

Study On Nutrition situation of Children & Mother in Mid western Region Of Nepal.



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LIST OF ABBREVIATIONS

g	gram
mg	milligram
µg	microgram
ppm	parts per million
%	Percent
IDD	Iodine Deficiency Disorders
ICCIDD	International Council For Control of Iodine Deficiency Disorders
BMI	Body Mass Index
FCHV	Female Community Health Volunteer
PEM	Protein Energy Malnutrition
VAD	Vitamin -A Deficiency
IDA	Iron Deficiency Anemia
TGR	Total Goiter Rate
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Summary

A total of 1200 households of mid-western region (Banke district), of Nepal were surveyed in this study. The aim of this study was to investigate the current prevalence of under nutrition, to measure the consumption of vitamin-A rich food among mother & children, to estimate the impact of salt iodisation on IDD & analyse progress made towards universal salt iodisation, to estimate the coverage & impact of vitamin-A capsule distribution on vitamin-A deficiency, to collect socio-economic information related to malnutrition, to identify anti nutritional component in daily intake diet and to collect information related to food safety. Structured questionnaire, clinical examination of goiter, vitamin-A deficiency and estimation of iodine in household salts constituted the data collection tools.

The target respondent in this study were women reproductive age (15 -49 years old) who had at least one pre-school children (6 -59 months of age),pre-school age children, school age children (6 - 11 years old) & adolescents (10 - 19 years).Of the respondents 42.96 % were male and 57.04 % were female in pre - school children where as in school age children & adolescence age 63.03 % were male and 36.97 % were female. Similarly, the numbers of lactating respondents were 235 were as numbers of pregnant mother respondents were 185.

A large number of households were agriculture day labor (34.58 %) and farmer (30.25 %) reported their main occupation. The level of literacy among households were 64.25 % but literate was observed high (32.50 %) among study population. It was observed that 42.33 % of household had >1.0 Bhiga land where as 5.25 % had < 5.10% Bhiga land. A large number of the households (43.75%) were from very low-income group (NRs.< 3000). About 25.67 % households were low-income group (NRs. 3001 -5000), about 23.25 % had monthly family income of above NRs. 5001 and rest of the households had monthly income of above NRs. >7001. About 36.08% of households had no access to home garden where as 13.17 % have. Similarly, 67.92% household had livestock where as 32.08 % household had no livestock.

It was quit discouraging that 74.58% of household didn't know the importance of Micronutrients during Pregnancy/Lactation. Source of Knowledge on Micronutrients of Knowledgeable household was Radio (40.00%), T.V. (26.21%) & FCHV (22.90%) respectively. Only 82.33% of household head's were knew the important of Vitamin- A. About 60.93% Knowledgeable household head's answer on source of Vitamin- A were green leafy vegetable where as 15.69%, 19.84% were Carrot and Yellow fruits respectively. Only 90.58% of households were received Vitamin- A capsule in Kartik/Bishak.

In the study area, 65.92% of households were knew the importance of iodized salt where as 20.00% of households were didn't know. Only 81.50% of households were consumed iodized salt. About 91.20% of household's answer on benefit of iodized salt was prevent goiter where as 8.39% said mental / cognitive function. Nearly half (46.08%) of household were consumed Phoda(Dhike) salts where as 26.58% , 20.42% were consumed Aauo noon & Crushed on brand salts respectively. In this area, the reasons of consuming above type of salts were low cost (72.92%) & availability (27.08%). More then one-third (73.75%) of household salts were content

<15.00 ppm of iodine. According to type of packing, iodine content (< 15 ppm) of salt was Phoda salt (100.00%) & Crushed no brand (100.00%) where as 77.60% of Aauo noon was \geq 15 ppm.

Most of the households (74.33%) were used green vegetable in past 3 days where as only 11.25% of households were used yellow fruits in 3 days past. Only 14.33% of households were knew about washing then cutting during preparation of green vegetable for cooking. Most of households were cooked green vegetable by boiling (68.08%) method.

More then one-third (87.33%) of households were didn't used regularly yellow fruits & green vegetable in the diet of mother & child in past one week. About 82.00% of households had access to food grain. 89.00% of households were used traditional method for storage of food grain.

Cabbage (67.50%) & Skin of ground nuts (8.58%) were used by household in daily intake diet in seasons which were Anti-nutritional Component in daily intake diet of respondents.

In the study area, more then one-third (78.08%) of households had not toilet facility in his house. Only 14.33% of households were used soap after toilet where as 85.67% were not. About 71.42% of households were used tap water as a source of drinking water where as 25.42% & 3.16% used well water & filter water respectively.

