Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/22425
DOI URL: http://dx.doi.org/10.21474/IJAR01/22425

RESEARCH ARTICLE

KNOWLEDGE-PRACTICE GAP IN CHILDREN'S NUTRITION AMONG MOTHERS OF YOUNG CHILDREN: AN URBAN-RURAL COMPARATIVE STUDY

Blessy Mohandass[1], Bhavneet[2], Manpreet Kaur[2], Rehmat Nabi[2], Sukhmanvir Kaur[2], Sukhveer Josan[2], Mandeep Kaur[3] and Davinder Kaur[4]

1. Department of Mental (Psychiatric) Health Nursing, Gian Sagar College of Nursing, Punjab.
2. B.Sc.Nursing Student, Gian Sagar College of Nursing, Punjab.
3. Department of Community Health Nursing, Shri Guru Harkrishan Sahib College of Nursing, Sohana, Punjab.
4. Department of Medical Surgical Nursing, Gian Sagar College of Nursing, Punjab.

Manuscript Info

Manuscript History
Received: 12 October 2025
Final Accepted: 14 November 2025
Published: December 2025

Keywords: -
Child nutrition, maternal knowledge, feeding practices, urban mothers, rural mothers

Abstract

Child nutrition is a fundamental determinant of growth, development, and overall health during early childhood. Inadequate nutrition during the under-five period can lead to long-term physical, cognitive, and developmental impairments that may persist into adulthood. Mothers, as primary caregivers, play a pivotal role in ensuring appropriate feeding practices and nutritional care for young children. Therefore, assessing maternal knowledge and practices regarding child nutrition is essential, particularly across diverse socio-cultural settings such as urban and rural communities. The present study aimed to assess and compare the knowledge and practices related to child nutrition among mothers of under-five children residing in selected urban and rural areas of District Patiala, Punjab, and to examine the association between knowledge and practices with selected socio-demographic variables.A descriptive comparative research design was adopted for the study. The research was conducted in June 2025, and a total of 70 mothers of under-five children were selected using purposive sampling, comprising 35 mothers from urban areas and 35 from rural areas.

Data were collected using a self-structured questionnaire that included socio-demographic characteristics and items assessing maternal knowledge and practices related to child nutrition. Statistical analysis was carried out using descriptive statistics such as mean and standard deviation, along with inferential statistics including the t-test.Findings revealed that the socio-demographic characteristics of urban and rural mothers were largely similar, with no statistically significant differences observed except for religion (p=0.001). Most mothers demonstrated average knowledge regarding child nutrition in both urban (54.3%) and rural (45.7%) areas, and no mothers were found to have poor knowledge. In terms of practices, good nutritional practices were more commonly observed among rural mothers (56.5%) compared to urban mothers (43.5%). A statistically significant difference was found in practice scores between urban and rural mothers (p=0.001), whereas no significant difference was noted in knowledge scores (p=0.933). Educational status and occupation showed a significant association with knowledge and practice scores among rural mothers (p<0.05). Although urban mothers exhibited slightly higher mean

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Corresponding Author: -Blessy Mohandass
Address: -Department of Mental (Psychiatric) Health Nursing, Gian Sagar College of Nursing, Punjab.

knowledge scores, rural mothers consistently demonstrated better nutritional practices. This highlights a gap between knowledge and practice, particularly in urban settings. The study underscores the need for targeted educational interventions and community-based nutrition programs to bridge this gap and promote optimal child nutrition practices, thereby improving health outcomes among under-five children.

Introduction: -

Early childhood nutrition plays a critical role in supporting optimal growth, cognitive development, immunity, and long-term health outcomes (Blacket al, 2013). Malnutrition—both undernutrition and overnutrition—remains one of the leading causes of childhood morbidity and mortality worldwide (UNICEF, WHO&World Bank, 2021). The first 1,000 days of life are especially crucial, as nutritional deficiencies during this period can lead to stunting, impaired cognitive performance, and increased susceptibility to infections (Victoraet al., 2010). Parents play a central role in safeguarding child nutrition, as many common childhood health issues can be prevented through healthy feeding practices (Bhutta et al., 2013). Nutrition is strongly influenced by socioeconomic status, maternal education, cultural norms, and access to healthcare services (Alderman & Headey, 2017). Children of educated mothers have been shown to have better dietary intake and lower risk of malnutrition (Hoddinott et al., 2013). Inadequate nutrition not only affects individual child potential but also undermines community health and long-term economic development (Yigra et al., 2019). According to the World Health Organization, malnutrition includes deficiencies, excesses, or imbalances in energy or nutrient intake (WHO & UNICEF, 2006).

