



The descriptive study of knowledge and practices regarding prevention of nutritional anemia among mothers of under-five children in selected rural areas of district sirmour, (H.P)

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ABSTRACT

Nutrition has an important role in anaemia and of all the nutrients involved, iron is the most crucial and regarding dietary causes of anaemia, the most common kind of anaemia includes iron deficiency anaemia and one of the most common is an inadequate intake of iron in the diet. The deficiency may be latent or patent. It may be responsible for repeated infections and interfere with the child's psychomotor development. The disease is most often due to a low intake of dietary iron, and it can be prevented by supplementing the mothers during pregnancy and by an adequate diet. Aim & Objectives: To assess knowledge and practices regarding prevention of nutritional anaemia among mothers of under-five children. Methods: The study adopted descriptive research design and was conducted at selected villages of Sirmour District, H.P. A total of 100 mothers were selected by convenient sampling technique. A structured knowledge questionnaire was used to assess knowledge and structured questionnaire on self-reported practices were used to assess the practices regarding prevention of nutritional anaemia. Results: Data analysis was done by descriptive and inferential statistics. The study results showed that 71% respondents had the moderately adequate knowledge, 22% of respondents had inadequate knowledge and remaining 7% respondents had an adequate level of knowledge and 98% of mothers had good practices and remaining 2% were had poor practices. Correlation coefficient indicates that weak positive linear correlation between knowledge and practice score as the value of $p= 0.097$ and $r= .336$. Chi square test indicates that there is a significant association between age of mother, dietary habits, sources of information and knowledge score, the highly significant association between education of mother, the occupation of mother, education of father and knowledge score. Chi square test indicates that not significant association between practice score and selected demographic variables. Conclusion: The results of the study suggest that there was an adequate level of knowledge and good practices regarding prevention of nutritional anaemia helps to reduce the chances of nutritional anaemia among under five children.

Keywords: Knowledge, Practices, mothers of under-five children, Nutritional anemia.

1. INTRODUCTION

Nutrition has an important role in anaemia and of all the nutrients involved, iron is the most crucial. Therefore the assessment of the iron status is very often essential in the diagnosis of anaemia. Iron deficiency generally occurs in three sequential stages: depleted iron stores, iron deficient erythropoiesis and iron deficiency anaemia. All three stages can be analyzed biochemically with the measurement of hemoglobin (Hb), ferritin and soluble transferrin receptor. Although there are some clinical indicators and the evaluation of iron intake might be helpful, the diagnosis relies mainly on these biochemical indicators. They are the only ones which give the necessary specificity and sensitivity. Unfortunately the procedures to measure them are costly and mostly not easy to perform.¹

Regarding dietary causes of anemia, the most common kind of anemia includes iron deficiency anemia, however, deficiencies of folic acid, B12, and Vitamin C can also lead to low levels of hemoglobin. World Health Organization estimates that 50% are caused by iron deficiency anemia and lists it as one of the 'Top Ten Risk Factors Contributing to Death.'²

The United Nations Children's Fund's goal to "reduce the prevalence of anemia, including iron deficiency by one third by 2010" emphasizes this global problem.³

According to WHO in 2011 the prevalence rate of nutritional anaemia in United states is 5 million children, 65% children in Afghanistan, 55% children in Bangladesh, 65% children in Nepal and in India 75%ⁱⁿ under five children and 71.7% in infants.⁴

According to Indian journal of community medicine the prevalence rate of nutritional anaemia among under-five children in the year of 2011 showed that the prevalence of nutritional anaemia among under-five children is 69.5% and in Himachal Pradesh prevalence of nutritional anaemia is 54.7%.⁵

As per report of WHO in 2014 globally anaemia affects 1.62 billion people, which corresponds to 24.8% of the population. The highest prevalence is in preschool-age children (47.4%) and the lowest prevalence is in the men (12.7%). However, the population group with the greatest number of individuals affected is pregnant women (41.8%).⁶

2. NEED FOR THE STUDY

Nutritional anaemia is a chronic anaemia resulting from an insufficient supply of iron in nutrition in the body. Without iron, hemoglobin concentration in the red blood cells is reduced and the cells are unable to oxygenate the body's tissue adequately, resulting in anemia. According to World Health Organization, anemia is a condition in which hemoglobin level is less than 11.0g/dl.⁷

