A STUDY TO ASSESS THE MALNUTRITION AND ITS CONTRIBUTING FACTORS AMONG MOTHERS OF MALNOURISHED PRESCHOOLERS IN SELECTED VILLAGES, MADURAI.

A DISSERTATION SUBMITTED TO
THE TAMILNADU DR. M.G.R.MEDICAL UNIVERSITY, CHENNAI,
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF SCIENCE IN NURSING.

APRIL – 2012
A STUDY TO ASSESS THE MALNUTRITION AND ITS CONTRIBUTING FACTORS AMONG MOTHERS OF MALNOURISHED PRESCHOOLERS IN SELECTED VILLAGES, MADURAI.

P. L. DHANALAKSHMI

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ACKNOWLEDGEMENT

“O Give Thanks unto the Lord; For He is good,
For His mercy endureth for ever”

- 1 Chronicles 16:34

I praise and thank God Almighty for his abundant grace and blessing throughout the period of this study.

At this very crucial juncture, I would like to extend my gratitude and sincere thanks to certain important individuals without whose unrelenting support, my journey throughout this research would have been less meaningful.

I would like my humble gratitude and sincere thanks to Dr. Prof. (Mrs). C.Jothi Sophia M.Sc(N)., Ph.D., Principal, H.O.D of child health nursing, C.S.I. Jeyaraj Annapackiam College of Nursing for her expert guidance and valuable suggestions which motivated me to successfully complete this dissertation.

I would like to gratitude and sincere thanks to Mrs. Merlin Jayapal M.Sc(N)., Ph.D., vice principal for constant support for this study.

Its my pleasure and privilege to express the deepest sense of gratitude and exclusive thanks to subject guide (Mrs.) Jessie Metilda M.Sc(N),RN.RM., Ph.D, Associate professor, child health nursing department, C.S.I.Jeyaraj Annapackiam College of Nursing, for her efficient guidance, valuable suggestions, untiring and patient corrections and kind encouragement which helped me to lay a strong foundation for this study.

I am grateful to Dr.Selva Pramila M.B.B.S, DCH, DNB, my medical guide for her valuable suggestions and guidance.

I express my sincere thanks to Mrs. Shanthi, Msc(N), and Mrs. Vijaya Suresh M.Sc(N), class coordinators for guidance, motivation and permission to conduct data collection and helped to complete the research in a successful manner.
I am extremely grateful to all the experts who have validated my tool in spite of their busy schedule.

I have a special word of appreciation for Mrs. Angelin Manove, Librarian, C.S.I. Jeyaraj Annapackiam College of Nursing, the management of Christian Medical College, Vellore and the Tamilnadu Dr.MGR Medical University, Chennai for granting permission to utilize the library facilities.

I extend my sincere thanks to Mrs. Velumani M.Sc, M.Phil Biostatistician for his valuable guidance and help rendered during analysis of this study.

I extend my special thanks to teaching and non teaching staff, friends and loving classmates for their cooperation and help they rendered during the study.

I express special thanks to the children and their mothers who have participated in the study with full cooperation.

I gratefully extend my heartful thanks to an inspired person Mrs. Rose Rajesh, M.Sc(N)., Ph.D., for her proficiency and excellent guidance for laying foundation in this research.

I have no words to express my gratitude and thanks to my beloved husband M.Sundara Rajan for his constant support, help, encouragement, and fervent prayers. My heartfelt thanks to my beloved daughter, Baby S.Kanishka for bearing the separation from me during the course of study.

I greatly remember all my family members for upholding me through prayer, their constant support and immense care.

There might be possibilities of having missed many individuals who directly or indirectly have helped me, I hearty thank them for making me to accomplish this milestone.

Above all I owe my success to Lord Almighty.
ABSTRACT

A descriptive Study to assess the malnutrition and its contributing factors among mothers of malnourished preschoolers in selected villages, Madurai - 2011 was undertaken by P.L.Dhanalakshmi in partial fulfillment of the requirement for the Degree of Master of Science In Nursing at C.S.I. Jeyaraj Annapackiam College of Nursing, affiliated to the Tamilnadu Dr. M.G.R. Medical University, Chennai.

The Objectives of the study were

1. To assess the malnutrition among preschoolers
2. To determine the contributing factors of malnutrition among mothers of malnourished preschoolers.
3. To find out the association between malnutrition and selected demographic variables.
4. To find out the association between the contributing factors of malnutrition among malnourished preschoolers and selected demographic variables.