Nutritional status of pre-school children was observed as malnourished (50.94%), Cronic-malnourished(41.78%) & sever malnourished(7.75%) on the basis of W/A, H/A & W/H respectively where as malnourished(8.45%), normal(27.93%) & undernourished(63.62%) on the basis of arm circumference according to age. Percentage of malnourished 21.01%, 20.20%, 14.35%, 28.03% & 31.68% were observed in 6.0 -8.0, 8.1 -10.0, 10.1 -12.0, 12.1 - 14.0, 14.1 - 16.0 years school age children & adolescence respectively. Prevalence of goiter (Total Goiter Rate i.e TGR) were found 14.94%, 11.05%, 12.56%, 28.87% & 30.43% in 6.0 - 8.0, 8.1 - 10.0, 10.1 - 12.0, 12.1 -14.0, & 14.1 - 16.0 years school age children & adolescence respectively. 4.81%(6.0 - 8.0 years), 2.32% (8.1 - 10.0 years), 4.04% (10.1 - 12.0 years), 1.67% (12.1 - 14.0 years), and 4.35% (14.1 - 16.0 years) were found prevalence of Vit.- A deficiency in school age children & adolescence. Prevalence of Vit.-A deficiency diseases in Lactating & Pregnant mother were 8.95% & 7.56% where as TGR were 41.28% & 37.84% respectively.

1.1 INTRODUCTION

Malnutrition is major health problem in Nepal.

The most significant nutritional disorder among the Nepalese population are protein energy malnutrition (PEM), VAD, IDD & IDA. A nos. of epidemiological studies have been conducted to estimate the severity & distribution of these different nutrition problems over the past twenty-five years. No integrated survey had ever been under taken to review the overall nutrition & micro nutrient status, food safety & availability of food in house hold level & anti nutritional factors found in food consumed by the population . Furthermore, the achievements of the programmed have never been systematically reviewed, nor has there been an evaluation of programme areas that require further strengthening & support.

1.2 OBJECTIVE OF THE STUDY

General

To access the current nutritional status of representative population like pre school children, School- aged children & pregnant/ lactating mothers.

Specific

- a) Determine the current prevalence of under nutrition,**
- b) Measure the consumption of vitamin A rich Food among mothers & children,**
- c) Estimate the impact of salt iodisation on IDD & analyse progress made towards universal salt iodisation,**
- d) Estimate the coverage & impact of Vitamin A capsule distribution on Vitamin A deficiency,**
- e) Collect Socio-eco information related to malnutrition,**
- f) Identify anti nutritional component in daily intake diet**
- g) Collect information related to food safety.**

2.1 METHODOLOGY

The study is conducted among the women of reproductive age, preschool age children and school-age children residing in Banke district during 2002. The study population constituted of male and female. The households are selected by means of systematic sampling.

In order to achieve the desired sample size systematic sampling method was followed. Banke district was divided in to three clusters. From each cluster two VDCs were selected. Among the selected VDC, only odd ward numbers were taken to cover the sample size of 1200 households. Amongst these, one house was selected randomly. This house was the first household to be surveyed. Salt samples were collected in the ratio 1:3 respondent from his/ her house hold respectively.

The target respondent in this study were women reproductive age (15- 49 years old) who had at least one pre- school children (6 – 59 months of age), pre-school age children & school age children (6 – 11 years old).

Structured questionnaires, clinical examination of goiter, Vitamin A deficiency & estimation of iodine in salt constituted the data collection tools.

Research questionnaires are included in annexes. A number of questions pertaining to on going malnutrition problems as well as food safety were included in the questionnaire & was administrated for every respondent.

Goiter was graded on the recommendation of Joint WHO/UNICEF/ICCIDD-1992 Consultations on IDD indicators(Ref.)¹

Estimation of Iodine in Salt was done on the process which was followed by Regional Food Lab. Nepalgunj .

Determination of the prevalence of under nutrition was based on Harvard Standard. According to this standard-

- Height/Age is less then 90%, children were suffering from Chronic Malnutrition.
- Weight/Age is less then 80%, children were malnourished.
- Weight/Height is less then 80%, children were malnourished.

On the basis Age/Arm Circumference -

Arm Circumference is >13.5 cm - Child is normal.

Arm Circumference is 12.5-13.5 cm - Undernourished

Arm Circumference is <12.5 cm - Child is malnourished.

Body Mass Index (BMI) for Adult -

BMI <16 - malnourished.