Rural children are more prone to undernutrition due to poverty, limited healthcare access, and poor sanitation, while urban children increasingly face obesity risks due to processed food consumption and sedentary lifestyles (Menon et al., 2018; Srivastava & Kumar, 2021). Feeding practices among mothers vary widely between urban and rural communities, influenced by cultural beliefs, availability of nutrition information, and access to health services (Victora et al., 2016; Ministry of women and child development, 2018). India continues to bear a substantial burden of malnutrition, despite economic growth and national nutrition programs. NFHS-5 reports high prevalence of stunting, wasting, and underweight among children under five (Kavle& Laundry, 2018). Punjab, although relatively developed, exhibits concerning rates of childhood malnutrition, with 25.7% stunted, 21.6% underweight, and 17.2% wasted children (NFHS-5, 2021). Poor maternal knowledge regarding breastfeeding, complementary feeding, dietary diversity, and appropriate portion sizes further contributes to nutritional deficiencies among young children (Aguayo &Menon, 2016; WHO, 2021). Significant differences between rural and urban maternal feeding practices highlight the need for comparative research (Srivastava & Kumar, 2021).

Need of study: -

According to WHO (2021), nearly 45% of deaths among children under five years are attributable to malnutrition, particularly in low- and middle-income countries. Malnutrition includes not only undernutrition but also micronutrient deficiencies and the rising burden of childhood overweight(NFHS-5, 2021). India contributes significantly to global malnutrition levels. NFHS-5 reported that 35.5% of children under five are stunted, 19.3% wasted, and 32.1% underweight (Kavley& Laundry, 2018). Punjab also shows concerning malnutrition levels, with 25.7% stunted, 21.6% underweight, and 17.2% wasted (IIPS, 2021). These figures highlight the continued challenges in child nutrition even in states considered relatively developed. Poor maternal knowledge regarding breastfeeding, complementary feeding, and dietary diversity is a major factor contributing to malnutrition (Aguayo & Menon, 2016). Incorrect timing of complementary feeding, inadequate portion sizes, and low intake of micronutrient-rich foods are common concerns (Gupta et al., 2012). Maternal practices are also influenced by socioeconomic status, cultural norms, food availability, and access to health services. Rural mothers often follow traditional methods and may lack nutrition-related information, whereas urban mothers may rely more on packaged foods due to lifestyle influences (Srivastava & Kumar, 2021).

Material and Methods: -

The study adopted a comparative, non-experimental research design to assess and compare the knowledge and practices regarding child nutrition among mothers of under-five children residing in urban and rural areas. A total of 70 mothers were selected, with 35 from urban areas and 35 from rural areas, using a non-probability purposive sampling technique. A structured questionnaire was used to collect data on mothers' knowledge and practices related to nutrition. The key research variable was used to assess the knowledge and practice regarding child nutrition among mother of under-five at urban and rural community area.

Results: -

The findings of the study indicated that the urban and rural groups were largely homogeneous in terms of baseline demographic characteristics. Religion was the only variable that showed a statistically significant difference between the two groups ($p < 0.05$), with Hindu mothers predominantly belonging to urban areas and Sikh mothers mainly representing rural areas. The data were normally distributed; therefore, parametric statistical tests were applied for further analysis. Assessment of maternal knowledge regarding child nutrition revealed no statistically significant difference between urban and rural mothers ($p > 0.05$), with both groups demonstrating similar distributions of average and good knowledge levels, indicating that area of residence did not influence knowledge scores. In contrast, maternal practices related to child nutrition differed significantly between the two groups. Rural mothers exhibited significantly better practices compared to urban mothers, with a higher proportion demonstrating good practices (56.5% versus 43.5%), and the mean practice scores were significantly higher among rural participants ($p < 0.001$), suggesting a strong influence of residence on maternal practices.

Further analysis showed that educational status and occupation were the only demographic variables that had a significant Influence on maternal knowledge scores ($p < 0.05$), whereas other variables such as age, number of children, gender, religion, family type, and family income did not show a significant association. Between-group comparisons also revealed significant differences in knowledge scores based on educational status and occupation across urban and rural areas. With respect to maternal practices, the age of the youngest child was the only demographic variable that showed a significant association with practice scores ($p < 0.05$), while other demographic factors did not demonstrate a significant effect. However, independent samples analysis revealed highly significant differences in practice scores across all demographic variables ($p < 0.001$), with rural mothers consistently scoring higher than urban mothers. Overall, the results highlight that although maternal knowledge levels were comparable between urban and rural communities, maternal practices differed markedly, with rural mothers demonstrating more favorable practices related to child nutrition, underscoring the significant role of area of residence in influencing maternal practices.

