | 121(30) | | | |
| Names of vaccine preventable disease (at-lest 4) | Yes | 167(56) | 04(4) | 171(43) | 30.13 | 10.80-84.05 | <0.0001 |
| | No | 133(44) | 96(96) | 229(57) | | | |
| Next due date of immunization | Yes | 298(99) | 53(53) | 351(88) | 132 | 31.15-560 | <0.0001 |
| | No | 2(1) | 47(47) | 49(12) | | | |
| Optional vaccines | Yes | 202(67) | 11(11) | 213(53) | 16.67 | 8.52-32.63 | <0.0001 |
| | No | 98(33) | 89(89) | 187(47) | | | |

**Table 4 Mean knowledge score of mothers according to residence and literacy status**

| Knowledge about | Socio demographic factor | Mean | SD | CI at 95% | t-test | P- value |
|---|---|---|---|---|---|---|
| IYCF Knowledge | Urban | 11.34 | 1.34 | -4.51to -3.9 | -30.48 | <0.0001 |
| | Rural | 7.1 | 1.44 | | | |
| Immunization Knowledge | Urban | 3.59 | 0.56 | -1.61to-1.38 | -25.39 | <0.0001 |
| | Rural | 2.09 | 0.62 | | | |
| IYCF Knowledge | Literate | 9.96 | 1.42 | -3.43 to -2.80 | -19.55 | <0.0001 |
| | Illiterate | 6.84 | 1.26 | | | |
| Immunization Knowledge | Literate | 3.56 | 0.70 | -1.86to -1.55 | -21.15 | <0.0001 |
| | Illiterate | 1.85 | 0.70 | | | |

50% mothers were from urban area and 50% were from rural area, 66.5% mothers had nuclear family rest had joint family, 55% mother belongs to Above poverty line (APL) and 45% Below Poverty Line (BPL).98 % mother had 2 or less than 2 under five children, 81.75 % had 2 or less than 2 total children while 17.25 % had more than 2 children.

The uni-variate analysis was done for all the socio demographic variables like occupation, caste, residence, SES, total number of children, total number of under five children at the time of study were tested for association with knowledge of mother but as many variables are there in study that's why only variables that shown association is displayed in table .That's why only two variables residence and literacy was described here in detail**.** Overall mean IYCF knowledge score was found to be 5.12 out of 12.Overall mean immunization knowledge score was found to be 2.53 out of 4. Mean Knowledge score of Urban mothers regarding IYCF & immunization was 11.34 & 3.59 respectively in rural mother IYCF & immunization mean knowledge score was 7.1 & 2.09 respectively Mean Knowledge score of Literate mothers regarding IYCF & immunization were 9.96and 3.56 respectively In illiterate mother IYCF & immunization mean knowledge score were 6.84 and 1.85 respectively.