BMI = 16.0 - 18.5 - Undernourished

BMI = 18.5 - 25.0 - Nourished (Normal)

BMI = 25.0- 30.0 - Overweight

BMI > 30.0 - Obesity

3.0 RESULTS & DISCUSSION

Table no - 1

Distribution of Household by Educational Level

Level of Education of the Household	Number of Household	Percent
Illiterate	429	35.75
Literate	390	32.50
Up to SLC	208	17.33
Intermediate	138	11.50
Bachelor level	35	2.92
TOTAL	1200	100.00

Table no -2

Distribution of Household by Land (Big)

Land in Bhiga	Number of Household	Percent
Less then 1.0	508	42.33
1.1- 2	301	25.08
2.1 - 3	123	10.25
3.1 -4	110	9.17
4.1 - 5	95	7.92
Greeter then 5.1	63	5.25
TOTAL	1200	100.00

42.33% of household had >1.0 Bhiga Land where as 5.25 % had <5.1 Bhiga Land .

Table no - 3
Distribution of Household by Occupation

Occupational Status	Number of Household	Percent
Farmer	363	30.25
Agriculture day Labor	415	34.58
Rickshaw Puller	20	1.67
Salaried Worker	119	9.92
Business Man	283	23.58
TOTAL	1200	100.00

30.25% & 34.58 % households were farmers & agriculture day labors respectively.

Table no - 4
Distribution of Household by Total Monthly Family Income

Monthly Family Income (NRs)	Number of Household	Percent
Very Low (<3000)	525	43.75
Low (3001 -5000)	308	25.67
Medium (5001 - 7000)	279	23.25
High (>7001)	88	7.33
TOTAL	1200	100.00

43.75 % households had very low (<3000 NRs.) total monthly family income where as 7.33% households had high monthly family income (>7001NRs.).

Table no - 5
Distribution of Household by Home Gardening

Access to Vegetable Garden	Number of Household	Percent
No	433	36.08
Yes (around house)	358	29.83
Yes (away from house)	251	20.92
Both	158	13.17
TOTAL	1200	100.00

36.08 % of households had no access to home garden where as 13.17% have.

Table no - 6
Distribution of Household by Livestock

Livestock	Number of Household	Percent
No	385	32.08
Yes	815	67.92
TOTAL	1200	100.00

Table no - 7.1

Distribution of Household by Types of Livestock

Type of Livestock	Number of Household	Percent
Chicken	58	7.12
Cow	231	28.34
Buffalo	205	25.15
Goats	321	39.39
TOTAL	815	100.00

Table no - 8

Knowledge on Micronutrients during Pregnancy /Lactation

Household Head's Knowledge	Number of Household	Percent
Knowledgeable	895	74.58
Do not Know	305	25.42
TOTAL	1200	100.00

74.58 % of households didn't know the importance of Micronutrients during Pregnancy/Lactation.

Table no - 8.1

Source of Knowledge on Micronutrients of Knowledgeable Household

Source of knowledge	Number of Household	Percent
Radio	358	40.00
Magazine /Newspaper	45	5.03
Poster	5	0.56
Friends / Neighbor	20	2.20
F.C.H.V.	205	22.90
School teacher	27	3.01
T.V.	235	26.21
TOTAL	895*	100.00

***Who know about Micronutrients.**

Source of Knowledge on Micronutrients of Knowledgeable Household was Radio(40.00 %) ,T.V.(26.21%),FCHV(22.90%) respectively.

Table no - 9

Knowledge on Vitamin - A

Household Head's Knowledge	Number of Household	Percent
Knowledgeable	988	82.33
Do not Know	212	17.67
TOTAL	1200	100.00

82.33 % of household head's were know the importance of Vit.-A.

Table no - 9.1

Knowledgeable Household Head' answer on Source of Vitamin - A

Source of Vitamin- A	Number of Household	Percentage
Green leafy Vegetable	602	60.93
Carrot	155	15.69
Yellow fruits	197	19.84
Eggs	22	2.23
Liver	13	1.31
Meat/Fish	00	00.00
Milk/Dairy products	00	00.00
TOTAL	988*	100.00

***Who know about Vitamin - A**

60.93 % Knowledgeable household head's answer on source of Vit.-A were green leafy vegetable where as 15.69 %,19.69 % were Carrot & Yellow fruits respectively.

Table no - 10

Vitamin -A Capsule received in Kartik /Bishak

Vitamin -A Capsule	Number of Household	Percentage
No	115	9.58
Yes	1085	90.42
TOTAL	1200	100.00

90.58 % households were received vitamin-A capsule in Kartik/ Bishak.

Table no - 11

Household's knowledge about iodized salt

Knowledge of iodized salt	Number of Household	Percentage
No	169	14.08
Yes	791	65.92
Don't know	240	20.00
TOTAL	1200	100.00

65.92 % of household's were know the importance of iodized salt where as 20.00 % didn't know.