India is leading in iron deficiency anaemia in the world. There are some variations in the prevalence of iron deficiency anaemia in urban and rural area. It is very common in rural population due to poverty and an inadequate diet. It can be temporary or long-term. It can range from mild to severe. In National Family Health Survey-2, all over the country, about 70.8% of children up to the age of three in urban areas and 75.3% in rural areas had anaemia and in a considerable proportion the anaemia was of a moderate to severe degree. As per a recent population-based study from an urban slum Integrated Child Development Services project in Delhi, the prevalence of anaemia among children, 9-36 months of age, was 64%. Of these, 7.8% had severe anaemia (Hb < 7.0 g/dL).⁸

Through reviews of the literature as a nurse researcher felt that this is the most emerging health problem which leads to serious life-threatening conditions and the nurse researcher also observed that during community and clinical posting that many children were reported with malnutrition and anemia due to nutritional deficiencies So, as a nurse researcher, it is felt that there is need to assess the knowledge and practices of the mother regarding prevention of nutritional anaemia.

3. CONCEPTUAL FRAMEWORK

The theory Nola J Pender (1982 and revised in 1996) health promotion model describes the multi-dimensional nature of persons as they interact within their environment to pursue health .Nola J Pender defines health as "a positive dynamic state not merely the absence of disease" and Health promotion is directed at increasing a client's level of well-being. The health promotion model describes the multi-dimensional nature of persons as they interact within their environment to pursue health.

The model focuses on the following three areas

- Individual characteristics and experiences
- Behavior-specific cognitions and affect
- Behavioral outcome

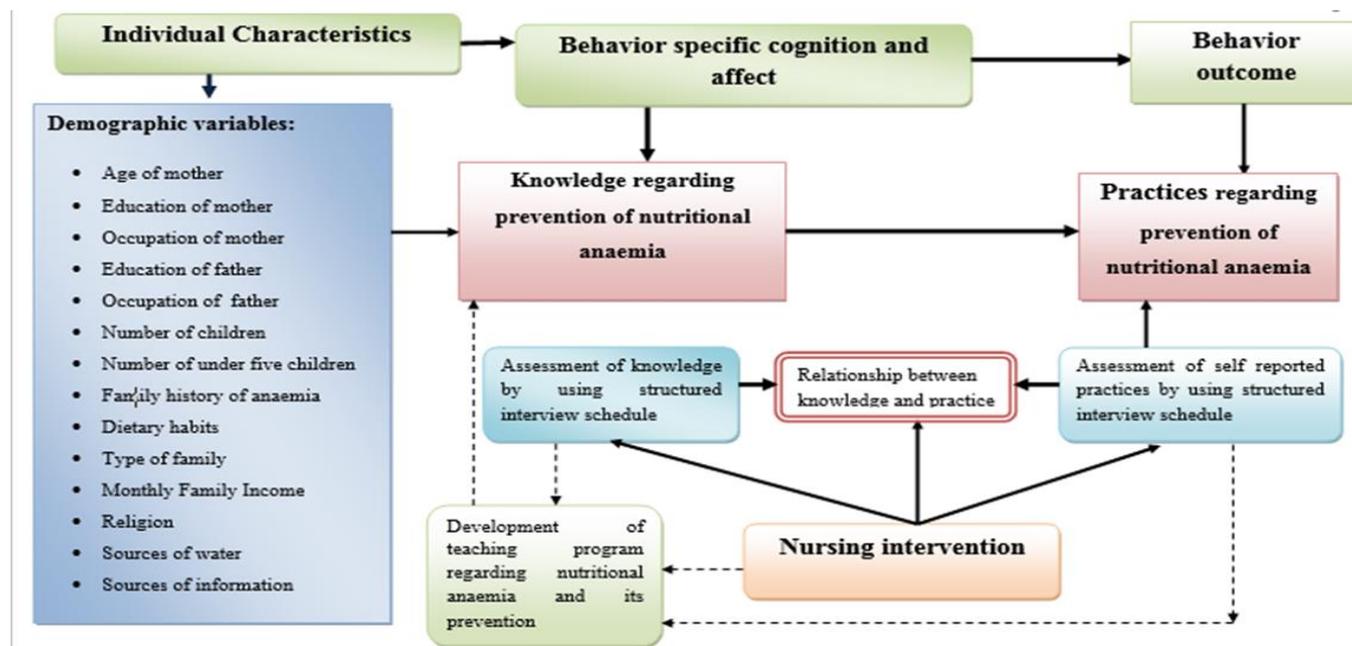


Figure.1: Conceptual model based on Nola. J. Pender Health Promotion Model (1982)

4. LITERATURE OF REVIEW

Review of literature divided into 6 sections:

Section 1: literature related to the importance of nutrition

Section 2: literature related to nutritional anaemia

Section 3: literature related to the prevalence of anaemia among under-five children

Section 4: literature related to practices followed for prevention of nutritional anaemia

Section 5: literature related to knowledge of mothers regarding nutritional anaemia and its prevention

Section 6: literature related to nutritional anaemia and cognitive impairment

5. RESEARCH METHODOLOGY

The methodology is the systematic, theoretical analysis of the methods applied to a field of the study. The purpose of the study was to assess knowledge and practice regarding prevention of nutritional anaemia among mothers of under-five. This chapter presents the methodology used for the present study.