Review was done relevant to the study. The conceptual framework for the study was based upon Becker’s and Mainman’s health belief model (1975). The research design was non experimental, description about malnutrition and its contributing factors of malnutrition. A total of 60 malnourished preschoolers were taken for samples in the study using purposive sampling technique. The malnutrition was assessed by WHO child growth standards (2006) and structured interview with dichotomous options for the contributing factors of malnutrition. Reliability of the tool r = 0.84. The main study was done in kaitharinagar, Madurai. The data collected was tabulated, analyzed and interpreted using descriptive and inferential statistics.

Results shows that based on WHO growth standards (2006) weight-for-age reveals that, 47 (78%) malnourished preschoolers who had (< - 2SD) moderate underweight, 13 (22%) malnourished preschoolers who had (< - 3SD) severely underweight.

Regarding contributing factors of malnutrition study reveals that, 39(65%) malnourished preschoolers were in the moderate risk groups. Only 19(32%) were in the severe risk groups and 2(3%) were in the mild risk groups. Malnutrition to child is determined by overall risk factors that are maternal and childhood factors, immunization
status, feeding and dietary practice and Environmental and hygienic factors. Specially history of recurrent illness and hospitalization for respiratory infection and diarrhea, lack of vitamin – A and Iron supplementation, lack of exclusive breast feeding and lack of environmental and hygienic measures were contributed to this malnourished children.

The chi square value of 5.56 (p<0.005) signifies that there was significant association between sex and malnutrition. The chi square value of 5.15 (p<0.05) signifies that there was significant association between family income and malnutrition. The chi- square value was not significant association between demographic variables like age, sex and birth order of the child, type of family, family income with contributing factors of malnutrition.

The investigator believes that this study would be useful contribution for creating awareness to the mothers of malnourished preschoolers regarding malnutrition. Pediatric nurse in the health care team should has concern over preschoolers and occupies a major role in educating the peoples especially under five children to enhance health promoting behavior. Learning module on malnutrition was administered to the mothers of malnourished preschoolers.
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- Parul datta (2009) *pediatric nursing* (2nded) new delhi ;jaypee brothers medical publishers (p)ltd.61-63.
JOURNALS


NET


**UNPUBLISHED THESIS**

• Ander N (2009) Descriptive study on risk factors of malnutrition and acceptance of ready to use therapeutic diet in vellore.

• Thomas J T (2010) Descriptive study to assess the nutritional status of school children in a primary school of udupi district.

PUBLISHED NEWS PAPERS

APPENDIX -I

From
Mrs. Dhanalakshmi,
II year M.Sc (N) Student,
C.S.I. Jeyaraj Annapackiam College of Nursing,
Madurai.

To

Forwarded Through,
The principal,
C.S.I Jeyaraj Annapackiam College of Nursing,
Pasumalai,
Madurai.
Respected madam,

Sub: Requisition for opinions and suggestions of experts for establishing content validity of research tool- regarding

With due regards, I kindly bring to your knowledge that I am a post graduate Nursing student of the C.S.I. Jeyaraj Annapackiam College of Nursing, Madurai. I have selected the below mentioned topic for my dissertation to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai as a part of partial fulfillment of Master of Nursing Degree. My dissertation topic is as follows:

“A descriptive study to assess the malnutrition and its contributing factors among mothers of malnourished preschoolers in selected villages, Madurai”

With regards I humbly request you to validate my study instruments. I will be grateful if you do this favor to me as early as possible.

Thanking you,

Date:        Yours Sincerely,

Place: Madurai

(P.L.Dhanalakshmi)
APPENDIX –II

LIST OF EXPERTS FOR CONTENT VALIDITY OF THE TOOL

1. **Dr. Prof. (Mrs). C. Jothi Sophia, M.Sc (N), RN.RM, Ph.D,**
   Principal,
   H.O.D of Child Health Nursing Department,
   C.S.I Jeyaraj Annapackiam College of Nursing,
   Madurai – 625 004.

2. **Mrs. Jessie Metilda M.Sc(N).,RN.RM.,Ph.D,**
   Associate professor
   Child Health Nursing Department,
   C.S.I Jeyaraj Annapackiam College of Nursing,
   Madurai – 625 004.

3. **Dr. (Mrs).Selva Pramila, M.B.B.S ., DCH.,DNB.**
   Paediatrician,
   Christian Mission Hospital,
   Madurai.

4. **Mr.John sam Arun prabu, M.Sc(N) ., Ph.D.,**
   Professor, community health nursing.
   C.S.I. Jayaraj Annapackiam college of nursing.
   Madurai.