Table no- 12**Household's knowledge about Consumption of iodized salt**

Consumption of iodized salt	Number of Household	Percentage
No	222	18.50
Yes	978	81.50
TOTAL	1200	100.00

Only 81.50 % of household were consumed iodized salt .

Table no- 12.1**Knowledgeable Household's Answer On Benefit of Iodized Salt**

Household's answer	Number of Household	Percentage
Prevent goiter	892	91.20
Prevent Cretinism	4	0.41
Growth	0	00.00
Mental/Cognitive function	82	8.39
Prevent death	0	00.00
TOTAL	978	100.00

91.20 % of household's answer on benefit of iodized was prevent goiter where as 8.39% said Mental/Cognitive function.

Table no- 13**Type of salt Consumed by Household**

Type of Salt	Number of Household	Percentage
Refined on brand	00	00.00
Aauo noon(packaged)	319	26.58
Tata salt	83	6.92
Crushed no brand	245	20.42
Shakti(packet)	00	00.00
Bhanu(packet)	00	00.00
Kurkutch(grain)	00	00.00
Phoda(Dhike)	553	46.08
Other	00	00.00
TOTAL	1200	100.00

46.08 % of household consumed Phoda(Dhike) salts where as 26.58 %,20.42 %were consumed by Aauo noon & Crushed no brand salts respectively .

Table no-13.1

Reason of Consuming salt

Reason of Consumption	Number of Household	Percentage
Availability	325	27.08
Low cost	875	72.92
Custom	00	00.00
Other	00	00.00
TOTAL	1200	100.00

Reason of consuming salt was low cost (72.92 %) & availability (27.08 %).

Table no -14

Iodine Content in Household salt

Level of iodine(ppm)	Number of Samples	Percentage
<15.00	295	73.75
≥15.00	105	26.25
TOTAL	400	100.00

73.75 % of household salts were contend <15.00 ppm of iodine.

Table no-14.1

Iodine Content of Household salt according to type of Packing

Type of salt	Iodine content of salt(ppm)		Total (percentage)
	<15.00	≥15.00	
Aauro noon(packet)	28 (22.40)	97 (77.60)	125 (100.00)
Phoda (Dhike)	243 (100.00)	00 (00.00)	243 (100.00)
Crushed no brand	22 (100.00)	00 (00.00)	22 (100.00)
Tata salt	2 (20.00)	8 (80.00)	10 (100.00)
TOTAL	295 (73.75)	105 (26.25)	400 (100.00)

Iodine contend(<15ppm)of salt was Phoda salt (100.00 %) & Crushed no brand (100.00 %) where as 77.60 % of Aauro noon was ≥ 15.00.

Table no- 15

Green Vegetable used by Household

Green Vegetable used in past 3 days	Number of Household	Percentage
No	308	25.67
Yes	892	74.33
TOTAL	1200	100.00

Only 74.33 % of households were used green vegetable in past 3 days.

Table no- 15.1

Knowledge about Preparation of Green Vegetables for Cooking

Preparation of green vegetable	Number of Household	Percentage
Cutting than Washing	1028	85.67
Washing than Cutting	172	14.33
TOTAL	1200	100.00

Only 14.33 % of households were know about preparation of green vege. for cooking.

Table no -15.2

Knowledge about Cooking of green Vegetable

Method of Cooking	Number of Household	Percentage
Fry with oil/ghee	83	6.92
Boiling	817	68.08
Steam cooking	300	25.00
Other	00	00.00
TOTAL	1200	100.00

Most of households were cooked green vegetable by boiling(68.08 %) method.

Table no-16

Yellow fruits used in the diet by Household

Yellow fruits used in 3 days past	Number of Household	Percentage
No	1065	88.75
Yes	135	11.25
TOTAL	1200	100.00

Only 11.25 % of households were used yellow fruits in 3 days past.

Table no -17

Yellow fruits & Green vegetable used in diet of Mother & Child in the Past one Week

Use of fruit & vegetable	Number of Household	Percentage
One time in a week	18	1.50
Two time in a week	31	2.58
Three time in a week	20	1.67
More than three time in a week	83	6.92
Didn't give regularly	1048	87.33
TOTAL	1200	100.00

87.33 % of households were didn't used regularly yellow fruits & green vegetable in the diet of mother & child in past one week.