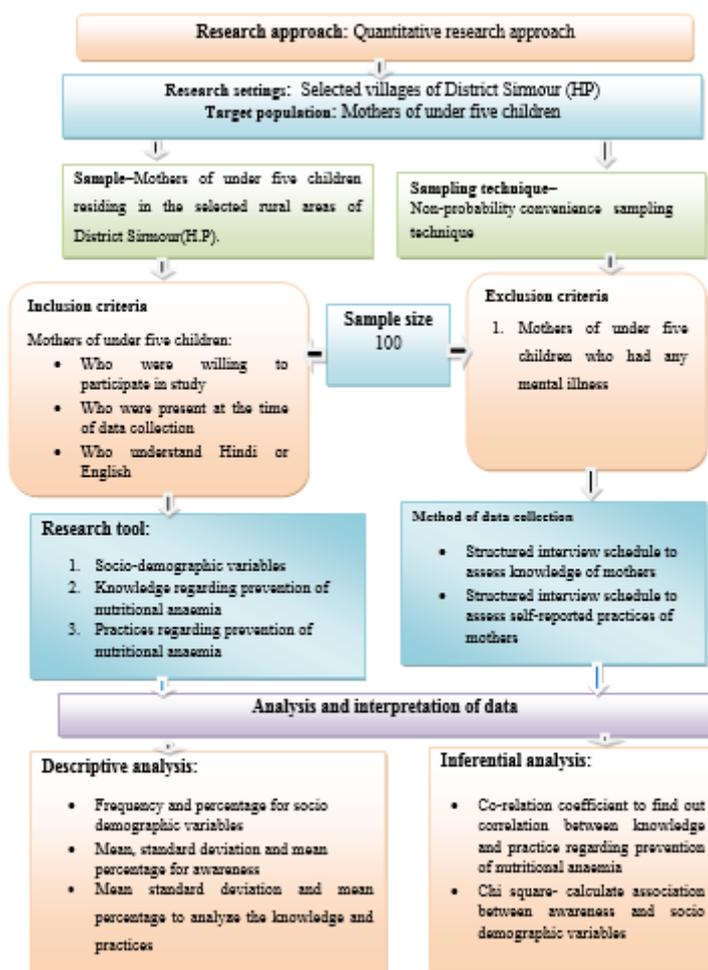


Figure2: Schematic diagram for research methodology

Data analysis and interpretation

In current study data analysis is described under following sections:

Section A: Personal profile of the subjects.

Section B: Knowledge regarding prevention of nutritional anaemia among mothers of under-five children.

Section C: Practices regarding prevention of nutritional anaemia among mothers of under-five children.

Section D: Co-relation between knowledge and practice regarding prevention of nutritional anaemia among mothers of under-five children

Section E: Association between knowledge regarding prevention of nutritional anaemia with selected demographic variables.

Section A: Personal profile of the subjects.

Table 1: Frequency and percentage distribution of personal profile of the subjects

N= 100

Variables	%
Age of mother	
21-30 year	80
31 - 40 year	20
Education of mother	
No formal education	14
Primary and secondary	55
High secondary	21
Graduation and post graduation	10
Education of father	
No formal education	6
Primary and secondary	63
High secondary	17
Graduation and post graduation	14
Occupation	
Homemaker	88
Private employee	12
Govt. employee	0
Father occupation	
Farmer	46
Private employee	49
Govt. employee	5
Religion	
Hindu	89
Sikh	9
Christian	2
Others, specify	0
Family type	
Nuclear family	68
joint family	28
Extended Family	4
Monthly family income	
5000-8000 Rs.	59
8001- >10001 Rs	41
No. of children	
1	29
>1	71
No. of under-five children	
1	63
>1	37
Dietary habits	
Vegetarian	30
Non.-Vegetarian	68
Lacto- Ovo vegetarian	2
The family history of anemia	
Yes	23
No	77
If yes, Specify	0

