

ASSESSMENT OF KNOWLEDGE REGARDING IMPACT OF MATERNAL BEHAVIOUR ON FETAL DEVELOPMENT AMONG ANTENATAL MOTHERS – A CROSS-SECTIONAL STUDY IN KANCHIPURAM

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Abstract

The burden of death and disability due to impaired fetal development is particularly high in developing countries; it is also a significant concern in many developed countries. By taking steps to promote optimal fetal development, it should be possible to improve the fetal growth and reduce mortality and morbidity rate. Which in turn, will lead to improved social and economic health and well-being.

Keywords Knowledge, development.

INTRODUCTION

Globally, the World Health Organization (WHO, 2023) reports that 15–20% of pregnancies result in low birth weight babies, many of whom are born in low- and middle-income countries. In India, the National Family Health Survey (NFHS-5) highlights persistent challenges in maternal and child health, including high rates of anemia, poor antenatal care attendance, and nutritional deficiencies among pregnant women, particularly in rural areas. These factors are often exacerbated by a lack of knowledge, awareness, and accessibility to reliable health information¹⁰.

In regions like Kanchipuram, where socio-cultural factors and literacy levels may limit awareness, antenatal mothers are at higher risk of engaging in unhealthy behaviour due to myths, misconceptions, and inadequate health education. This underscores the urgent need to assess and improve their knowledge regarding the impact of maternal behaviour on fetal development¹¹.

Identifying gaps in maternal knowledge allows healthcare professionals to design targeted educational interventions that are culturally sensitive and community-specific. Empowering mothers with the right knowledge can prevent complications such as intrauterine growth restriction (IUGR), preterm birth, and developmental delays. Reinforcing beneficial—such as balanced nutrition, regular antenatal check-ups, emotional well-being, and abstaining from harmful substances—can drastically improve fetal outcomes.

Enhancing maternal knowledge contributes to healthier pregnancies, which in turn reduces the burden on healthcare facilities and improves overall public health indicators.

The study aligns with SDG Goal 3, which emphasizes ensuring healthy lives and promoting well-being for all at all ages, particularly maternal and child health. Hence, this study is not only relevant but also essential for fostering healthy maternal behaviours, ensuring favourable birth outcomes, and strengthening the health of future generations. By conducting this research, nurses and healthcare providers can play a pivotal role in promoting evidence-based practices and supporting maternal and child health at the grassroots level.

METHODOLOGY

A descriptive design was adopted for conduction this study to assess the knowledge regarding maternal behaviour on fetal development among antenatal mother. The research design selected for study was non – experimental descriptive design.

3.3 Variables:

Variables are qualities, properties or characteristics of person, things or situation that changes or vary

3.3.1 Independent variable:

It is a stimulus or activity that is manipulated or varied by researcher to create the effect on dependent variable.

3.3.2 Dependent variable:

In the outcome or response due to the effect of the dependent variable, which researcher want to predict or explain. The dependent variable in the present study was effectiveness knowledge on fetal development among primigravida mothers

3.4 Setting of the study:

This study was carried out in villages of Kanchipuram such as sevilimedu and pallavarmedu.

3.5 Population:

The term population refers to the aggregate or totality of all the objects, subjects or members that confirm to a set of specifications³²

3.5.1 Target population:

It refers to the population that the researcher wishes to make all antenatal mother in this research to the target population.

3.5.2 Accessible population:

It refers to the aggregate of cases which confirm to the designed criteria which is accessible to the researcher as the pool of subjects or objects. In this study the population consists of all antenatal mother at selected villages of Kanchipuram such as (sevilimedu and pallavarmedu).

