

“A Case Control Study To Explore The Maternal Determinants Associated With Diarrhea Among Under Five Children Attending Pediatric OPD At HSK Hospital Navanagar Bagalkot.”

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Abstract

Diarrhea is a very common pediatric concern, and diarrhea and dehydration cause about 1.5 to 2.5 million deaths/year worldwide. It accounts for about 9% of hospitalization. Diarrhea is a universal disease, with more than a billion people suffering one or more episodes of acute diarrhea each year worldwide. Diarrhea exacts an enormous toll in terms of morbidity and loss of productivity. Acute infectious diarrhea remains one of the most common causes of mortality in developing countries, particularly among children. It is estimated that diarrhea is responsible for some 5 to 8 million deaths each year.

The study was conducted in the HSK hospital, at pediatric OPD Navanagar Bagalkot. Convenient sampling technique was used to select the samples for study through randomization of sample to the experimental and control group with simple random sampling through lottery method was allocated. The sample size was 180. Case= 66 Control= 114. who fulfilled inclusion criteria of sample selection. The sample consisted of 180 under-five children. Data from all the mothers of under-five children were collected by using structured questionnaires to assess the knowledge.

The results of the study revealed that in case group 20.58% of children had diarrhea fortnight, in control group 5.17% had diarrhea fortnight, a significant association was found between diarrheal status of the under-five children and diarrhea in last fortnight. The study concluded that the mothers knowledge on weaning among case & control group were not same, mothers in the control group had more knowledge on weaning than case group. The difference between knowledge regarding weaning, among mothers of case group and mothers of control group was significant at 0.05 level of significance.

Key words: *Diarrhea, Maternal determinants, Pediatric OPD.*

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I. Introduction

Diarrhea is a leading cause of malnutrition in children under five years old. Diarrheal disease is the second leading cause of death in children under five years old. It is both preventable and treatable. Each year diarrhoea kills around 525 000 children under five. A significant proportion of diarrhoeal disease can be prevented through safe drinking-water and adequate sanitation and hygiene. Globally, there are nearly 1.7 billion cases of childhood diarrhoeal disease every year.¹

Diarrhoea or Diarrhea is a disorder that causes you to pass looser or more stool than usual. Often symptomatic of Gastroenteritis, which is the inflammation of the stomach or intestine as a result of microbial infection, Diarrhoea usually lasts for 2-4 days without the need for treatment. Severe diarrhoea, on the other hand, poses a threat to your life. The reason behind this is the dehydration that your body undergoes as it steadily loses fluids with every passing of motion. Infants and children, malnourished and people with weakened immunity have the highest risk of falling prey to such infection. To put that into perspective, statistics show that

760,000 children under the age of 5 die every year because of diarrhoea which is the second leading cause of death in this age group.²

Diarrhea, however, is a disease that can be prevented if a number of simple measures are taken. The risk of diarrhoeal outbreak can be significantly reduced by maintaining provisions for safe drinking water, facilities for safe and hygienic disposal of human waste and proper hygiene when it comes to washing your hands and body.³

NEED FOR STUDY:

Diarrhoeal disease is still one of the most significant causes of morbidity and mortality in developing countries. mortality and morbidity rates from diarrhoeal diseases in children aged <5 years are high and represent a public health problem. Diarrhoea can be caused by many types of virus, bacteria and parasites, and infection is often acquired directly by contact with another infected individual or by consuming food or water that has been contaminated by stool.⁴

A study was conducted on diarrhea among under five children global, regional and national estimates clearly place diarrhoeal diseases as a major, albeit to an extent neglected public health problem. Deaths of children aged <5 years owing to diarrhoea was estimated to be 1.87 million at the global level (uncertainty range from 1.56 to 2.19 million), which is approximately 19% of total child deaths.⁵

Globally, there are nearly 1.7 billion cases of diarrheal disease and 760,000 deaths in children under 5 every year. In India, diarrhea accounts for nearly 212,000 under five deaths annually. On an average, children below 3 years of age in India, experience about 3–5 episodes of diarrhea every year.⁶

OBJECTIVES OF THE STUDY.