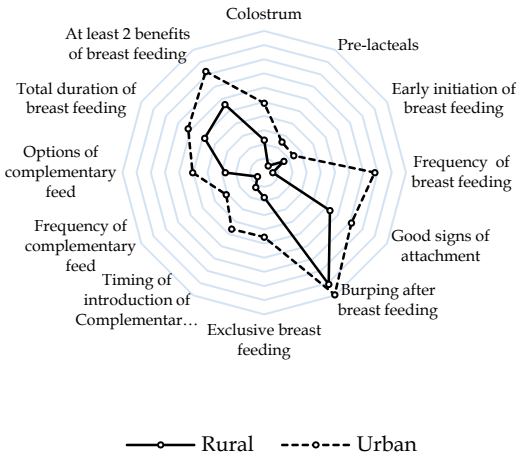


**Figure 1 Knowledge of mother about IYCF according to their residence**

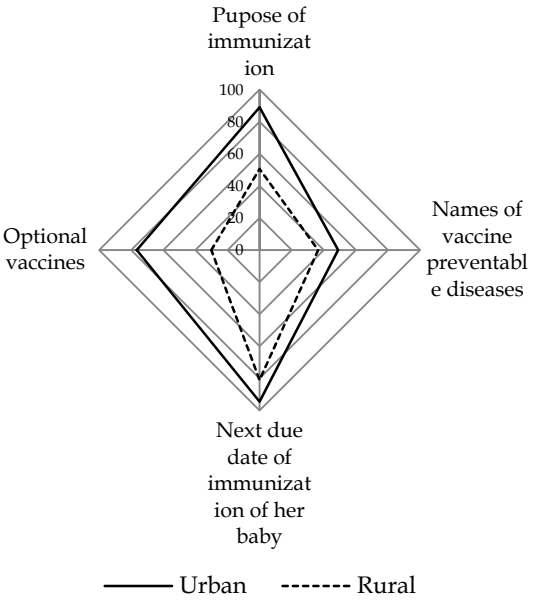


**Figure 2: Knowledge of mother about immunization according to their residence**

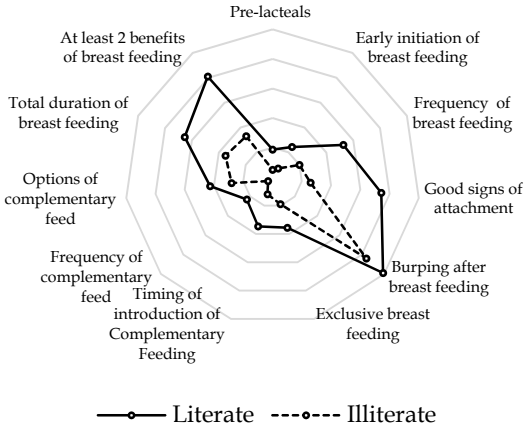


**Figure 3: Knowledge of mother about IYCF according to their literacy**

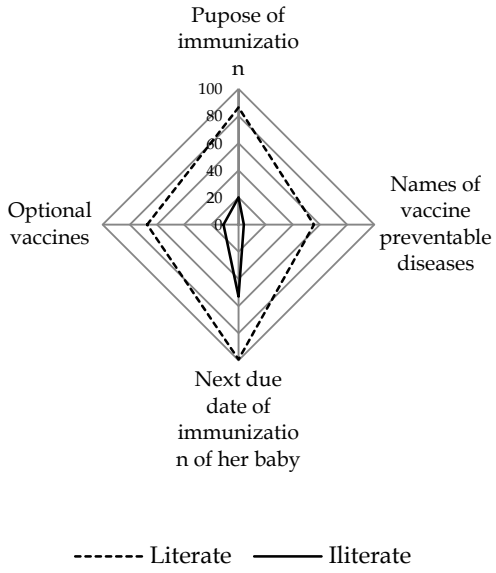


**Figure 4: Knowledge of mother about Immunization according to their literacy**

For assessing knowledge regarding each component we used univariate analysis demonstrated in table 2.

**Table 2** is showing appropriate knowledge regarding colostrums was 36% ,pre-lacteals was found to be 15% in under five mother ,20% mothers were aware about timing of early initiation of breast feeding ,44% mothers had correct knowledge about frequency of breast feeding ,62% mothers knows the signs of good attachment ,95% mothers knows that burping should be done after each breast feed,31.5% knows what is exclusive breast feeding .29% knows the correct timing of introduction of complementary feeding ,18% mothers knows how frequently complementary feed should be given , 39% mothers were aware about the options of complementary feed.55% mothers knows the total duration of breast feeding .69% mothers were able to tell at least 2 benefits of breast feeding. Knowledge of under five mothers regarding different IYCF practices were found to be significantly (<0.05) associated with the residence of mother.

Approximately 69%mothers knows purpose of immunization.42% mothers were able to tell names of vaccine (any 4) preventable disease.87% mothers knows the next due date of immunization.53% mothers knows the names of at least 2 optional vaccine.

By Table 2 we can conclude that mothers who were literate were more likely to be more knowledgeable as compared to illiterate mothers. As odds ratio

for all factors of IYCF and immunization came positive and p value for all odds were <0.05

**Table 3** is showing in univariate statistically significant association was found between literate status of mother with the better knowledge of under five children's mothers regarding IYCF and immunization.