3.6 Sample size:

The sample size is 50

3.7 Sampling technique:

- The sampling technique use in this study was non-probability convenient sampling technique

3.8 Criteria for sample selection:

3.8.1 Inclusive criteria:

- Antenatal mothers who are willing to participate in the study
- All antenatal mothers who are in selected villages at Kanchipuram
- Antenatal mothers who knows the language tamil
- Antenatal mothers who are available at the time of study

3.8.2 Exclusive criteria:

- Antenatal mothers who are not available at the time of study
- Antenatal mothers who are at high risk

3.9 Development of the tool:

The tool which was used in this study consists of two parts

Part I:

Demographic variable such as age, religion, education, occupation, income of the family, type of the family, age of menarche

To assess the level of knowledge regarding impact of maternal behaviour on fetal development

Knowledge questionnaire to assess the level of knowledge regarding impact of maternal behavior on fetal development

It contains 20 multiple choice questions to assess the knowledge regarding impact of maternal behavior on fetal development among antenatal mother in the area of stress, depression, smoking, consuming alcohol, physical activity, and other daily activity .Correct answer carries one mark and wrong answer carries zero mark. The possible maximum score is 20 and minimum score is 0

3.10 Scoring Interpretation:

Level of knowledge

Knowledge level	Score
Poor	0 –9
Adequate	10-14
Good	15-20

3.11 Plan for data analysis:

Data analysis was done by using descriptive statistic in that we included percentage, frequency, mean and chi-square test.

Section: A

The level of knowledge regarding fetal development was analysed by using frequency and percentage.

Section: B

Assessment of association between the level of knowledge on fetal development and demographic variables using chi-square test.

RESULTS

Table : 1 Frequency and percentage of demographic variables

Sno	Demographic variables	Frequency (F)	Percentage(%)
1.	Age in years a) 18-22 years b) 22-26 years c) 26-30 years	9 29 12	18% 58% 24%
2.	Religion of the mother a) Hindu b) Christian c) Muslim d) Others	40 6 4 0	80% 12% 8% 0
3.	Education of the mother a) Illiterate b) Primary c) Higher secondary d) Graduate	1 7 21 21	2% 14% 42% 42%
4.	Occupation of the mother a) Unemployed b) Business c) Technical worker d) professional	43 2 4 1	86% 4% 8% 2%
5.	Monthly income of the family a) Rs 5000-15000 b) Rs 15000-250000 c) Rs 250000-350000 d) Above Rs 350000	30 20 0 0	60% 40% 0% 0%
6.	Type of family a) Nuclear family b) Joint family c) Break family	22 28 0%	44% 56% 0%
7.	Age of menarche a) 12-14 years b) 15-16 years c) Above 16 years	18 23 9	36% 46% 18%

Table 1:

Table shows the distribution of demographic variables of antenatal mothers. With regard to the age group of antenatal mother 18-22 were 9 (18%), 22-26 years were 29 (58%), 26-30 years were 12 (24%) and above 30 were 0 (0%). Regarding the religion of the antenatal mother Hindu were 40 (80%), Christian were 6 (12%), Muslim 4 (8%) and others were 0. Regarding education of the antenatal mothers 1 (2%) were illiterate, 7 (14%) were primary, 21 (42%) were Higher secondary, 21 (42%) were graduate. Regarding occupation of the antenatal mother 43 (83%) were unemployed, 2 (4%) were business, 4 (8%) were technical worker and professional worker 0. On considering the monthly of the family of the antenatal mother 30 (60%) were between Rs 5000 -15000, 20 (40%) were between Rs 15000-25000, 0 (0%) were between Rs 25000-35000 and between Rs above were 0.

Regarding the type of family 22 (44%) were nuclear family, 28 (56%) were joint family, and break family were 0. Regarding age of menarche 18 (36%) were between 12-14 years, 23 (46%) were between 15 -16 years, and above 16 year were 9 (18%).

: Association between demographic variable and level of knowledge regarding impact of maternal behaviour on fetal development among antenatal mothers.