5. **Pro. Mrs.shanthi M.Sc(N), Ph.D**
   Class coordinator,
   C.S.I. Jayaraj Annapackiam college of nursing.
   Madurai.

6. **Prof .(Mrs) Rose rajes,M.Sc(N),Ph.D.,**
   Child health nursing,
   Madurai.
7. Prof. DR.(Mrs). Helan Mary Perdita, MSc(N)., Ph.D.,
   Principal,
   Madurai Appollo college of nursing,
   Madurai.

8. DR. Prof. (Mrs) Naline Gopalakrishnan, MSc(N)., Ph.D.,
   Principal,
   Sacred heart college of nursing.
   Madurai.

9. Mrs. Saraswathi, M.Sc(N), Ph.D.,
   Principal,
   Ramachandra college of nursing.
   Rajapalayam.

10. Prof. (Mrs). Prabha .K, M.Sc(N)., Ph.D.,
    Reader
    Sree mookambika college of nursing
    Kanyakumari.

11. Mrs. Suganya M.Sc (Clinical Nutrition)
    Chief dieticians,
    Apollo specialty hospitals,
    Madurai.

12. Mr. Velumani M.Sc(N).,M.Phil,
    Biostatistician,
    Madurai.
APPENDIX -III

INSTRUMENT

STRUCTURED INTERVIEW QUESTIONNAIRE

PART I

A. DEMOGRAPHIC DATA PROFILE

1. What is the age of your child? (verify record)
   1. 3 yrs
   2. 4 yrs
   3. 5 yrs

2. What is the gender of your child?
   1. Male
   2. Female

3. What is the birth order of the child in your family?
   1. 1st
   2. 2nd
   3. 3rd and above

4. Religion
   1. Hindu
   2. Christian
   3. Muslim

5. Type of family
   1. Nuclear family
   2. Joint family

6. Family income (per/month)
   1. Below 5000
   2. Above 5001

7. Age of mother
   1. Below 20
   2. 21 to 25
   3. 26 to 30
   4. Above 30
8. Educational status of the mother
   1. Home maker
   2. Private employee
   3. Government employee
   4. Self employee
9. Occupational status of the mother
   1. Home maker
   2. Private employee
   3. Government employee
   4. Self-employee
10. Did you use temporary family planning methods?
   1. Yes
   2. No

**B. CLINICAL DATA ON ANTHROPOMETRIC MEASUREMENTS**

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<td>KG</td>
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<td>Height – for age (Inch tape)</td>
<td>CM</td>
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2. Mid – arm circumference ------- cm
PART -II

QUESTIONNAIRE ON CONTRIBUTING FACTORS OF MALNUTRITION AMONG MALNOURISHED PRESCHOOLERS

I. MATERNAL FACTORS AND CHILDHOOD FACTORS

* 1. Did you take adequate vitamins supplementation during antenatal period?
   1. Yes
   2. No

* 2. Was your child’s weight adequate at birth? (verify record)
   1. Yes
   2. No

If no how much
   1. 2000 – 2500 grams
   2. 1500 – 1.999 grams
   3. Below 1500 grams

# 3. Did your child had history of hospitalization for respiratory infection?
   1. No
   2. Yes

If yes how many times hospitalized
   1. Once
   2. Twice
   3. More than twice

*4. Did your child deworming in every 6 months to treat intestinal worm infestation?
   1. No
   2. Yes
# 5. Any previous history of hospitalization for diarrhea?

1. No
2. Yes

   if yes how many times hospitalized

1. Once
2. Twice
3. More than twice

II. IMMUNIZATION FACTORS

* 1. Have you immunized your child as per national Immunization schedule?
   (verify record)

   1. Yes
   2. No

* 2. Have you given VIT-A oral dose to your child as per schedule? (verify record)

   1. Yes
   2. No

* 3. Have you given Iron syrup/tablets as per schedule? (verify record)

   1. Yes
   2. No

III. FEEDING AND DIETARY PRACTICE FACTORS

* 1. Did you exclusively breast feed to your baby?

   1. No
   2. Yes

   If yes how long did you given exclusively breast feed to your baby

   1. Below 3 months
   2. 4 to 5 months
   3. 6 months above
#2. Do you avoid particular foods based on your culture?

1. Yes
2. No

*3. Are you utilizing any nutritional programs from balwadi (ICDS scheme)?

1. Yes
2. No

IV. ENVIRONMENTAL AND HYGIENIC FACTORS

*1. Are you using safe drinking water in your home?