So by table 3 we can conclude that mothers who were from urban area were more likely to be more knowledgeable as compare to the mothers who were from rural area as odds for all aspects of IYCF and immunization came positive and their p value was <0.05.

But there was possibility of confounding, that urban mothers were more likely to be literate so to remove confounding we calculated mean knowledge score for residence and literacy status. Then mean knowledge score of literate and illiterate mothers and urban and rural mothers were compared with the help of t –test.

We can conclude by table 4 that the knowledge of urban and literate mothers about IYCF and immunization was more as compared to rural and illiterate mothers as the p value for all the t statistics were <0.05

**Figure 1**: Knowledge of mother about IYCF according to their residence -2 is showing that urban mother were more knowledgeable in IYCF as compared to rural mother

**Figure 2**: Knowledge of mother about Immunization according to their residence -2 is showing that urban mother had more knowledge regarding Immunization as compared to rural mothers.

**Figure 3**: Knowledge of mother about IYCF according to their literacy status is showing that literate mother had more knowledge regarding IYCF as compared to rural mothers.

**Figure 4**: Knowledge of mother about Immunization according to their literacy status is showing that literate mother had more knowledge regarding Immunization as compared to rural mothers.

## DISCUSSION

Knowledge of mothers regarding Immunization and IYCF was found to be inadequate. Better knowledge was found to be associated with literacy of mother .Reason for this may be that Literacy is considered as the ability to read and write. The reading development is a key of progression of skills that begins with the ability to understand spoken words. Education stimulates critical thinking and helps individual to build his /her own opinions and to have the abstract thinking**.** Better knowledge was found to be associated with residence of the mother.

Urban mother had more knowledge the reason behind this may be that urban people have more exposure, more ways of communication. They are more aware and more likely to be educated. Although there are very less studies with similar objectives of current study, the studies with similar partial objectives were taken for discussion. N Sujita Devi, Irish et al[6] conducted a study and concluded that there is deficiency of knowledge of mother in many aspects of immunization similar to present study. Angadi et al [7] conducted a study, & concluded that mother's knowledge was inadequate regarding immunization as concluded by present study.

Mereena, Sujatha et al[8] reveled by their study that there is lake of knowledge regarding vaccines among the under –five mothers same as our study. Kapoor R, Sheetal V et al [9] came on same conclusion by their study as ours that there is low knowledge level of mothers regarding immunization. Avinash kumar, B Unnikrishnan[10] assessed that mothers have poor knowledge about signs of good attachment and even about immunization similar to our study. S Mishra, A Pathak, M Bansal[11] studied awareness of various vaccine individually and concluded that polio vaccine awareness was 100% but the awareness about measles vaccine was 83%.

Hamid, Chinnasami B, Subash S et al[12] conducted a study its main result were knowledge regarding different aspect of breast feeding was below average as present study and knowledge regarding introduction of complementary feeding was good unlike present study. Divya Karnawat, B S Karnawat et al[13] reveled by their study that the knowledge of mother regarding infant feeding was higher in urban mothers as compared to rural mothers like our study. Harnagle R, Chawla P S et al[14] did a study which reveled that the knowledge of mothers was borderline regarding feeding and immunization.

Almost all study along with present study concluded that the knowledge of mother regarding immunization and IYCF is not adequate and some studies also concluded that the better knowledge was associated with urban residence and literate mother.

## CONCLUSION

Overall mean IYCF knowledge score was found to be 5.127 out of 12.overall mean immunization knowledge score was found to be 2.5350 out of 4.Mean knowledge score regarding IYCF and im-

munization of urban & literate mother was found more as compared to rural and illiterate mother. There is slightly more knowledge regarding immunization as compared to IYCF as indicated by mean score. This knowledge level is not satisfactory.

Recommendations -There is need of innovative intervention to improve the knowledge and ultimately the practices, which could support and encourage breastfeeding and Immunization practices.

**Limitation –**limitation of the present study was small sample size, it affects the Generalisability of the result. Nothing can be done to avoid the recall bias in current study.

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