Table 1: Comparison of level of knowledge regarding child nutrition among mothers

N=70

Level of knowledge	N	Urban(n=35)		Rural(n=35)		p-value
		F	%	F	%	
Poor	0	0	0.0	0	0.0	0.473^{NS}
Average	35	19	54.3	16	45.7	
Good	35	16	45.7	19	54.3	

Fisher's Exact test NS=Non-significant at p>0.05; *= Significant at p<0.05

Table 1revealsno statistically significant difference between the two groups ($p > 0.05$), with both urban and rural subjects having a similar distribution of average and good knowledge levels.

Table 2: Comparisonof level of practices regarding child nutrition among mothers

N=70

Practices	N	Urban(n=35)		Rural(n=35)		p-value
		F	%	F	%	
Poor	0	0	0.0	0	0.0	0.005**
Average	8	8	100.0	0	0.0	
Good	62	27	43.5	35	56.5	

Fisher's Exact test NS=non-significant at p>0.05; **=Significant at p<0.01

Table 2 showed a statistically significant difference between urban and rural mothers ($p = 0.005$, $p < 0.05$), with a higher proportion of rural mothers demonstrating good practices (56.5%) compared to urban mothers (43.5%).

Table 3:Comparison of mean and standard deviation of knowledge scores regarding child nutrition between respondents of Urban and rural community areas

N=70

Residence	N	Mean± SD	Mean difference	df	t	p-value
Urban	35	20.20± 4.16	0.086	68	8.36	0.933^{NS}
Rural	35	20.29± 4.28				

t=Independent Samples t-testNS=non-significant at p>0.05; *= Significant at p<0.05

Table 3 revealed that no statistically significant difference between the groups p > 0.05) suggesting that area residence had no effect on the knowledge scores of mothers, and both groups had similar levels of knowledge.

Table 4:Comparison of mean and standard deviation of practice scoresregarding child nutritionbetween respondents of Urban and rural community areas

N=70

Residence	N	Mean± SD	Mean difference	df	t	p-value
Urban	35	15.31± 1.87	3.257	68	8.36	0.001***
Rural	35	18.57± 1.35				

t=Independent Samples t-testNS=non-significant at p>0.05; *=Significantat p<0.001**

Table 4showed statistically significant difference in mean practice scores between urban and rural participants (p <0.001) indicating that residence has a significant impact on maternal practice scores. Rural participants demonstrated significantly better practices compared to their urban counterparts

Table5:Comparison of mean knowledge scores and demographic variables in urban and rural areasrespondents

N=70

Variable	Urban (n=35)					Rural (n=35)				
	N	Mean	SD	F	p-value	N	Mean	SD	F	p-value
Age(years)										
18–25	7	21.57	2.5	0.63	0.540^{NS}	12	20.08	3.91	0.83	0.448^{NS}
26–32	26	19.73	4.49			20	19.95	4.66		
33–39	2	21.5	4.95			3	23.33	2.51		
t 0.12**p- value** 0.90^{NS}										
Number of children										
1	11	21	3.43	0.570	0.570^{NS}	7	21.43	4.57	1.208	0.298^{NS}
2	16	19.38	4.41			24	20.08	4.23		
3	8	20.75	4.77			3	17.33	3.05		
≥ 4	0	–	–			1	26	–		
t -1.02**p- value**0.32^{NS}										
Gender of child										
Male	17	19.65	4.78	0.453	0.453^{NS}	21	19.95	4.33	0.320	0.581^{NS}
Female	18	20.72	3.54			14	20.79	4.33		
t -0.065**p- value** 0.95^{NS}										
Age of youngest child(years)										
0–1	0	–	–	0.33	0.72^{NS}	4	16	3.83	1.360	0.260^{NS}
1–2	18	20.28	4.39			14	20.43	3.81		
2–3	12	19.75	4.35			12	20.67	4.67		
3–4	4	21.75	3.5			3	22.33	2.51		
4–5	1	18	–			2	22.5	6.36		
t -0.49 p – **value** 0.63^{NS}										