Sources of water	
Tap water	84
Hand pump water	3
Natural resources	13
Sources of information	
Family members and friends	73
Awareness program	8
Mass media	19

Table.1 depicts the demographical variables of the mothers of under five children that majority of mothers 80(80%) belonged to the age group < 30 years ,in educational status of mothers that 55(55%) have primary and secondary education, in educational status of father that 63(63%) had primary and secondary education ,Majority of mothers of under five children that 88(88%) were homemaker and remaining, in father occupation 49(49%) were private employee, and 5(5%) were govt. employee, in religion 89(89%) belonged to Hindu religion, more than half of the mothers of under-five children i.e. 68(68%) from nuclear family and 4(4%) from extended family in family monthly income 59(59%) mothers of under-five children have < 8000Rs. Monthly family income, in no. of children majority of mothers of under five children that 71(71%) have >1 children, in no. of under five children majority of mothers of under five children that 63(63%) have 1 under five children, in dietary habits majority of mothers of under five children that 68(68%) have Non-vegetarian dietary habits, in family history of aneamia majority of mothers of under five children that 77(77%) have no family history of anemia, in water sources majority of mothers of under five children that 84(84%) have tap water use and in sources of information majority of mothers of under five children that 73(73%) have information from family members and friends.

Section B: Knowledge regarding prevention of nutritional anaemia among mothers of under-five children.

Table 2: Mean and Std. deviation of knowledge in each component N= 100

Components	Lowest score	Mean ± SD	Mean %
Nutrition	0	1.83 ± 0.81	61.33
Causes and risk factors	0	1.43 ± 0.79	35.75
Clinical features	0	1.74 ± 1.06	43.5
Assessment and diagnostic evaluation	0	1.67 ± 0.77	55.66
Prevention	0	4.05 ± 1.77	50.62
Treatment	0	1.65 ± 1.14	41.25
Complications	0	0.98 ± 0.71	49
Total	7	15.37±4.433	46.57

Table2. Depicts that in first module i.e. nutrition knowledge Max. The score is 3, Mean± SD is 1.83 ± 0.81 and Mean % is 61.33 % and in module third i.e. causes and risk factors knowledge Max. The score is 4, Mean± SD is 1.43 ± 0.79 and Mean % is 35.75.

**Table3: Distribution of sample based on correct responses on an individual item of knowledge questionnaire
N= 100**

Sr. No.	Questions	Correct responses
		%
1	Complementary feeding starts at age of 6 month	89
2	Food items rich in nutrition	82
3	Complications of nutritional anaemia	62
4	Meaning of nutritional anaemia	60
5	Laboratory investigation that signifies anaemia,	57
6	Findings which signifies anaemia	56
7	A vegetable that is the richest source of iron is spinach	56
8	Meaning of nutrition	56
9	Trace element deficiency responsible for nutritional anaemia	56
10	Utensils that helps to prevent anaemia ,	55
11	Nutritional anaemia assessment at home	54
12	Signs of Pica for nutritional anaemia	52
13	The deficiency of vitamin which causes nutritional anaemia	52
14	The berries which have more iron	51
15	The food to be given to child suffering from nutritional anaemia,	47
16	Most common nutritional deficiency among children	46
17	The main cause of nutritional anemia in below 6-month children	46
18	Physical symptoms present in children with iron deficiency anaemia	45
19	Most reliable food sources of iron	42
20	Nutritional anaemia is managed at home	41
21	Symptoms those are not present in nutritional anaemia	40
22	Vitamin helps in absorption of iron in the body	40
23	Side effects of iron supplementation	39
24	Drugs are used to treat anaemia	38
25	Signs of anaemia	37
26	The etiology that does not cause anaemia	36
27	Nutritional anaemia can be prevented	36
28	Life-threatening condition which may occur due to severe anaemia	36
29	The effect of anaemia on the physiology of the body	33
30	Poor breast feeding results in nutritional anaemia	31
31	Dry fruit which is the richest source of iron	30
32	Primary risk factors of nutritional anaemia	30
33	The body part that stores iron is liver	6

Table3 depicts that **89%** of respondents had given correct answer about starting age of complementary feeding, **82%** of respondents had given correct answer about food items reach in nutrition, **30%** of respondents had given correct answer about primary risk factors of nutritional anaemia, **30%** of respondents had given correct answer about dry fruit those are richest source of iron, **6%** of respondents had given correct answer about body part that stores iron.