- To assess the prevalence of diarrhea among under five children.
- To explore the maternal determinants associated with diarrhea among under five children.
- To find out the association between maternal determinants with selected socio- demographic variables.

HYPOTHESIS:

H₁: There will be significant differences between maternal determinants and prevalence of diarrhea among under five children.

H₂: There will be significant association between maternal determinants of under five children with selected socio demographic variables.

ASSUMPTIONS:

Assumptions of the study are as follows

- Diarrhea among under five children is more common.
- Mothers of under five children will co- operate and will participate actively throughout the research study along with their children.
- Findings of the maternal determinants associated with diarrhea will help in reducing the incidence of diarrhea among under five children.

RESEARCHDESIGN:

The research design used in this study Observational Case control research design. In this study there are two groups, case group and control group. Cases are the under five children with diarrhea, whereas control is the normal under five children or under five children without diarrhea.

VARIABLES:

Variables selected for the present study are;

INDEPENDENTVARIABLE: Diarrhea among under five children.

DEPENDENTVARIABLE: Maternal determinants such as maternal age, occupation, literacy, knowledge regarding hygienic practices, Breast feeding and weaning techniques.

SOCIO-DEMOGRAPHICVARIABLES:

Age , Family monthly income Religion, Father’s education status, Mother’s education status, Mother’s occupational status, Father’s occupational status ,Type of family, No of family members, Area of residence.

SETTING:

Setting refers to physical location and condition in which the data is gathered. The present study will be conducted at pediatric OPD at HSK Hospital Bagalkot.

POPULATION:

Target Population- Target population for present study includes under five children with diarrhea.

Accessible Population- Accessible population for present study includes under five children with diarrhea attending pediatric OPD at selected Hospital, Bagalkot.

SAMPLE:

The researcher will randomly select one hospital as accessible population and all the under five children residing in the selected hospital will be enrolled in the study as sample. Hence the sampling technique is complete enumeration.

SAMPLE SIZE:

The Tentative sample size for the present study is 180 under five children, Case= 66 Control= 114. who fulfilled inclusion criteria of sample selection. Final allocation of sample will be calculated by using power analysis method.

SAMPLING TECHNIQUE: Convenient sampling technique was used to select the sample for study through randomization of sample to the experimental and control group with simple random sampling through lottery method will be allocated.

CRITERIA FOR SAMPLE SELECTION: INCLUSIONCRITERIA:

This study will include,

- ✓ Mothers of under five children attending pediatric OPD, HSK Hospital Bagalkot.
- ✓ Mothers of under five children who are available at the time of data collection.
- ✓ Mothers willing to participate in the study.

EXCLUSION CRITERIA:

This Study will exclude the.

- ✓ Under five children who were chronically ill and with persistent diarrhea for greater than two weeks.
- ✓ Mothers of under five children who are hospitalized and cannot provide data.
- ✓ Under five children mothers who are suppose to be out the study area, at the time of data collection.
- ✓ Mothers of under five children who are mentally challenged.

II. Results

The study was begun with selection of 180 children from HSK hospital bagalkot. All the children were screened for their diarrheal status. Among 180 children 66 children were found suffering with diarrhea. 66 children were considered as cases and 114 normal children were considered as controls. Hence the final analysis was done based on the data obtained from 180 children. The data was analyzed using SPSS 18 statistics package. The analysis was carried out according to objectives of the study.

Presentation of data

Part I: Description of Socio demographic variables and its association with diarrhea

Part II: Description according to nutritional status of children

Part III: Description of Child birth history& present history and its association with diarrhea

Part IV: Description of maternal general factors and its association with diarrhea

Part V: Description of antenatal and postnatal factors, and its association with diarrhea

Part VI: Description of Breast feeding history and its association with diarrhea

Part VII: Assessment and comparison of maternal knowledge regarding weaning and its association with diarrhea among under-five children.