Educational status										
No formal education	0	–	–	0.87	0.684^{NS}	2	14.5	2.12	5.07	0.028*
Primary	6	18.33	2.06			5	16.6	4.39		
Matriculation	14	20.5	5.06			15	21.2	4.07		
Senior Sec.	11	20.45	4.29			8	20.63	4.06		
Graduation>	4	21.25	2.75			5	23	1.58		
t -0.009**p - value0**.99^{NS}										
Religion										
Hindu	17	20.06	3.68	0.31	0.245^{NS}	1	24	–	0.77	0.387^{NS}
Muslim	2	25	1.41			0	–	–		
Sikh	16	19.75	4.62			34	20.18	4.3		
t -0.17**p- value** 0.86^{NS}										
Occupation										
Homemaker	29	19.62	4.28	6.45	0.016^{S}	28	20.68	4.07	3.42	0.036*
Govt. employee	0	–	–			2	12	1.41		
Private employee	6	23	2			3	21	3.6		
Self employed	0	–	–			2	22	0		
t 0.20 **p- value** 0.84										
Family income (in Rs.)										
< 10,000	3	19.33	1.15	0.09	0.964^{NS}	4	15.75	4.42	1.87	0.162^{NS}
10,000–20,000	13	20.54	4.52			16	20.69	4.19		
20,000–30,000	18	20.17	4.44			12	21.08	4.07		
> 30,000	1	19	–			3	21	3.6		
t 0.044**p- value** 0.97^{NS}										
Type of family										
Nuclear	21	21.29	4.12	3.96	0.058^{NS}	13	20.92	3.4	0.37	0.507^{NS}
Joint	14	18.57	3.79			22	19.91	4.77		
t 1.99**p- value** 0.055^{NS}										

F =One-way ANNOVA t=Independent Samples t-test NS=non-significant at p>0.05 *=Significant at p<0.05

Table 5 revealed that a significant mean difference ($p<0.05$) was observed only for educational status and occupation, indicating their influence on knowledge scores. No significant mean differences ($p>0.05$) were found across other demographic variables, suggesting that variables such as age, number of children, gender, family type, religion, and income did not affect the knowledge scores.Between groups, independent samples t-tests revealed significant mean differences ($p<0.05$) in educational status and occupation, suggesting these factors influenced maternal knowledge scores across urban and rural communities.

Table 6: Comparison of mean practice scores and demographic variables in urban and rural areasrespondents

N=70

Variable	Urban(n=35)					Rural (n=35)				
	N	**Mean**	**SD**	**F**	**p-value**	**N**	**Mean**	**SD**	**F**	**p-value**
Age(years)										
18–25	7	15.43	1.98	2.09	0.15^{NS}	12	18.33	1.43	0.19	0.83^{NS}
26–32	26	15.42	1.83			20	18.75	1.33		
33–39	2	13.5	2.12			3	18.33	1.52		
t =-7.32; **p** 0.001***										
Number of children										
1	11	15.45	1.63	0.11	0.935^{NS}	7	19	1.15	2.11	0.233^{NS}
2	16	15.19	1.87			24	18.54	1.35		
3	8	15.38	2.38			3	17.33	1.52		
≥ 4	0	–	–			1	20	–		
t =-6.63; **p**0.001***										
Gender of child										

Male	17	14.94	1.56	1.42	0.259^{NS}	21	18.62	1.28	0.067	0.804^{NS}
Female	18	15.67	2.11			14	18.5	1.5		
t =-8.49; **p** 0.001***										
Age of youngest child(years)										
0–1	0	–	–	0.13	0.981^{NS}	4	18	1.15	3.05	0.047*
1–2	18	15.22	2.07			14	18.29	1.26		
2–3	12	15.5	1.38			12	18.83	1.33		
3–4	4	15.25	2.87			3	20	0		
4–5	1	15	–			2	18	2.82		
t = -8.21**p** 0.001***										
Educational status										
No formal education	0	–	–	3.14	0.039^{NS}	2	19.5	0.7	2.42	0.110^{NS}
Primary	6	14.33	1.5			5	17.2	1.09		
Matriculation	14	15.14	1.99			15	18.53	1.3		
Senior Sec.	11	15.82	1.88			8	19	1.3		
t = -8.35**p** 0.001***										
Religion										
Hindu	17	15.24	2.01	0.78	0.667^{NS}	1	20	–	0.73	0.292^{NS}
Muslim	2	16.5	0.7			0	–	–		
Sikh	16	15.25	1.84			34	18.53	1.35		
Hindu	17	15.24	2.01			1	20	–		
Muslim	2	16.5	0.7			0	–	–		
t= -8.35**p** 0.001***										
Occupation										
Homemaker	29	15.21	1.91	0.55	0.465^{NS}	28	18.57	1.31	0.32	0.912^{NS}
Govt. employee	0	–	–			2	18	1.41		
Private employee	6	15.83	1.72			3	18.67	2.3		
Self employed	0	–	–			2	19	1.41		
t = -8.4**p** < 0.001***										
Family income (in Rs.)										
< 10,000	3	16.33	2.3	0.607	0.745^{NS}	4	17.75	1.5	1.64	0.20^{NS}
10,000–20,000	13	15	1.78			16	18.5	1.31		
20,000–30,000	18	15.39	1.97			12	19	1.2		
> 30,000	1	15	–			3	18.33	2.08		
t = -8.43**p** 0.001***										
Type of family										
Nuclear	21	15.67	1.9	1.96	0.177^{NS}	13	18.69	1.25	0.17	0.692^{NS}
Joint	14	14.79	1.76			22	18.5	1.43		
t = -8.59**p** 0.001***										