**Table 4. Distribution of sample based on the level of knowledge about prevention of nutritional anaemia
N= 100**

Level of Knowledge	%
Inadequate	22
Moderate	71
Adequate	7

Table 4. Shows that 71% respondents had the moderately adequate knowledge, 22% of respondents had inadequate knowledge and remaining 7% respondents had an adequate level of knowledge.

Section C: Practices regarding prevention of nutritional anaemia among mothers of under-five children.

**Table 5: Distribution of sample based on correct responses on an individual item of practice questionnaire
N=100**

Sr. No.	Expressed practices questions	Practices followed (%)
1.	Use of citrus fruits in the child’s diet	98
2.	Use cheese in the child’s diet	97
3.	Mother satisfied regarding child taking sufficient diet	96
4.	Use of fruit juice	96
5.	Continuation of exclusive breastfeeding continue for six months	96
6.	Spinach is used in cooking	95
7.	Black grams are used in cooking	95
8.	Whether the child was taken to hospital for weakness,	93
9.	Iron-rich food items are given to a child	89
10.	Dried fruits are given to a child	86
11.	Soya products are use in diet	84
12.	Blackberries are given to a child	83
13.	Jaggery is given to a child	81
14.	Non-vegetarian food is used in diet	70
15.	The child is taken for regular medical check-ups	69
16.	Whether skin is checked for the presence of anaemia	69
17.	Vitamin supplements are given to a child	66
18.	Whether the child eats non-nutritious substances like clay, paint, mud, soil etc.	55
19.	Curry leaves are used for the preparation of food	53
20.	Iron and folic acid supplements are given to a child	52
21.	Anthelmintic supplementation	50
22.	Iron utensils are used to cook food	36
23.	Copper pot is used to store drinking water	22
24.	Ragi sprouts gave to the child	19

Table 5. Shows detailed explanation of practices followed by mothers of under-five children for the prevention of nutritional anaemia. Participants answered a total of 24 close ended multiple choice questions about practices for prevention of nutritional anaemia out of total 100 subjects **98%** of respondents use citrus fruits in their diet , **97%** of respondents use cheese in diet of child, **96%** of the respondents were practiced exclusive breastfeeding to baby till six months , **96%** of respondents are sure about child taking sufficient diet, **96%** of respondents use fruit juice for diet of child, **95%** of respondents use black grams in their diet, **83%** of respondents use blackberries in diet of child, **95%** of respondents use spinach in their diet, **93%** of respondents take their child for hospital if they find any sign of weakness in child, **89%** of the subjects were practiced to give iron rich food to baby, **86%** of respondents use dried fruits in the diet of child, **84%** of respondents use soya products in diet of child, **81%** of respondents use to give jiggery to child, **70%** of respondents use non-vegetarian diet, **69%** of the participants assessed the skin of child for presence of anemia, **69%** of respondents took their child for regularly medical checkups, **66%** of participants use vitamin supplements for child, **55%** of respondents check the child if they eat non nutritious substances, , **54%** of respondents use curry leaves in preparation of food, **52%** of respondents give iron and folic acid supplements to child, **50%** Of respondents give anti-helminthes drugs to child, **36%** respondents use iron utensils for cooking, **22 %** of respondents use copper utensils for water drinking and **19%** respondents were use to give ragi sprouts to child.

**Table 6: Distribution of sample based on practices followed by mothers for prevention of nutritional anaemia
N=100**

Practices	%
Poor	2
Good	98
Total	100

Table 6. Shows that 98% of mothers had good practices and remaining 2% had poor practice.

Section D: Co-relation between knowledge and practice regarding prevention of nutritional anemia among mothers of under-five children

Table 7: Correlation between knowledge and practices followed by mothers for prevention of nutritional anaemia
N=100

	Pearson Correlation r	P value
Knowledge score	.336	0.097*
Practice score		

* Indicates weak positive linear correlation

Table 7. Depicts that there is a weak positive linear correlation between knowledge score and practice score as the value of $p=0.097$ and $r = 0.336$

Section E: Association between knowledge regarding prevention of nutritional anaemia with selected demographic variables.