Part I: Description of Socio demographic variables and its association with diarrhea

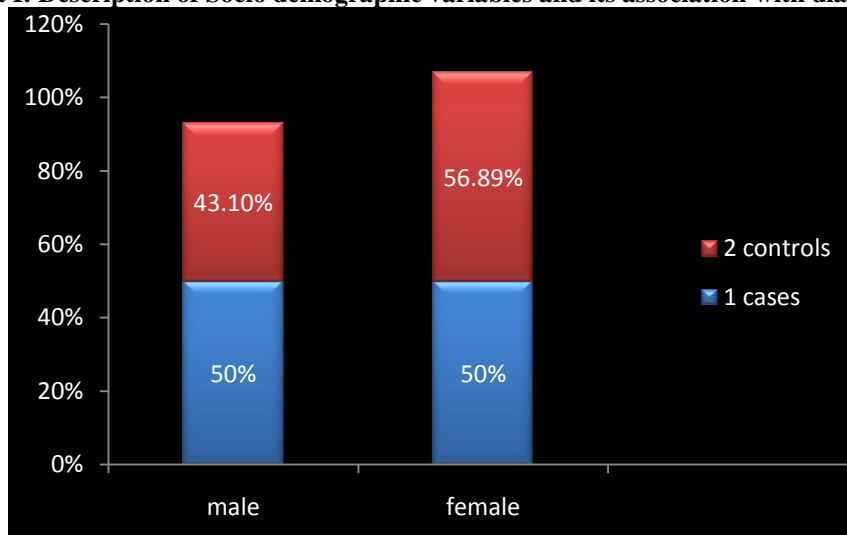


Fig 1: Distribution of subjects according to gender of the children.

Fig 1: Illustrates the Percentage wise distribution of samples according to gender of the children. There were 50% males and 50% female in case group. In control group 56.89% are males & 43.11% are females.

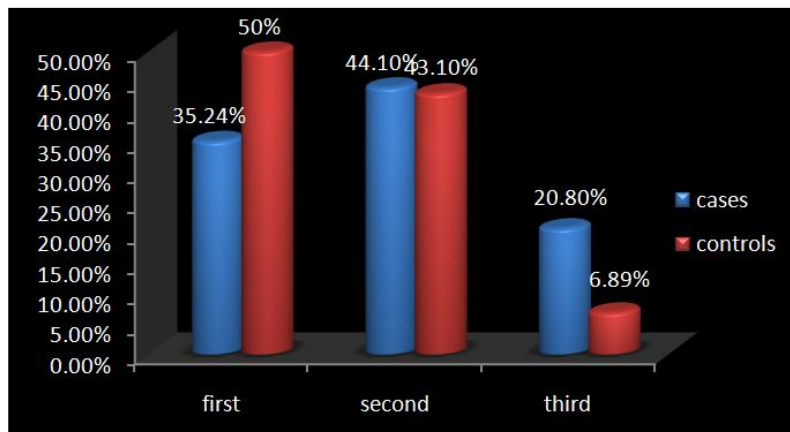


Fig 2: Distribution of subjects according to birth order of children.

Fig 2: Illustrates the Percentage wise distribution of children according to their birth order. In cases group most of the children (44.1%) were born second in order, 35.24% were first born and remaining 20.80% had birth order third and above. In control group most of the children (50%) were born first in order, 43.10% were born second in order and remaining 6.89% had birth order third and above.