Table no-18

Anti-nutritional Component in daily intake diet

Food Commodity used	Number of Household	Percentage
Cabbage (Goitrogens)	810	67.50
Skin of ground nut (Goitrogens)	103	8.58
Faba bean (Haemolytic anaemia)	287	23.92
Raw soybean (Antivitamin -A)	00	00.00
Raw kidney beans (Antivitamin -E)	00	00.00
TOTAL	1200	100.00

#Cabbage (67.50%)&Skin of ground nut (8.58%)were used in daily intake diet in season.

Table no-19

Access to food grain

Access to food grain	Number of Household	Percentage
No	216	18.00
Yes	984	82.00
TOTAL	1200	100.00

82.00 % of households had access to food grain.

Table no-20

Store of Food grain

Storage of food grain	Number of Household	Percentage
Traditional method	1068	89.00
Modern method	132	11.00
TOTAL	1200	100.00

89.00 % of households were used traditional method for storage of food grain.

Table no -21

Toilet facility available in House

Toilet facility	Number of Household	Percentage
No	937	78.08
Yes	263	21.92
TOTAL	1200	100.00

78.08 % of households had toilet facility in his house.

Table no -22

Use of Soap after Toilet for washing hand

Use of soap after Toilet	Number of Household	Percentage
No	1028	85.67
Yes	172	14.33
TOTAL	1200	100.0

Only 14.33 % of households were used soap after toilet were as 85.67% were not.

Table no-23

Type of Drinking water

Sources of Drinking water	Number of Household	Percentage
Tap water	857	71.42
Well water	305	25.42
River water	00	00.00
Filter water	38	3.16
TOTAL	1200	100.0

71.42% of households were used tap water as a source of drinking water where as 25.42% & 3.16 % used well water & filter water respectively.

Table no- 24

Nutritional Status of Pre- school Children

Age in months	Male	Female	Total	Percentage
6 - 12	24	60	84	19.72
13 - 24	48	63	111	26.06
25 - 36	18	48	66	15.49
37 - 48	21	18	39	9.15
49 - 60	72	54	126	29.58
TOTAL	183	243	426	100.00

Table no - 24.1
Weight According to Age

Age	Standard		90%		80%		70%		60%		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
6 -12	2	5	1	7	9	18	8	22	4	8	24	60
13 - 24	3	3	6	11	15	16	17	15	7	18	48	63
25 - 36	0	4	3	5	6	15	8	14	1	10	18	48
37 - 48	1	0	2	3	8	6	1	7	9	2	21	18
49 - 60	2	5	4	6	29	14	20	23	17	6	72	54
TOTAL	7	17	16	32	67	69	54	81	38	44	183	243

♣Percentage of Malnourished = 50.94 %

Table no -24.2

Height According to Age

Age	Standarder		90%		80%		70%		60%		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
6 -12	1	5	12	30	8	20	3	4	0	1	24	60
13 - 24	6	12	22	25	18	15	2	1	0	10	48	63
25 - 36	0	8	10	20	7	18	0	2	1	0	18	48
37 - 48	2	1	10	10	4	7	3	0	2	0	21	18
49 - 60	7	4	35	28	25	12	4	8	1	2	72	54
TOTAL	16	30	89	113	62	72	12	15	4	13	183	243

♣Percentage of Cronic-malnourished =41.78 %

Table no - 24.3

Weight According to Height

Age	Standarder		90%		80%		70%		60%		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
6 -12	2	6	8	11	12	36	2	6	0	1	24	60
13 - 24	0	8	4	16	40	34	3	5	1	0	48	63
25 - 36	1	0	4	20	12	25	1	2	0	1	18	48
37 - 48	0	0	2	0	18	17	1	1	0	0	21	18
49 - 60	9	0	20	22	38	28	4	4	1	0	72	54
TOTAL	12	14	38	69	120	140	11	18	2	2	183	243

♣ Percentage of Sever malnourished = 7.75 %

Table no - 25
Arm Circumference According to Age

Age	Standarder		90%		80%		70%		60%		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
6 -12			7	17	15	38	2	5			24	60
13 - 24			13	18	31	40	4	5			48	63
25 - 36			5	13	11	31	2	4			18	48
37 - 48			6	5	13	11	2	2			21	18
49 - 60			20	15	46	35	6	4			72	54
TOTAL			51	68	116	155	16	20			183	243