Table 8: Association between knowledge score and selected demographical variables
N=100

Sr. No.	Variables	Calculated (value χ^2)	df	Sig 0.05 (95%)
1	Age of mother	25.73	6	.000**
2	Education of mother	37.26	6	.000**
3	Education of father	25.73	6	.000**
4	Occupation of mother	13.26	2	.001**
5	Occupation of father	3.42	4	.490 ^{NS}
6	Family type	6.47	6	.372 ^{NS}
7	Monthly family income	2.41	2	.299 ^{NS}
8	No. of children	7.09	2	.029*
9	No. of under-five child	3.70	2	.157 ^{NS}
10	Dietary habits	12.82	4	.012*
11	Family history of anaemia	.79	2	.674 ^{NS}
12	Source of water	4.42	4	.352 ^{NS}
13	Source of information related to nutritional anaemia	6.31	4	.177 ^{NS}

* indicates significant association at $p<0.05$, ** Indicates highly significant association at $p<0.001$, NS: indicates not significant association

Table 8 revealed that there is a significant association between no. of children, dietary habits with knowledge score, the highly significant association between mother age, education of mother, education of father, the occupation of a mother with knowledge score.

Table 9: Association between practice score and selected demographical variables

N=100

Sr. No.	Variables	Calculated (value χ^2)	df	Sig 0.05 (95%)
1	Age of mother	3.790	2	.150 ^{NS}
2	Education of mother	2.093	3	.553 ^{NS}
3	Father education	1.418	3	.701 ^{NS}
4	Occupation	.154	1	.695 ^{NS}
5	Father occupation	.108	2	.947 ^{NS}
6	Family type	.960	3	.811 ^{NS}
7	Income	1.251	1	.263 ^{NS}
8	No. of children	1.099	1	.295 ^{NS}
9	No. of children	.148	1	.700 ^{NS}
10	Dietary habit	.199	2	.905 ^{NS}
11	Anaemia history	.576	1	.448 ^{NS}
12	Water source	2.491	2	.288 ^{NS}
13	Information sources	.755	2	.686 ^{NS}

NS: indicates not significant association

Table 9 depicts that there is not a significant association between practice score and selected demographic variables

6. DISCUSSION

The findings of the study have been discussed in accordance with the objectives of the study and previously reviewed literature.

Objective1:- To assess the knowledge and practice regarding prevention of nutritional anaemia among mothers of under-five children

In current study shows that 71% respondents had the moderate knowledge, 22% of respondents had inadequate knowledge and remaining 7% respondents had an adequate level of knowledge and 98% of mothers had good practices and remaining 2% were had poor practices.

A similar case study was conducted by Evelyine B. Ngimbudzi et al. At Mkuranga distt. Hospital, Tanzani on mothers knowledge, beliefs, and practices on causes and prevention of anaemia in children aged 6-59 months and result showed that slight majority of participants (n = 22; 55%) acknowledged prior knowledge of anaemia, with the majority (n = 32; 82%) reporting the main source of this information as the Reproductive and Child Health (RCH) pro- grams and services. A total of 27 mothers (67.5%) reported a diagnosis of anaemia during pregnancy and had received treatment ranging from oral medications (n = 25; 92.6%) to blood transfusion (n = 2; 7.4%). The major signs and symptoms of anaemia identified as known by the mothers included a range of early to late indicators. The most frequently reported causes of anaemia included frequent illness (n = 12; 30.0%), refusal to eat (n = 10; 25.0%), and lack of food at home (n = 9; 22.5%). A small proportion of the participants knew of the connection between maternal anaemia and infant anaemia as well as the link between childhood anaemia and future health conditions. 55% of mothers in this study associated anaemia with feeding practices. Half of the study participants (50%) reported that they were still breastfeeding their children, although a predictable weaning pattern emerged including maize porridge, ugali, and beans. As the primary caregivers, most mothers (72.5%) reported three feeds per day. Mothers (65.0%) were the main persons responsible for feeding the child with nearly three-quarters (72.5%) of children being fed three times a day. Health care accessed for anaemia was most frequently an over the counter medication followed by access to services at a dispensary level.⁹

A similar study was conducted by Leah-Mari Richards et al. is to understand the feeding practices of children aged 0–24 months in Myanmar and maternal characteristics associated with adequate feeding practices and the result of study shows that 41.8 % of infants under 6 months were exclusively breastfed, 63.2 % of those aged 6–11 months were adequately fed, and 10.3 % of 12–23 month-olds were adequately fed. In multivariate regressions were found that antenatal care visits [1–4 visits, AOR = 6.59 ($p < 0.01$) and >4 visits, AOR = 6.63 ($p < 0.05$)] was associated with exclusive breastfeeding for under 6-month-old infants. Having >4 antenatal care visits [AOR = 9.97 ($p < 0.05$)] was associated with adequate feeding for 6–11 months old infants.¹⁰

Objective2:-To find out the co-relation between knowledge and practice regarding prevention of nutritional anaemia among mothers of under-five children.