F=One-way ANNOVA t=Independent Samples t-test S=non-significant at p>0.05 *=Significant at p<0.001**

Table 6 revealed that a significant mean difference($p<0.05$) was observed for the age of the youngest child, indicating its influence on practice scores. No significant mean differences ($p>0.05$) were found across other demographic variables, suggesting that variables such as age, number of children, gender, educational status, religion, occupation, family income, and type of family did not affect the practice scores. Between groups, independent samples t-tests revealed highly significant mean differences across all variables ($p<0.001$), with rural participants consistently scoring higher than urban participants implying area of residence significantly influenced the measuredpracticescores**,** with rural participants showing better outcomes than urban participants.

Summary: -

- Urban and rural mothers demonstrated comparable levels of knowledge regarding child nutrition, with no statistically significant difference ($p > 0.05$).
- Rural mothers exhibited significantly better child nutrition practices compared to urban mothers ($p < 0.05$).

- None of the mothers demonstrated poor knowledge or poor feeding practices.
- Educational status was significantly associated with knowledge among rural mothers.
- Feeding practices were significantly associated with selected demographic variables such as occupation and type of family.
- No significant association was observed between knowledge scores and age, religion, gender of the child, or family income.

Discussion: -

The findings revealed that both urban and rural mothers had almost equal levels of knowledge regarding child nutrition, and no statistically significant difference was observed between the two groups ($p > 0.05$). A study in Maharashtra also found that health education initiatives improved complementary feeding practices more effectively among rural mothers, supporting the current finding that rural mothers showed better practices than urban mothers(Pawar&Katkade, 2023). A comparative study in Mysuru, Karnataka, reported that urban mothers had somewhat better practices compared to rural mothers, though both groups demonstrated gaps in correct feeding practices(Girish &Venkatesh, 2023). Similarly, research in Belgaum, Karnataka, found that urban mothers initiated complementary feeding more appropriately than rural mothers(Patil&Angadi, 2015). Studies from Thrissur, Kerala, also indicated that urban mothers adhered better to weaning guidelines, whereas rural mothers often started earlier than recommended(Nair &Augustine, 2012).Despite these variations, the role of maternal education has been consistently emphasized. In the present study, education was significantly associated with knowledge among rural mothers. This is supported by a multi-state study in India which showed that higher maternal health literacy significantly reduced the risk of underweight and stunting among children(Kashyap et al., 2016). Regarding practices, demographic factors such as occupation, type of family, and age of the youngest child were significantly associated with better nutrition-related practices. Overall, while the present study highlighted that rural mothers demonstrated better practices despite similar knowledge levels, evidence from other regions shows mixed trends.

Conclusion: -

The study concluded that while both urban and rural mothers had comparable levels of knowledge regarding child nutrition, rural mothers demonstrated significantly better practices. Education, occupation, and family type influenced mothers' knowledge and practices. The results highlight a gap between awareness and implementation, particularly among urban mothers. Effective community-based health education, practical demonstrations, and active involvement of family members are necessary to bridge this gap. Strengthening government nutrition programs and involving nurses and health workers in continuous support can promote optimal feeding practices. A holistic, family-centered approach is essential to improve child nutrition and support the growth and development of under-five children.

Acknowledgement: -

The authors thank their institution for granting permission to conduct the study. We extend our heartfelt thanks to the academic experts and faculty members for validating the tool and providing continuous guidance. We also extend appreciation to mothers of under five children who willingly participate and cooperate with us during the data collection.

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