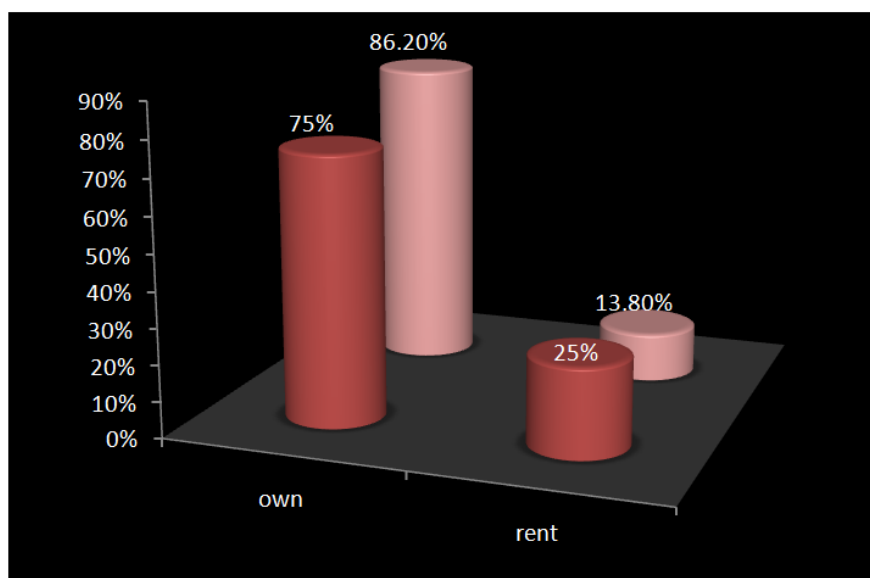


Fig 3: Distribution of subjects according to the house type of the family.

Fig 3: Illustrates the Percentage wise distribution of cases and controls according to house type. In cases 75% of families had own house where as 25 % resided in rented house. In control group 86.2% of families had own house where as 13.8% resided in rented house.

Part II: Description according to nutritional status of children

Table no 1: Classification of cases/controls based on level of under five children.

N=180 Case= 66 Control= 114

Nutritional status	Weight for age score		Height for age score		Weight for height score	
	F	%	F	%	F	%
Normal Z=> -2SD	126	70%	132	73.33%	131	72.77%
Mild/Moderate Z=< -2SD to -3SD	42	23%	36	20%	39	21.66%
Severe Z=< -3SD	12	6%	10	5%	10	5%
Total	180	100	180	100	180	100

Table no 2 Distribution of children according to their birth history and medical history.

N=180 Case= 66 Control= 114

Sl no	Maternal factors	Character	Cases N ₁ =66		Controls N ₂ =114	
			Frequency	Percentage	Frequency	Percentage
1	Any abnormality at birth	1) present	13	19.12%	11	9.48%
		2) Absent	55	80.88%	105	90.52%
2	H/O diarrhea in last fortnight	1) present	14	20.58%	6	5.175%
		2) Absent	54	79.415%	110	94.82%
3	H/O fever or illness in last fortnight	1) present	17	25%	14	12.07%
		2) Absent	51	75%	102	87.93%
4	H/O Worm infestation in last fortnight	1) Done	64	94.115%	110	94.82%
		2) Not done	4	5.895%	6	5.18%
5	H/O de-wormification	1) Done	57	83.82%	107	92.24%
		2) Not done	11	16.18%	9	7.76%

**Table no 3 Distribution of cases and controls according to their maternal factors
N=180 Case= 66 Control= 114**

Sl no	Maternal factor	Character	Cases N ₁ =66		Controls N ₂ =114	
			Frequency	Percentage	Frequency	Percentage
1	Present age of mothers	1) 18 to 21 yrs	13	19.11%	20	17.24%
		2) 22 to 25 yrs	42	61.76%	66	56.89%
		3) 26 yrs& above	13	19.17%	30	25.86%
2	Age at the time of marriage	1) 18 to 21 yr	38	55.88%	61	52.58%
		2) 22 to 25 yr	28	44.11%	53	45.66%
		3) 26 & above	0	0%	2	1.72%
3	Educational qualification	1) Illiterate	10	14.75%	0	0%
		2) Primary	32	47.05%	18	15.51%
		3) Secondary	18	26.47%	36	31.03%
		4) PUC	5	7.35%	38	32.75%
		5) Graduation and above	3	4.41%	24	20.66%
4	Mother occupation	1) Unemployed	20	29.41%	85	73.27%
		2) former and coolie	39	57.35%	22	18.96%
		3) Elementary occupation	7	10.29%	7	6.03%
		4) Skilled workers	2	2.94%	2	1.72%
		5) Professionals and gazette officers	0	0	0	0
5	Nutritional status of mother	1) Obese	3	4.41%	15	12.93%
		2) Normal	43	63.23%	90	77.58%
		3) Undernourished	22	32.35%	11	9.48%
6	Any present illness	1) present	7	10.29%	4	3.44%
		2) Absent	61	89.7%	112	96.55%