This study depicts that there is weak positive linear correlation between knowledge score and practice score as the value of $p=0.097$ and $r= 0.336$

A study was conducted by D'Souza Jyothi Jenevive Prima on to assess the knowledge, self-reported practices on prevention of Iron deficiency anemia and to find the relationship between knowledge and practice and the study findings showed that majority of women belonged to the age group of 31-45 years (53.3%), most of them (31.7%) had the secondary level of education. Majority of participants had inadequate knowledge (55.8%) and unfavorable practices (58.3%) with regard to iron deficiency anemia and its prevention. There was a weak positive correlation between knowledge and self-reported practices of women ($\rho = 0.275$, $p= 0.002$).¹¹

Objective3:-To find out the association between knowledge regarding prevention of nutritional anaemia with selected demographic variables.

This study revealed that there is a significant association between mother age, dietary habits and knowledge score, the highly significant association between education of mother, education of husband, and occupation of a mother with knowledge score.

A study was conducted by Sichieri Rosely et al. in a public hospital in Rio de Janeiro, Southeastern Brazil to assess the association between iron status at birth and growth of preterm infants and the study results showed that The multivariate analysis showed growth was positively associated with birth weight (0.4 cm/100 g; $p \leq 0.001$) and negatively associated with gestational age at birth (-0.5 cm/week; $p \leq 0.001$). There was no association between cord iron and mother iron measurements and growth ($p > 0.60$ for all measures). Only two children had anemia at birth, whereas 43.9% of mothers were anemic (hemoglobin <11 g/dl). Also, there was no correlation between anemia indicators of mothers and children at birth ($r < 0.15$; $p > 0.20$).¹²

Major findings

- Result related to knowledge showed that majority (7%) respondents had an adequate level of knowledge, (22%) of respondents had inadequate knowledge and (71%) respondents had a moderate level of knowledge about prevention of nutritional anaemia.
- Findings related to practices showed that majorities (98%) of mothers had good practices and remaining (2%) had poor practices regarding prevention of nutritional anaemia.
- Study findings depict that there is a weak positive linear correlation between knowledge score and practice score as $r= 0.336$

- Study findings revealed that there is a highly significant association between mother age, the occupation of mother, education of mother, education of father with knowledge score, a significant association between dietary habits, no. of children with knowledge score.

Other findings

In demographical finding shows that:

Mothers of under five children that majority of mothers 80(80%) belonged to the age group 21- 30 years, In educational status of mothers findings shows that that 55(55%) have primary and secondary education, In educational status of father findings shows that 63(63%) have primary and secondary education, In occupation of mothers finding shows that 88(88%) of mothers were homemaker, In religion of mothers findings shows that 89(89%) of mothers belong to Hindu religion, In family type findings revealed that 68(68%) of mothers from nuclear family, In family monthly income findings showed that 59(59%) mothers of under five children have 5000- 8000Rs. monthly income and 41(41%) mothers of under-five children have 8001-10000 Rs. Monthly family income, In no. of children findings shows that 71(71%) have >, 1 children, In no. of under five children findings shows that 63(63%) mothers have 1 under five children, In dietary habits findings shows that that 68(68%) mothers have Non-vegetarian dietary habits and 2(2%) have Lacto-ovo vegetarian dietary habits, In family history of anaemia findings shows that 77(77%) have no family history of anemia and remaining 23(23%) have family history of anaemia, In resources of water findings revealed that 84(84%) mothers use tap water and in source of information 73(73%) mothers have information from family members and friends and 8(8%) mothers have information from awareness program.

Strength of study

- This study helps to give a path for further studies for conducting on nutritional anaemia among under-five children.
- This study helped to find out knowledge and practices of the mother regarding prevention of nutritional anaemia.
- No other study was reported in Sirmour district regarding nutritional anaemia among under-five children.

Limitations

- Study findings can't generalize.
- This study only focuses on assessment of knowledge and practices of mothers of under-five children regarding prevention of nutritional anaemia.
- The study was limited only to the rural population.

Nursing implications

The study has its implications on areas of nursing practice, nursing administration, nursing education and nursing research.

Recommendations

In the light of the above findings and personal experience of the investigator the following recommendations are offered:

- The study can be replicated on samples with different demographic variables; thereby findings can be generalized to a larger population.
- A similar study may be conducted to assess the prevalence of nutritional anaemia.
- A planned teaching programme can be conducted for mothers regarding nutritional anaemia and its health consequences.
- A similar study can be conducted to compare the knowledge and practices among mothers of under-five children of urban and rural communities.
- A comparative study can be conducted to find the prevalence of nutritional anaemia between urban and rural under-five children.