- ♣ Malnourished = 8.45 %
- ♣ Normal = 27.93 %
- ♣ Undernourished = 63.62 %

Table no - 26
BMI of School age children & Adolescence by Age & Sex

BMI	6.0-8.0 years		8.1-10.0 yer.		10.1-12.0 ye		12.1-14.0 ye		14.1-16.0 ye	
	M	F (%)	M	F (%)	M	F (%)	M	F (%)	M	F (%)
<16	61	22(21.01)	41	20(20.2)	22	10(14.35)	43	24(28.03)	37	14(31.68)
16.0 - 18.5	11	34(11.39)	29	18(15.56)	18	14(14.35)	36	21(23.85)	35	13(29.81)
18.5- 25.0	129	67(49.62)	75	47(40.40)	66	47(50.67)	60	29(37.24)	34	10(27.33)
25.0 - 30.0	14	40(13.67)	24	12(11.092)	20	12(14.35)	22	00(9.21)	14	2(9.94)
>30	00	17(4.30)	28	8(11.92)	9	6(6.73)	4	00(1.67)	00	00(00)
TOTAL	215	180(395)	197	105(302)	135	88(223)	165	74(239)	120	41(161)

Table no -26.1

Prevalence of Goiter by Age & Sex

Prevalence of goiter	6.0-8.0 years		8.1-10.0 yer.		10.1-12.0 ye		12.1-14.0 ye		14.1-16.0 ye	
	M	F (%)	M	F (%)	M	F (%)	M	F (%)	M	F (%)
Grade -0	156	128(71.90)	135	70(67.88)	94	60(69.06)	119	51(71.13)	82	30(69.56)
Grade -1	58	52(27.85)	62	33(31.46)	41	24(29.15)	40	20(25.10)	36	10(28.57)
Grade -2	1	0 (0.25)	0	2(0.66)	0	4(1.79)	6	3(3.76)	2	1(1.86)
TGR(Gr.- 1+2)	59	0 (14.94)	0	35(11.59)	0	28(12.56)	46	23(28.87)	38	11(30.43)
TOTAL	215	180(395)	197	105(302)	135	88(223)	165	74(239)	120	41(161)

Table no -26.2

Prevalence of Vit.-A deficiency Diseases by Age & Sex

Prevalence of Vit.-A	6.0-8.0 years		8.1-10.0 yer.		10.1-12.0 ye		12.1-14.0 ye		14.1-16.0 ye	
	M	F	M	F	M	F	M	F	M	F
Night blindness	1 (0.46 %)	00 (00.0 %)	2 (1.02 %)	1 (0.95 %)	2 (1.48 %)	3 (3.41 %)	1 (0.61 %)	0 (00.0 %)	3 (2.50 %)	2 (4.88 %)
Short sightness	5 (2.33 %)	3 (1.67 %)	4 (2.03 %)	0 (00.0 %)	0 (00.0 %)	1 (1.14 %)	0 (00.0 %)	2 (2.70 %)	1 (0.83 %)	0 (00.0 %)
Long sightness	8 (3.72 %)	2 (1.11 %)	0 (00.0 %)	0 (00.0 %)	1 (0.74 %)	2 (2.27 %)	0 (00.0 %)	1 (1.35 %)	0 (00.0 %)	1 (2.44 %)
No defect	201 (93.49 %)	175 (97.22 %)	191 (96.95 %)	104 (99.04 %)	132 (97.7 8%)	82 (93.1 8%)	164 (99.3 9%)	71 (95.9 5%)	116 (96.6 7%)	38 (92.6 8%)
TOTAL	215	180	197	105	135	88	165	74	120	41

4.81%(6.0-8.0 years), 2.32 %(8.1-10.0 years), 4.04 %(10.1-12.0 years),1.67 % (12.1-14.0 years) and 4.35 %(14.1-16.0 years) were found prevalence of Vit.-A deficiency in school age children & Adolescence.

Table no -27

Prevalence of Vit. -A deficiency Diseases in Lactating & Pregnant mother

Prevalence of Vit. -A	Lactating	Pregnant mother
Night blindness	12 (5.12%)	8 (4.32%)
Short sightness	7 (2.98 %)	2 (1.08%)
Long sightness	2 (0.85%)	4 (2.16%)
No defect	214 (91.06%)	171 (92.43%)
TOTAL	235	185

Prevalence of Vit.-A deficiency diseases in Lactating & Pregnant mother were 8.95% & 7.56% respectively.

Table no -27.1

Prevalence of Goiter in Lactating & Pregnant mother

Prevalence of Goiter	Lactating	Pregnant mother
Grade -0	138 (58.72%)	115(62.16%)
Grade -1	92 (39.15%)	68 (36.76%)
Grade -2	5 (2.13%)	2 (1.08%)
TRG(grad -1+2)	97 (41.28%)	70 (37.84%)
TOTAL	235	185

Prevalence of Goiter(TGR) in Lactating & Pregnant mother were 41.28% & 37.84 % .