**Table no 4 :Distribution of cases & controls according to antenatal and postnatal history of mother.
N=180 Case= 66 Control= 114**

Sl no	Maternal factors	Character	Cases N ₁ =66		Controls N ₂ =114	
			Frequency	Percentage	Frequency	Percentage
1	Immunization of the mother at the time of pregnancy	1) Not completed	3	4.41%	2	1.72%
		2) Completed	65	98.48%	114	98.27%
2	Regular health checkup during pregnancy	1) 2 visits	18	26.47%	0	0%
		2) 3visits	37	54.41%	26	22.41%
		3) 4visits	9	13.23%	45	38.79%
		4) 5visits& above	4	5.88%	36	31.03%
3	Mothers age at the time of delivery	1) 18 to 21 yrs	29	42.64%	48	41.37%
		2) 22 to 25 yrs	33	48.52%	58	50%
		3) 26 years& above	6	8.82%	10	8.62%
4	Any illness during pregnancy	1) Present	18	26.47%	4	3.44%
		2) Absent	50	73.52%	112	96.55%

**Table no 5: Maternal factors associated with diarrhea among under five children
N=180 Case= 66 Control= 114**

Sl no	Maternal factors	Character	Cases N ₁ =66		Controls N ₂ =114	
			Frequency	Percentage	Frequency	Percentage
5	Mothers weight gain during pregnancy	1) 9 to 10 kg	15	22.72%	3	2.63%
		2) 11 to 12 kg	23	34.84%	65	57.01%
		3) 13 & above	5	7.57%	15	13.15%
6	Place of delivery	1) Home delivery	3	4.41%	0	0%
		2) GovtPHC&CHC	9	13.23%	16	13.79%
		3) Taluk& District hospital	25	36.76%	40	34.48%
		4) Private hospital	10	14.7%	46	31.03%
		5) Medical college & research centers	9	13.25%	14	12.06%

7	H/O any post natal illness	1)Present 2)Absent	11 57	16.127% 83.82%	2 114	1.72% 98.27%
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**Table no 5 : Maternal factors associated with diarrhea among under five children.
N=180 Case= 66 Control= 114**

Sl no	Maternal factors	Character	Cases N ₁ =66		Controls N ₂ =114	
			Frequency	Percentage	Frequency	Percentage
8	Gestational age at the time of delivery	1) 36weeks & less	11	6.18%	0	0%
		2) 37 weeks	5	7.35%	2	1.72%
		3) 38weeks	18	26.47%	24	20.66%
		4) 39 weeks	20	29.41%	44	37.93%
		5) 40weeks & above	14	20.58%	41	35.34%
9	H/O any abnormal event during pregnancy	1)Present	3	4.41%	1	0.825
		2)Absent	65	95.585	115	99.18%
10	H/O abortion, before pregnancy of this child	1)Present	4	5.88%	2	1.72%
		2)Absent	64	94.12%	114	98.27%

**Table no 6 : Distribution of samples according to breastfeeding practices followed by mothers.
N=180 Case= 66 Control= 114**