1. No
2. Yes

if yes which method

1. Boiling
2. Mineral water
3. Other method

*2. Are you using slipper when moving out?

1. Yes
2. No

*3. Do you wash your hands before eating?

1. Yes
2. No

*4. Do you practice hand washing after defecation?

1. Yes
2. No
APPENDIX -IV

பிகுரு - I

பொறுத்துள்ளது தொடர்நியான புதியம் தொன்பொன்றன வரையில் புதுமை

பகுதி - I

மாற்றுமை வழிகாட்டு முக்கியான விளக்கங்கள்

1. அறுமையுண்மை அறுமை (அறுவண்டியான பயனுள்ள)
   1. 3 அறுமை
   2. 4 அறுமை
   3. 5 அறுமை
   4. 6 அறுமை

2. அறுமையுண்மை பகுதியான
   1. அறுமை
   2. பகுதியான

3. அறுமைக்குட்பிள்ளை வருமாறு
   1. 1
   2. 2
   3. அறுமை அறுமை விளக்கான

4. அறுமையுண்மை தொடரால் அறுவண்டியான விளக்கங்கள்
   1. விளக்கான
   2. விளக்கான
   3. விளக்கான

5. கூட்டு வலைத் தொடர்வண்டியான விளக்கங்கள்
   1. கூட்டு விளக்கான
   2. கூட்டு விளக்கான

6. விளக்கான வலைத்தொடர்வண்டியான
   1. முதல் 5000சதுரம் விளக்கான
   2. முதல் 5001சதுரம் விளக்கான

7. கூட்டு வலைத்தொடர்வண்டியான
   1. 20 அனுகுறிச்செய்யாக விளக்கான
   2. 20-25 அனுகுறிச்செய்யாக விளக்கான
   3. 25-30 அனுகுறிச்செய்யாக விளக்கான
   4. 30 அனுகுறிச்செய்யாக விளக்கான

8. விளக்கான வலைத்தொடர்வண்டியான
   1. விளக்கான
2. இருபத்து கல்லி
3. எழுதுமுறைகள் கல்லி
4. கல்லில் புதுப்பிக்க
9. இருபத்து விளக்கம்
1. தொடர்பு விளக்கம்
2. தொடர்பு விளக்கம்
3. அங்கமுக விளக்கம்
4. குறிப்பிட்டு
10. தைவான கல்லறிவுச் செயலாக கல்லறிவு பல்லூரென் புதியவற்றில் மாற்றங்கள் விளக்கம் செய்யத்தக்கதா?
   1. அப்படி
   2. அவ்வாறு

பகுதி - II

முழுவதும் சாத்துக்குறிக்கும்
1. குறிப்பிட்டு விளக்கம் ________ குறிப்பிட்டு விளக்கம் ________
2. குறிப்பிட்டு விளங்கும் ________

தீர்மான விளக்கம்

(பெண்கள்)                 (பெண்கள்)

பிறகு - II

சான்றுகள் கல்லறிவுச் செயலியின் கருத்தியல் படிகளுக்குச் செய்யத்தக்கதா?
1.மறுபாலம் சான்றுகள் வழக்கு குறிக்கப்பட்ட பகுதிகள்
*1. பெருமையான காரணியான வகையான மாற்றுத் தகவல்களை விளக்கும் வகையில் கூறி வந்துள்ளாரா?
   1. ஆம்
   2. இடைவெளி

*2. வாகனம் அறிகுறி சுற்றுச்சூழல் ஓரை சேர்வில் புகின்றா? (அல்லது மற்றவை)
   1. ஆம்
   2. இடைவெளி
   வாகனங்களில்,
   1. 2000 - 2500 கிமீ
   2. 1500 - 1999 கிமீ
   3. 1500 கிமீவாகத் தான்

# 3. வாகனம் அறிகுறி காரணம் பாதுகாப்பு செயல்பாடு மற்றும் வாகனத் தகவல் மாறுதல் மற்றும் தொடர்புகள் தோன்றுமாறு?
   1. ஆம்
   2. இடைவெளி
   வாகனம் மற்றும் வேகமாறு (சமையல்)
   1. 1
   2. 2
   3. 2க்கும் மேலான

*4. வாகனம் அறிகுறி மாற்றத்தின் மூலம் வாகனம் காரணத் தகவல் மாறுமாறு மற்றும் வேகத்தில் ஒடுக்கப்படுமா?
   1. ஆம்
   2. இடைவெளி