7. CONCLUSION

The present study was associated with to assess the knowledge and practices of mothers of under-five children regarding prevention of nutritional anaemia in selected villages of Distt. Sirmour, H.P. The study findings revealed that there were appropriate knowledge and adequate level of practices about prevention of nutritional anaemia.

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Conflicts of interest: None

8. REFERENCES

[1] Badham J, Zimmermann MB, Kraemer K, editors. The guidebook nutritional anemia. Basel, Switzerland: Sight and Life Press; 2007(cited on 2016 July 22).

Available from:-http://www.sightandlife.org/fileadmin/data/Books/nutritional_anemia_guidebook_e.pdf

[2] Ailinger RL, Moore JB, Pawloski L, Cortés LR. Concepts of anemia among low-income Nicaraguan women. Revista latino-Americana de enfermagem. 2009 (cited on 2016 July 22)Apr;17(2):147-52.

Available from:- http://r.search.yahoo.com/_www.rguhs.ac.in/

[3] Adams C, Costello A, Flynn S. Iron Deficiency Anemia In Ecuador: Does Education Matter(cited on 2016 February 10).

Available from:- http://www.bloodmed.com/home/Newsitemattachement_1147.pdf

- [4] Miller JL. Iron deficiency anemia: a common and curable disease. Cold Spring Harbor perspectives in medicine. 2013 Jul 1(cited on 2016 July 22);3(7).
Available from:- <http://www.ncbi.nlm.nih.gov/pubmed/23613366>
- [5] Kotecha PV. Nutritional anemia in young children with a focus on Asia and India. Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine. 2011 Jan(cited on 2017 June 18);36(1):8.
Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3104701/>
- [6] Salah MJ. Factors that Affect the Nutritional Status of Children Aged 9-18 Months in East Jerusalem (Doctoral dissertation, An-Najah National University) (cited on 2016 March 12).
Available from:- <https://scholar.najah.edu/content/factors-affect-nutritional-status-children-aged-9-18-months-east-jerusalem>
- [7] Pasricha SR, Black J, Muthayya S, Shet A, Bhat V, Nagaraj S, Prashanth NS, Sudarshan H, Biggs BA, Shet AS. Determinants of anemia among young children in rural India. Pediatrics. 2010 Jul.(cited on 2016 August 216); 1;126(1):e140-9.
Available from :- <http://pediatrics.aappublications.org/content/126/1/e140>
- [8] Ghosh S, Shah D. Indian Pediatrics–Environmental Health Project Special Article Series. Indian Pediatrics. 2004. (cited on 2016 March 27);41:682-96.
Available from:- www.indianpediatrics.net/july2004/july-682-696.htm
- [9] Ngimbudzi EB, Lukumay AM, Muriithi AW, Dhamani KA, Petrucka PM. Mothers' Knowledge, Beliefs, and Practices on Causes and Prevention of Anaemia in Children Aged 6-59 Months: A Case Study at Mkuranga District Hospital, Tanzania. Open Journal of Nursing. 2016 Apr(Cited on 2017 June 2) 19;6(04):342.
Available from: http://file.scirp.org/pdf/OJN_2016042814140358.pdf
- [10] Thet MM, Richards LM, Sudhinaraset M, Paw NE, Diamond-Smith N. Assessing Rates of Inadequate Feeding Practices Among Children 12–24 months: Results from a Cross-Sectional Survey in Myanmar. Maternal and child health journal. 2016 Aug(cited on 2017 June 10) 1;20(8):1688-95.
Available from: <https://link.springer.com/article/10.1007/s10995-016-1968-2>
- [11] Francis I, Achen RK, Quadras R, D'Souza MV, D'Souza PJ, Sankar A. Knowledge and self-reported practices on prevention of iron deficiency anemia among women of reproductive age in rural area. International Journal of Advances in Scientific Research. 2015(cited on 2017 June 26);1(7):289-92.
Available from: <http://eprints.manipal.edu/144314/>
- [12] Sichieri R, Fonseca VM, Hoffman D, Trugo NM, Moura AS. Lack of association between iron status at birth and growth of preterm infants. Revista de Saúde Pública. 2006 Aug (cited on 2017 June 26);40(4):641-7.
Available from: <http://www.scielo.br/scielo.php?pid=S003489102006000500013&script=sciarttext>