Sl no	Breast feeding practices	Character	Cases N ₁ =66		Controls N ₂ =114	
			Frequency	Percentage	Frequency	Percentage
1	Exclusive breast feeding was given up to	1) 5 month & less	20	29.41%	10	8.62%
		2) 6 month	26	38.23%	92	79.31%
		3) 7month & above	22	32.35%	14	12.06%
2	Weaning was started at the age	1) 5 month & less	20	29.41%	10	8.62%
		2) 6 month	26	38.23%	92	79.31%
		3) 7month & above	22	32.35%	14	12.06%
3	When was breast feeding started after birth	1) After 1 day	3	4.41%	0	0%
		2) After 3 hr	7	10.3%	2	1.72%
		3) After 2 hr	28	41.17%	47	40.51%
		4) After 1 hr	23	33.82%	48	41.37%
		5) Immediately after birth	7	10.29%	19	16.37%
4	Administration of pre lactational goods	1) Administered	9	13.23%	3	2.58%
		2) Not administered	59	86.76%	113	97.41%
5	Breast feeding was administered up to the age	1) 8 to 12 months	13	19.11%	2	1.72%
		2) 13 to 18 months	35	14.65%	17	14.65%
		3) 19 to 24 months	16	59.48%	69	59.48%
		4) 25 to 30 months	4	5.88%	28	24.13%

Table no 7: Illustrates the association between socio demographic factors and nutritional status of children. N= 180 Case= 66 Control= 114

H₁: There is a significant association between level of diarrhea and socio demographic factors, of under five children at 0.05 level of significance.

Sl no	Socio demographic variable	Degree of freedom	Chi square value	P value	Table value	Level of significance	Significance of association
1	Gender	1	0.822	0.365	3.84	0.05	NS
2	Birth order	2	6.326	0.042	5.99	0.05	Significant
3	Religion	1	nil		3.84	0.05	NS
4	House type	1	4.346	0.037	3.84	0.05	Significant
5	Family monthly income	4	21.09	0.000	9.49	0.05	Significant
6	Father education	4	17.655	0.001	9.49	0.05	Significant
7	Father occupation	4	6.182	0.186	9.49	0.05	Significant
8	Number of siblings	4	9.745	0.05	9.49	0.05	Significant
9	Family size	7	3.607	0.824	14.07	0.05	NS

10	Family type	1	5.776	0.016	3.84	0.05	Significant
11	Immunization status	1	1.175	0.190	3.84	0.05	NS
12	Socio economic status	3	2.566	0.463	7.89	0.05	NS

Table no 8: Association between child birth history and nutritional status of under-five children. N= 180 Case= 66 Control= 114

H₂: There is a significant association between level of diarrhea and children birth history factors, of under five children at 0.05 level of significance.

S/n o	child present history variables	Df	Chi square value	p-value	Table value	level of significance	Significance of association
1	Any abnormality at birth	1	3.509	.061	3.84	0.05	NS
2	Any diarrhea fort night	1	10.516	0.001	3.84	0.05	Significant*
3	Any fever fort night	1	5.117	0.024	3.84	0.05	Significant*
4	H/O worm infestation	1	0.042	.838	3.84	0.05	NS
5	H/O de-wormification	1	3.136	0.077	3.84	0.05	NS

Table no 9 : Association between child birth weight and nutritional status of children N= 180 Case= 66 Control= 114

S No	Variables	SE value	Regression value	P value	Level of significance	Significance of association
1	Birth weight of the children	0.012	-0.296	0.000	0.05	Significant*

Table no 10 : Association between maternal determinants with Nutritional status of under-five

H₃: There is a significant association between maternal determinants and level of diarrhea among under-five children at 0.05 level of significance.