*5. வாகனம் அறிகுறி மாற்றத்தின் மூலம் வாகனத் தகவலைப்பாட்டின் மாறுமாறு தோன்றுமாறு?
   1. ஆம்
   2. இடைவெளி
   வாகனம் மற்றும் வேகமாறு (சமையல்) மாறுமாறு மாறுமாறு அல்லது மாறுமாறு ?
   1. 1
   2. 2
   3. 2க்கும் மேலான

2.காரணங்கள் பரப்புகள்

*1. வாகனம் குறைந்தத் தகவலில் கணினி அடையாளப்படுத்து கல்விகள் தொடர்பில் நிறைவு செய்யப்படுமா? (அல்லது மற்றவை)
   1. ஆம்
   2. இடைவெளி
2. என்றுதான் அம்மைகள் அல்லாஹ்லின் A மூலக்கூறு அல்லது பார்வாக்கள்? (அல்லாஹ்முக்கூறும் பார்வாக்கள்)
   1. அப்பிற
   2. சிற்றூட்டு

3. என்றுதான் அம்மைகள் மூலக்கூறு குழப்பம் மன்னர்களின் தொகுப்புகள் அல்லது பார்வாக்கள்? (அல்லாஹ்முக்கூறும் பார்வாக்கள்)
   1. அப்பிற
   2. சிற்றூட்டு

3. நான் பார்வாக்கி பார்வாக்கிய கருத்துக்கள்

*1. என்றுதான் அம்மைகள் மூலக்கூறு குழப்பம் தொகுப்பினால் என்று?
   1. அப்பிற
   2. சிற்றூட்டு

*2. என்றுதான் அம்மைகள் மூலக்கூறு குழப்பம் மன்னர்களின் தொகுப்பினால் என்று?
   1. அப்பிற
   2. சிற்றூட்டு

*3. என்றுதான் அம்மைகள் மூலக்கூறு குழப்பம் மன்னர்களின் தொகுப்பினால் ஆணார்கள்  என்று?
   1. அப்பிற
   2. சிற்றூட்டு

4. மறுசுருக்கல் மறுசுருக்க கண்டுபிடிப்பு கருத்துக்கள்

*1. என்றுதான் குதிரைக்கூறும் வாதை பிரபலிக்கப்பட்டதா?
   1. அப்பிற
   2. சிற்றூட்டு

   அப்பிற வாதை
   1. வாழ்க்கைக் கீழ் காண்முதல்
   2. முன்னை முயல்லா (முற்பூச்சை பிரபலிக்கும் குதிரைக்கூறும் வாதை)
   3. பாரசைனா
APPENDIX V

KEY TO INTERPRET THE SCORE ON CONTRIBUTING FACTORS OF MALNUTRITION AMONG MALNOURISHED PRESCHOOLERS

- * positive questions – 12 positive questions
- # negative questions - 3 negative questions

For each positive question
Score of 1 was given for yes
Score of 0 was given for no

For each negative question
Score of 1 was given for no
Score of 0 was given for yes

**Total Score 15**
APPENDIX VI

LEARNING MODULE ON MALNUTRITION
INTRODUCTION

“Prevention is better than cure” according to this saying the food that is given to the children from their birth helps them to lead a peaceful and healthy life in their later age. It will helps to reduces the prevalence of malnutrition.

India occupies the second place in malnutrition among of 3-6 years of age. Therefore its essential to create awareness to mothers regarding malnutrition and its contributing factors. Now we shall discuss the reasons for these deficiencies.

MALNUTRITION

Definition

Malnutrition is the condition that develops when the body does not get the right amount of the vitamins, minerals, and other nutrients it needs to maintain healthy tissues and organ function.

Under Nutrition

Malnutrition occurs in people who are either undernourished or over nourished. Under nutrition is a consequence of consuming too few essential nutrients or using or excreting them more rapidly than they can be replaced.

Causes of Malnutrition

i. Due to poverty

ii. At the time of pregnancy if the mother doesn’t takes nutritious food

iii. If the mother does not feed the child (breast feeding) for a specified period

iv. When the mother is not aware about child growth or not taking proper care when the child is sick

v. When the child is often affected by worms in the intestine

vi. Not keeping the surroundings clean

vii. Not taking care of the child in a clean way

viii. Giving birth to children very often without proper intervals.
Protect your Child from Malnutrition

- Impedes overall development
- Reduces Resistance to disease.