S.No	Demographic variables	Level of knowledge						x2 (df)
		poor		moderate		adequate		
		f	%	f	%	f	%	
1.	Age in years							Df=4 Chi-s =5.875 P = 0.0152 P < 0.05 significant
	a)18-22 years	4	8%	1	2%	4	8%	
	b) 22-26 years	10	20%	11	22%	9	18%	
	c) 26-30 years	2	4%	7	14%	2	4%	
2.	Religion of the mother							Df=6 Chi-s =5.809 P = 0.0159 P < 0.05 significant
	a) Hindu	13	26%	18	36%	10	20%	
	b) Christian	2	4%	0	0%	4	8%	
	c) Muslim	1	2%	1	2%	1	2%	
	d) Others	0	0%	0	0%	0	0%	
3.	Education of the mother							Df=6 Chi-s =5.531 P = 0.0187 P < 0.05 significant
	a)Illiterate	0	0%	0	0%	1	2%	
	b)Primary	3	6%	1	2%	3	6%	
	c)Higher secondary	6	12%	8	16%	7	14%	
	d)Graduate	7	14%	10	20%	4	8%	
4.	Occupation of the mother							Df=6 Chi-s =8.41 P = 0.0037 P < 0.05 significant
	a) Unemployed	13	26%	17	34%	13	26%	
	b) Business	2	4%	0	0%	0	0%	
	c) Technical worker	0	0%	2	4%	2	4%	
	d) Professional	1	2%	0	0%	0	0%	
5.	Monthly income of the family							Df=6 Chi-s =8.41 P = 0.0037 P < 0.05 Not significant
	a) Rs 5000-15000	12	24%	12	24%	11	22%	
	b) Rs 15000-250000	4	8%	7	14%	4	8%	
	c) Rs 250000-350000	0	0%	0	0%	0	0	
	d) Above Rs 350000	0	0%	0	0%	0	0	
6.	Type of family							Df= 4 Chi-s = 3.318 P = 0.0685 P < 0.05 Not significant
	d) Nuclear family	9	18%	8	16%	11	22%	
	e) Joint family	7	14%	11	22%	4	8%	
	f) Break family	0	0%	0	0%	0	0%	
7.	Age of Menarche							Df= 4 Chi-s = 7.863 P = 0.0050
	d) 12-14 years	8	16%	8	16%	1	2%	
	e) 15-16 years	7	14%	8	16%	11	22%	
	f) Above 16 years	1	2%	3	6%	3	6%	

								P < 0.05 significant
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NS: Not significant, S: Significant

P<0.05 = Significant, >0.05 = Not significant

The above depicts showed that there is a five significant are age in years, religion of the mother, education of the mother, occupation of the mother, age of menarche association between demographic variable and two not significant are monthly income of the family, type of family demographic variable of knowledge regarding impact of maternal behaviour on fetal development among antenatal mother in selected village at Kanchipuram.. There is a significant association between the level of knowledge regarding impact of maternal behaviour on fetal development among antenatal mother was partially accepted.

DISCUSSION

The present study revealed that majority of frequency and percentage distribution impact of maternal behaviour on fetal development of poor knowledge is 16 (32%), moderate knowledge is 18 (36%), good knowledge is 16 (32%).

The similar study was conducted by Sharma et al. (2020) A Descriptive Study to Assess the Knowledge of Pregnant Women Regarding Maternal Health Behaviours and Their Impact on Fetal Outcomes in Rural Haryana. This study was conducted in rural Haryana to assess the knowledge of pregnant women regarding maternal health behaviours and fetal outcomes. Results showed that 65% of mothers had inadequate knowledge about the impact of nutrition, rest, and substance abuse on fetal development. The study highlight the need for structured educational programs during antenatal visits.

The above depicts showed that there is a five significant association between demographic variable and two not significant demographic variable of knowledge regarding impact of maternal behaviour on fetal development among antenatal mother in selected village at Kanchipuram.. There is a significant association between the level of knowledge regarding impact of maternal behaviour on fetal development among antenatal mother was partially accepted.

The obligation of the nursing of the profession, is the provision of care and service to human bring several implication may drawn from the present study for nursing practice.

- Nurses in community and primary care settings should focus on the identifying knowledge gaps among antenatal mothers during routine care.

- Routine health assessments during antenatal care visits must include basic health education about maternal behaviours and their influence on fetal outcomes.

Nurses can act as key advocates for safe maternal behaviours, especially in rural areas with limited access to professional health guidance.

It plays an important role preparing nurse for providing wellbeing to people in various areas the present study has implication on nursing education

- Nursing students should be trained to conduct health education sessions and assess knowledge levels in community settings.

- Nursing curriculum must emphasize maternal behaviour and fetal development to prepare students for roles in antenatal counselling.

Stimulation and role-play methods can be used in education to improve students ability to communicate important maternal health topics effectively.

The study limitations include:

- The study is limited to pregnant mothers in selected village.

- The study assessed for impact of maternal behaviour on fetal development among antenatal mothers in selected village.

