

CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	LIST OF TABLES	
	LIST OF FIGURES	
	LIST OF PLATES	
	LIST OF APPENDICES	
	PUBLICATIONS	
I	INTRODUCTION	1
II	REVIEW OF LITERATURE	12
	A. Fishermen in India and their Livelihood	12
	B. Socio-economic and Nutritional status of Fishermen	14
	C. Prevalence of Vitamin A Deficiency and Malnutrition in Children	20
	D. Vitamin A rich – Orange Fleshed Sweet Potato	25
	E. Effect of Nutritional Education	29
III	METHODOLOGY	35
	Phase I: Selection and Screening of Fisherfolk children for Vitamin A deficiencies and Iron Deficiency Anaemia	36
	A. Selection of the research area and subjects	36
	B. Formulation of tools and conduct of the socio-economic survey	43
	C. Screening of children and identifying children with vitamin A deficiencies and iron deficiency anaemia.	44
	Phase II: Assessment of Nutritional Status of Children with Vitamin A Deficiencies and Iron Deficiency Anaemia	45
	A. Anthropometrical assessment	46
	B. Biochemical assessment	49
	C. Clinical assessment	50
	D. Dietary survey	51

	Phase III: Selection, Preparation and Nutritional Analysis of Boiled Sweet Potato for Intervention	52
	A. Selection of sweet potato variety rich in beta-carotene	53
	B. Preparation and acceptability of orange-fleshed sweet potato	55
	C. Nutrient analysis of the sweet potato	56
	Phase IV: Supplementation and Assessing the Impact of the Boiled Sweet Potato and Nutrition Education to the Selected Group of Children	57
	A. Grouping of fishermen children and conduct of supplementation and nutrition education	57
	B. Impact of interventions among fishermen children	65
	Phase V: Statistical Analysis	66
IV	RESULTS AND DISCUSSION	67
	Phase I: Prevalence of VAD and IDA among Fisherfolk Children in the Selected Villages	67
	A. Socio-economic background of the fisherfolk children	67
	B. Clinical symptoms of VAD and IDA among the Fisherfolk Children	78
	C. Nutritional anthropometry of the fisherfolk children	82
	D. Dietary pattern of the fisherfolk children	91
	Phase II: Background Information and Nutritional Status of Fisherfolk Children Selected for Supplementation	106
	A. Socio-economic background of the selected children for supplementation	106
	B. Nutritional status of the children before supplementation	109
	Phase III: Acceptability and Nutritive Value of Orange Fleshed Sweet Potato	128
	A. Acceptability trials orange fleshed sweet potato	128
	B. Nutrient content of boiled orange fleshed sweet potato supplement	128

	Phase IV: Impact of Intervention on Nutritional Status and Knowledge, Attitude and Practice (KAP)	130
	A. Impact of supplementation of orange fleshed sweet potato	130
	B. Impact of nutrition education on KAP	153
V	SUMMARY AND CONCLUSION	155
	BIBLIOGRAPHY	174
	APPENDICES	196

LIST OF TABLES

TABLE NO.	TITLE	PAGE NO.
I	Indian Fishermen Average Income Status	1
II	Fishermen Population and Resources of Coastal States and Union Territories of India	2
III	Population Distribution in the Selected Eight Villages	42
IV	Nutritional Composition of Orange Fleshed Sweet Potato Genotypes	54
V	Age-wise Grouping of the Selected Fisherfolk Children	58
VI	Nutrition Education Methods and Frequency of Education	60
VII	Literacy Rate of Fisherfolk of the Selected Villages	71
VIII	Type of Family of the Selected Fisherfolk	74
IX	No. of Children per Selected Fishermen's Household	75
X	Monthly Income Range of the Selected Fisherfolk Children's Families	76
XI	Monthly Expenditure of the Fisherfolk families	77
XII	Clinical Symptoms of VAD and IDA among Fisherfolk Children	79
XIII	Distribution of Boys and Girls according to Age	82
XIV	Mean Height (cm) of the Boys in Comparison with WHO and ICMR Standards	83
XV	Mean Height (cm) of the Girls in Comparison with WHO and ICMR Standards	84
XVI	Mean Weight (kg) of Boys (N=547) in Comparison with WHO and ICMR Standards	85
XVII	Mean Weight (kg) of Girls (N=453) in Comparison with WHO and ICMR Standards	86
XVIII	Grading of Children according to Height for Age	87
XIX	Grading of Children according to Weight for age	89
XX	Grading of Children according to BMI for Age	90
XXI (a)	Frequency of consumption of Cereals and Pulses	93
XXI (b)	Frequency of Consumption of Roots and Tubers and Green Leafy Vegetables	95