N= 180 Case= 66 Control= 114

SL NO	Ante natal and post natal variables	Df	Chi square value	p-value	Table value	Level of significance	Significance of association
1	Mother education	4	40.87	0.000	9.49	0.05	Significant*
2	Mother occupation	3	18.58	0.000	7.89	0.05	Significant*
3	Any present illness	1	0.109	.742	3.84	0.05	NS
4	Immunization of mother	1	0.148	0.701	3.84	0.05	NS
5	Regular health check up	5	66.42	.000	12.59	0.05	Significant*
6	Mother age at delivery	11	6.450	0.842	19.66	0.05	NS
7	Any illness during pregnancy	1	17.145	0.000	3.84	0.05	Significant*
8	Place of delivery	3	8.378	0.039	7.89	0.05	Significant*
9	Post natal illness	1	13.637	0.000	3.84	0.05	Significant*
10	H/o any abnormal event during pregnancy	1	2.54	0.111	3.84	0.05	NS
11	H/o abortion before this child	1	6.766	0.009	3.84	0.05	Significant*

Table No 11 : Association between maternal factors and nutritional status of children N= 180 Case= 66 Control= 114

S No	Variables	SE value	Regression value	P value	Level of significance	Significance of association
1	Present age of mother	0.014	0.059	0.427	0.05	NS
2	Mother age at the time of marriage	0.024	0.059	0.426	0.05	NS
3	BMI of the mother	0.003	-0.220	0.003	0.05	Significant*
4	Mother weight gain during pregnancy	0.032	-0.437	0.000	0.05	Significant*

5	Gestational weeks of mothers	0.037	-0.272	0.000	0.05	Significant*
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Table no 12: Association between breast feeding practices with nutritional status of under-five.

H₄: There is a significant association between level of diarrhea and breast feeding practices of mothers of under five children at 0.05 level of significance.

N= 180 Case= 66 Control= 114

Sl NO	Breast feeding variables	Degree of freedom	Chi square value	p-value	Table value	Level of significance	Association
1	Exclusive breast feeding was given up to	6	35.758	0.000	12.59	0.05	Significant*
2	Weaning was started at the age	6	35.301	0.000	12.59	0.05	Significant*
3	breast feeding started after birth	4	13.317	0.010	9.49	0.05	Significant*
4	Administration of pre lactational goods	1	7.974	0.005	3.84	0.05	Significant*
5	Breast feeding was administered up to the age	14	62.085	0.000	23.66	0.05	Significant*

Table no 13: Comparison of mothers weaning Knowledge, between case group and control group. N= 180 Case= 66 Control= 114

Samples N=180	Mean	S.D	S.E	Min score	Max score
cases N ₁ =66	5.82	1.53	0.186	4	9
controls N ₂ =114	7.31	1.54	0.143	5	10

Table no 17.4 :Distribution of samples according mothers knowledge on weaning

H₃: There is a significant association between maternal determinants and level of diarrhea among under-five children at 0.05 level of significance.

N= 180 Case= 66 Control= 114

Samples N=180	Low		Average		High	
	Score up to 5		Score 6-7		Score 8-12	
	F	%	F	%	F	%
Controls N ₁ =114	19	16.37%	41	35.34%	56	48.27%
Cases N ₂ =66	31	45.58%	28	41.17%	9	13.23%

Table no 15: Association between mothers weaning knowledge with nutritional status of children N= 180 Case= 66 Control= 114

Sl NO	Breast feeding variables	Df	Chi square value	p-value	Table value	Level of significance	Association
1	mothers knowledge on weaning	3	28.74	0.0001	7.89	0.05	Significant*

III. Recommendations

- Lack of exclusive breastfeeding for six months is significant risk factors. Counseling of mothers about the importance of exclusive breast feeding and starting complementary feeds on time during their ante-natal visits is highly recommended.
- 38% Of the cases are found to be malnourished and it found to be maternal factors are more associated with it. Hence, Counseling of pregnant mothers and women in the reproductive age group about nutritious, healthy and safe food during pregnancy is recommended.

IV. Conclusion

This chapter deals with the conclusions drawn based on the findings of the study, implications, and limitations of the study, suggestions and recommendations. The present study was conducted with the objective of assessing the maternal determinants associated with diarrhea of under five children residing HSK hospital

Bagalkot district. In the present study the prevalence of, stunting, wasting and undernourished are 30.97%,26.08% and 28.26% respectively.

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