4.0 CONCLUSIONS -

The findings of the present study are given below --

- 1) Of the 1200 households surveyed, 65.92% were aware of iodised salt (Table -11). Though, more than a half of the respondents (74.58%) were informed about micronutrients, radio (40.0%) was their major source of information (Table -8.1)
- 2) People of the study area had preference for phoda (46.08%) salt (Table -13).
- 3) Majority (81.50%) of the households consumed iodised salt containing inadequate amount of iodine (<15 ppm) was 73.75% (Table -12 & 14)
- 4) About two third of respondents (82.33%) had knowledge about Vit.-A and had known about sources of Vit.-A (60.93 %) Table -9 & 9.1
- 5) Majority (90.42 %) of respondents received Vit.-A in Kartik / Baisak (Table -10).
- 6) 74.33% of respondents used green vegetables in the past 3 days (Table -15) where as 85.67% prepared green vegetable cutting then washing (15.1)
- 7) Only 11.25% used yellow fruits in past 3 days (Table -16) where as 87.33% respondents didn't give regularly fruits & vegetables in the diet of mother & children (Table -17).
- 8) Cabbage (67.50%), Faba bean (23.92%)& Skin of groundnut (8.58%) were used as antinutritional component in daily intake diet (Table -18).
- 9) Table -21,22 & 23 show poor food safety.
- 10) Table- 24, 24.1, 24.2, 24.3 & 25 show nutritional status of pre-school children .

Malnourished - 50.94%
Chronic -Malnourished - 41.78%
Serious -Malnourished - 7.75%
- 11) Table-26, 26.1 & 26.2 show the nutritional status of adolescence .
- 12) Table 27.1 & 27.2 shows the prevalence of Vit.-A deficiency Diseases & goiter in lactating & pregnant women .

5.0 RECOMMENDATION :-

- i.) Salt iodization Act should be implemented and responsible organization should be monetered it.**
- ii.) Malnutrition is controlled with the helps of Health education. If it is implemented in V.D.C with the helps of F.C.H.V it gives better results.**
- iii.) Health education should be emphasis on cooking practices.**

6.0 BIBLIOGRAPHY:-

- I) Jelliffe, D.B. Community Nutritional Assessment . 1989**
- II) Gibson, Rosalind S. Principles of Nutritional Assessment. 1990**
- III) WHO. Measuring Change in Nutritional Status, Geneva, 1983**
- IV) Nepal Micro Nutrient Status Survey, 1998. HMG Ministry of Health,
UNICEF, WHO,MI.**

7.0 PHOTOGRAPH :-

Following are the list of photograph collected by the study area.



8.0 ANNEXURE:-

QUESTIONNAIRES

100. HOUSEHOLD SOCIO-ECONOMIC:-

101. S.No:- 102. Cluster No:- 103. Ward No:- 104. VDC:-
104. Name of Household Head(HH):- Male = 1, Female = 2
105. H.H religion:- Hindu = 1, Muslim = 2, Buddhist = 3, Other = 4
106. H.H Caste:-
107. How many members are there in your family?(asked with H.H) -----
108. How many children do you have who are below 5 years old?
109. H.H Education:- No = 1, Yes = 2
110. What is the highest grade? up to SLC = 1, I.A. = 2, B.A =3, Literate = 4

200. ECONOMIC STATUS:-

201. How much land does your family own? (Ropani /Bigha) -----

202. Does your household have:-	No	Yes
(i) Electricity	1	2
(ii) Telephone	1	2
(iii) Radio	1	2
(iv) Television	1	2
(V) Bicycle	1	2

203. What is the occupation of the household head?

- | | |
|----------------------------------|------------------------------|
| (i) Farmer ---- 1 | (iv) Salaried worker ----- 4 |
| (ii) Agriculture day labor --- 2 | (v) Business man ----- 5 |
| (iii) Rickshaw puller----- 3 | (vi) Other(specify) ----- 6 |

206. Total monthly family income (NRc):-

- | | |
|-------------------------|--------------------------|
| (i) < 3000 ----- 1 | (iii) 5001 -7000 ----- 3 |
| (ii) 3001 - 5000 ---- 2 | (iv) > 7001 ----- 4 |

300. AGRICULTURE / HOME GARDENING:-

301. Do you have access to a vegetable garden?

- | | |
|-------------------------------|-----------------------------------|
| (i) No ----- 1 | (iii) Yes(away from house) --- 3 |
| (ii) Yes (around house) --- 2 | (iv) Both ----- 4 |

302. Could have livestock in the household? No -- 1 Yes --- 2

303. Could you give the details on the number of livestock your own ?

- | | |
|-----------------------|--------------------|
| (i) Chicken ----- 1 | (ii) Cow ----- 2 |
| (iii) Buffalo ----- 3 | (iv) Goats ----- 4 |