XXI (c)	Frequency of Consumption of Vegetables and Fruits	97
XXI (d)	Frequency of Consumption of Non-Vegetarian Foods, Fats and Oils, Milk and Milk Products	98
XXII	Mean Food Intake of Children	100
XXIII	Mean Nutrient Intake of the Children	103
XXIV	Correlation between Energy intake and BMI	105
XXV	Background Information of the Children Selected for Supplementation	106
XXVI	Monthly Income of the Fishermen Families of Children Selected for Supplementation	107
XXVII	Monthly Expenditure of the Fishermen Families of Children Selected for Supplementation	108
XXVIII	Mean Height (cm) of boys Before Supplementation in Comparison with ICMR and WHO Standards	109
XXIX	Mean Height (cm) of Girls before Supplementation in Comparison with ICMR and WHO Standards	111
XXX	Mean Weight (kg) of Boys before Supplementation in Comparison with ICMR and WHO Standards	112
XXXI	Mean Weight (kg) of Girls before Supplementation in Comparison with ICMR and WHO Standards	113
XXXII	Mean Haemoglobin (g/dl) of Boys Before Supplementation in Comparison with WHO Standard	115
XXXIII	Mean Haemoglobin (g/dl) of Girls before Supplementation in Comparison with WHO Standard	116
XXXIV	Grouping of Children according to Degree of Anaemia	117
XXXV	Correlation between Iron Intake and Haemoglobin	118
XXXVI	Mean Serum Retinol (mg/L) of Boys Before Supplementation in Comparison with WHO Standard	120
XXXVII	Mean Serum Retinol (mg/L) of Girls before Supplementation in Comparison with WHO Standard	121
XXXVIII	Correlation between Vitamin A Intake and Serum Retinol	122
XXXIX	Correlation between Haemoglobin and Serum Retinol Level	124
XL	Clinical Symptoms in Children before Supplementation	126
XLI	Acceptability Trails of Orange Fleshed Sweet Potato	128

XLII	Nutrient Content of Boiled Orange Fleshed Sweet Potato (100g)	129
XLIII	Mean Height (cm) of Boys Before and After Supplementation	131
XLIV	Mean Height (cm) of Girls Before and After Supplementation	133
XLV	Mean Weight (kg) of Boys Before and After Supplementation	135
XLVI	Mean Weight (kg) of Girls Before and After Supplementation	137
XLVII	Mean Haemoglobin of Boys Before and After Supplementation	139
XLVIII	Mean Haemoglobin of Girls Before and After Supplementation	139
XLIX	Categorization of Children according to Degree of Anaemia	142
L	Mean Serum Retinol (mg/L) of Boys Before and After Supplementation	144
LI	Mean Serum Retinol (mg/L) of Girls Before and After Supplementation	144
LII	Clinical Examination of Children Before and After Supplementation	147
LIII	Mean Food Intake of Children Before and After Supplementation	150
LIV	Mean Nutrient Intake of Children Before and After Supplementation	152
LV	Impact of Nutrition Education on KAP	153