- The small number of sample limits the generalization of the study

- Non experimental research design was adopted in the study.

Based on the finding of the study following recommendations can made

- Conduct regular antenatal health education sessions on maternal behaviour and fetal development.

- Train community health workers to counsel pregnant women on healthy prenatal practices.

- Include behavioural education as part of routine antenatal care protocols.

- Distribute IEC materials to enhance awareness about harmful maternal behaviours.

- Encourage family involvement in promoting positive maternal habits during pregnancy.

REFERENCES

1. Numan, M., & Insel, T. R. (2003). The neurobiology of parental behaviour. Springer Science & Business Media.
2. Rosenblatt, J. S. (2002). Psychobiology of maternal behaviour: Contribution to the clinical understanding of maternal behaviour among humans. *Acta Paediatrica*, 91(s439), 21–25.
3. Cunningham, F. G., Leveno, K. J., Bloom, S. L., Spong, C. Y., & Dashe, J. S. (2018). *Williams Obstetrics* (25th ed.). McGraw-Hill Education.
4. Moore, K. L., Persaud, T. V. N., & Torchia, M. G. (2020). *The developing human: Clinically oriented embryology* (11th ed.). Elsevier.
5. Sadler, T. W. (2018). *Langman's medical embryology* (14th ed.). Wolters Kluwer.
6. Basavanthappa, B. T. (2008). *Community health nursing* (pp. 634–648). Jaypee Brothers.
6. Carlson, N. R. (2013). *Physiology of behaviour* (11th ed.). Pearson Education.
7. Moore, K. L., Persaud, T. V. N., & Torchia, M. G. (2020). *The developing human: Clinically oriented embryology* (11th ed.). Elsevier.
8. Marieb, E. N., & Hoehn, K. (2018). *Human anatomy & physiology* (11th ed.). Pearson.
9. Sadler, T. W. (2018). *Langman's medical embryology* (14th ed.). Wolters Kluwer.
10. Tortora, G. J., & Derrickson, B. (2017). *Principles of anatomy and physiology* (15th ed.). Wiley.
11. Cunningham, F. G., Leveno, K. J., Bloom, S. L., Spong, C. Y., & Dashe, J. S. (2018). *Williams Obstetrics* (25th ed.). McGraw-Hill Education.
12. Larsen, W. J. (2001). *Human embryology* (3rd ed.). Churchill Livingstone.
13. Gilbert, S. F. (2010). *Developmental biology* (9th ed.). Sinauer Associates.
14. Guyton, A. C., & Hall, J. E. (2016). *Textbook of medical physiology* (13th ed.). Elsevier.
15. Young, B., O'Dowd, G., & Woodford, P. (2013). *Wheater's functional histology: A text and colour atlas* (6th ed.). Churchill Livingstone.
16. World Health Organization. (2023). Low birth weight estimates. <https://www.who.int>
17. Ministry of Health and Family Welfare. (2021). National Family Health Survey (NFHS-Government of India.
18. Bhutta, Z. A., Das, J. K., Rizvi, A., Gaffey, M. F., Walker, N., Horton, S., ... & Black, R. E. (2013). Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet*, 382(9890), 452–477.
19. Singh, P., & Yadav, R. J. (2019). Health and nutrition knowledge among pregnant women in rural India. *Indian Journal of Community Health*, 31(2), 204–209.
20. Paul, P., & Rumalla, K. (2020). Awareness of antenatal care services among women in South India. *International Journal of Reproductive Medicine*, 2020, 1–8.
21. Goyal, N., & Negandhi, P. (2021). Tailoring maternal education programs for rural Indian women. *BMC Pregnancy and Childbirth*, 21(1), 102.
22. Kramer, M. S. (2003). The epidemiology of adverse pregnancy outcomes: an overview. *Journal of Nutrition*, 133(5), 1592S–1596S.
23. Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., de Onis, M., ... & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890), 427–451.
24. Lawn, J. E., Blencowe, H., Oza, S., You, D., Lee, A. C., Waiswa, P., ... & Cousens, S. N. (2014). Every Newborn: progress, priorities, and potential beyond survival. *The Lancet*, 384(9938), 189–205.
25. United Nations. (2015). Sustainable Development Goals: Goal 3—Ensure healthy lives and promote well-being for all at all ages.