400. MEDIA EXPOSURE ON MICRONUTRIENTS:-

401. Have you heard messages on Vitamin- A, Iodised salt and Iron (given during pregnancy / lactation) ? If yes, from which sources ? (No = 1, Yes = 2)

- | |
|-------------------------------|
| (a) Radio ----- 1 |
| (b) Magazine/Newspaper -- 2 |
| (c) Poster ----- 3 |
| (d) Friends/ neighbor ----- 4 |
| (e) F.C.H.V. ----- 5 |

(f) School teacher ----- 6

(g) Television ----- 7

500. VITAMIN - A

501. What are dietary sources of Vitamin-A ?

(Do not probe, No = 1, Yes = 2)

(a) Green leafy vegetables ----- 1

(b) Carrot ----- 2

(c) Yellow fruits ----- 3

(d) Eggs ----- 4

(e) Liver ----- 5

(f) Meat / Fish ----- 6

(h) Milk / Dairy products ----- 7

502. Did received vitamin -A capsule during that event in Kartik / Bishakh ?

No = 1, Yes = 2

503. Do you remember the recent vitamin -A capsule distribution that happened in Kartik / Baisakh ? No = 1, Yes = 2

600. IODIZED SALT :-

601. Is the salt that you use iodized? No = 1, Yes = 2, Don't know = 3

602. Why do you think that we should take iodized salt?

(Do not probe, No = 1, Yes = 2)

(i) Prevent goiter ----- 1

(ii) Prevent Cretinism ----- 2

(iii) Growth ----- 3

(iv) Mental / Cognitive function ----- 4

(v) Prevent death ----- 5

603. What is the main type of salt used for household?

(a) Refined no brand ----- 1

(b) Aauo noon(packet) ----- 2

(c) Tata salt ----- 3

(d) Crushed no brand ----- 4

(e) Shakti (packet) ----- 5

(f) Bhanu (packet) ----- 6

(g) Kurkutch (grain) ----- 7

(h) Phoda (Dhike) ----- 8

(i) Other (specify) ----- 9

604. What is main reason for using these salt ?

(a) Availability ----- 1

(b) Low cost ----- 2

(c) Custom ----- 3

(d) Other (specify) ----- 4

605. Was salt collected for analysis by titration?

No = 1, Yes = 2

606. Iodine content of salt (by titration method) -----

700. HOUSEHOLD VEGETABLE AND FOOD CONSUMPTION :-

701. Have green vegetables been used in the diet of the household in the past 3 days ?
No = 1, Yes = 2

702. How do you normally cook vegetables?
(a) Fry with oil / ghee ----- 1
(b) Boiling ----- 2
(c) Steam cooking ----- 3
(d) Raw (on cooking) ----- 4
(e) Other ----- 5

703. Have yellow fruits used in the diet of the household in the past 3 days ?
No = 1, Yes = 2

704. Have Cabbage, Skin of Ground nut, Faba bean, Raw soyabean, Raw kidney Beans used in your diet of household in past season?

- | | No = 1 | Yes = 2 |
|------------------------|--------|---------|
| (a) Cabbage | ----- | ----- |
| (b) Skin of Ground nut | ----- | ----- |
| (c) Faba bean | ----- | ----- |
| (d) Raw soyabean | ----- | ----- |
| (e) Raw kidney beans | ----- | ----- |

705. How do you normally green vegetables prepared for cooking ?

- (a) Cutting then washing ----- 1
(b) Washing then cutting ----- 2

706. How many times yellow fruits & vegetables used in the diet of the mother and children in the past one weeks?

- (a) One time in a week ----- 1
(b) Two time in a week ----- 2
(c) Three time in a week ----- 3
(d) More then three time in a week --- 4
(e) Didn't give regularly ----- 5

800. FOOD SAFETY :-

801. Do you have toilet facility in your home ? No = 1, Yes = 2

802. Do you used soap after toilet ? No = 1, Yes = 2

803. Type of drinking water used in your home -----

900. MESEREMENT OF WEIGHT, GEIGHT, M.U.A.C. & AGE

- (a) Wit. (kg)
(b) Hit. (cm)
(c) MUAC (mm)
(d) Age (year, month, day)
(e) Sex (Male = 1, Female = 2)
(f) Grade of goiter (i) 0 grade, (ii) 1 grade, (iii) 2 grade
(g) Vit. - A deficiency (do not probe No = 1, Yes = 2)
(i) Short shightness --- 1
(ii) Long shightness --- 2
(iii) Night blandness --- 3