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE NO.
1	Map of East Godavari District	37
2	Assessment of Nutritional Status in Fisherfolk children	46
3	Steps in Selection, Preparation and Standardization of Boiled Sweet Potato for Intervention	52
4	5-point Child Friendly Hedonic Scale	56
5	Grouping of the Selected Fisherfolk Children	58
6	Assessing the Effect of Intervention	65
7	Population Distribution of Fisherfolk in the Selected Villages	68
8	Literacy Rate of Fisherfolk of the Selected Villages	72
9	Employment Status of the Fisherfolk of the Selected Villages	73
10	No. of children per Selected Fishermen's Household	75
11	Average Monthly Expenditure of the Fisherfolk Families	77
12	Clinical Symptoms of VAD and IDA among Fisherfolk Children	80
13	Mean Height of the Boys in comparison with WHO and ICMR Standards	83
14	Mean Height of the Girls in comparison with WHO and ICMR Standards	84
15	Mean Weight of the Boys in comparison with WHO and ICMR Standards	85
16	Mean Weight of the Girls in comparison with WHO and ICMR Standards	86
17	Percentage Adequacy of Mean Food Intake	101
18	Percentage of Mean Nutrient Intake	104
19	Monthly Income of the Fishermen Families of Children Selected for Supplementation	107

20	Mean Height (cm) of the Boys Before Supplementation in Comparison with ICMR and WHO Standards	110
21	Mean Height (cm) of the Girls Before Supplementation in Comparison with ICMR and WHO Standards	111
22	Mean Weight (kg) of Boys Before Supplementation in Comparison with ICMR and WHO Standards	113
23	Mean Weight (kg) of Girls Before Supplementation in Comparison with ICMR and WHO Standards	114
24	Mean Haemoglobin (g/dl) of Boys Before Supplementation in Comparison with WHO Standard	115
25	Mean Haemoglobin (g/dl) of Boys Before Supplementation in Comparison with WHO Standard	116
26	Correlation Graphs between Iron Intake and Haemoglobin Levels of Children before Supplementation	119
27	Mean Serum Retinol (mg/L) of Boys Before Supplementation in Comparison with WHO Standard	121
28	Mean Serum Retinol (mg/L) of Girls Before Supplementation in Comparison with WHO Standard	122
29	Correlation Graphs between Vitamin A Intake and Serum Retinol in Children	123
30	Correlation Graphs between Serum Retinol and Haemoglobin levels in Children	125
31	Mean Height of Boys Before and After Supplementation	132
32	Average Height (cm) of Girls Before and After Supplementation	134
33	Mean Weight (kg) of Boys Before and After Supplementation	136
34	Mean Weight (kg) of Girls Before and After Supplementation	138
35	Mean Haemoglobin Values (g/dl) of Children Before and After	140
36	Mean Serum Retinol Values (mg/l) of Children Before and After Supplementation	145
37	Clinical Symptoms of Children Before and After Supplementation	148

LIST OF PLATES

PLATE NO.	TITLE	PAGE NO.
I	Fishermen Hamlets and their Living Environment	39
II	Fisherfolk's Neighbourhood Condition	40
III	Fisherfolk at Work	41
IV	Measuring Height of the Subjects using Wall Mounted Stature Meter	47
V	Measuring Weight of the Subjects using Digital Weighing Balance	48
VI	Examination for Clinical Symptoms	50
VII	Study on Different Sweet Potato Varieties at ICAR	54
VIII	Preparation of Sweet Potato	55
IX	Charts for Nutrition Education	61
X	Nutrition Exhibition on Kitchen Gardening and Hygiene	62
XI	Pamphlets Distribution to Enhance Healthy Food Choices	63
XII	Art Session as a Part of Nutrition Education	63

LIST OF APPENDICES

APPENDIX NO.	TITLE	PAGE NO.
I	Institutional Human Ethical Committee Clearance Certificate	196
II	Interview Schedule to Elicit the Information regarding the Socio-economic Background, Dietary Intake, Dietary Pattern, Anthropometric Measurements and Clinical Assessment	197
III	Clinical Examination Schedule	201
IV	Description of Procedures for Anthropometric Measurements	202
V	Procedure for Biochemical Analysis	203
VI	Three day 24 Hour Recall Method	205
VII	Preparation of the Orange Fleshed Sweet Potato (OFSP)	206
VIII	Knowledge, Attitude and Practice (KAP) Schedule	207
IX	Plagiarism Report	212