Malnutrition in early childhood has serious consequences because

- Reduces performance in school
- Greater risk of disease
Growth Chart

Growth chart which is available for boys and girls separately to find out growth problems (Given by WHO, 2006)

<table>
<thead>
<tr>
<th>Weight status</th>
<th>z-score line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Above -2SD</td>
</tr>
<tr>
<td>Moderate underweight</td>
<td>Below – 2SD</td>
</tr>
<tr>
<td>Severely underweight</td>
<td>Below – 3 SD</td>
</tr>
</tbody>
</table>

So every mother should monitor and record your child’s weight on a monthly basis

Once the child is able to tolerate a high dose of therapeutic nutrition and has started gaining weight.

Caloric requirement to malnourished child – 120 to 150 kcal / kg/day
Protein requirement to malnourished child – 2 – 3 grams / 1 kg/day
(WHO Guidelines 2006)

**Selected Protein Rich Foods:**

The following cereals containing

- Protein – 1.3 grams
- Kcal – 85 K.Cal
- Rice – 50 grams
- Wheat – 25 grams (3 ½ tablespoon)
- Idly – 1 medium size
- Chapatti – 1 medium

The following pulses containing

- Protein – 6 grams
- K. Calories – 85 K.Cal
- Pulses – 25 grams (½ cup boiled)
- Beans variety – 25 grams (½ cup boiled)
- Dhals – 25 grams (¾ cup boiled)

The following Non. Veg containing

- Protein – 7.5 grams
- K.Calories – 8.5 K.Cal
- Mutton – 75 grams – egg – 1 medium size
- Chicken – 75 gram – Fish – 75 – 100 gram
- Liver – 75 gram
The following milk and milk products contains,

- Protein – 1.3 grams
- K.Calories – 65 K. Calories
- Milk – 100 ml (½ cup)
- Curd – 100 ml (½ cup)

The following Vegetables Containing

- Protein – 2 – 3 gm
- Kcal – 50 – 60 kcal

(1/2 Cup boiled)
- Beetroot
- Carrot
- Sweet Potato
- Spinach
- Yam
- Onion

How to prepare nutritious food some recipes are given here:

How to prepare health mix drink

**Ingredients:**

- Poha - 100gms
- Fried rice - 100 gms
- Bojra - 100 gms
- Ragi - 100 gms
- Corn (maize) - 100 gms
- Wheat - 100 gms
- Varagu - 100 gms
- Green gram - 100 gms
- Fried gram - 100 gms
- Fried groundnuts - 100 gms
- Cashew nut - 15 gms
- Badam - 15 gms
Method:
   i. Except the fried rice fry all the ingredients one by one in lowest flame.
   ii. After frying grind all the ingredients into powder
   iii. Take 200ml of milk, boil it and add 4 spoons of health mix powder and keep on stirring.
   iv. Add jaggery and feed the children.

2. Spinach Chapatti

Ingredients:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat flour</td>
<td>-75 gms</td>
</tr>
<tr>
<td>Fenugreek spinach</td>
<td>- 50 gms</td>
</tr>
<tr>
<td>Spinach</td>
<td>- 50 gms</td>
</tr>
<tr>
<td>Masal powder</td>
<td>- ½ teaspoon</td>
</tr>
<tr>
<td>Jeera powder</td>
<td>-1/2 teaspoon</td>
</tr>
<tr>
<td>Salt</td>
<td>- Add to taste</td>
</tr>
<tr>
<td>Water</td>
<td>- As per requirement</td>
</tr>
</tbody>
</table>

Method:
   i. Clean the Spinach and cut them.
   ii. Add masal and jeera powder with the spinach.
   iii. Add wheat flour, salt, pour water and make them into dough and keep it aside for 30 minutes.
   iv. After 30 minuted start preparing the chapattis.

Time Table regarding healthy food for children

Tips to mothers about prevention of malnutrition

1. Breast feeding

   • Mothers should give colostrum milk soon after birth of baby.
   • WHO recommends exclusive breast feeding for the 1st 6 months of life, and these benefits include decrease infection, decrease obesity in later life and increased intelligence. Breast milk contain all the nutrients including protein, vitamin, carbohydrates and vitamins A.
   • Mothers also getting many benefits including chance of getting breast cancer is low.
2. Immunization
   - All the Vaccination should be given as per national Immunization Schedule.
   - So that we can prevent communicable disease to child and also its increases immunity power.

3. Dewarming of heavily intestinal worm infested children in every 6 months.

4. Diet
   - Child’s diet must contain protein and energy rich food.
     Milk, eggs and fresh fruits should be given, if possible.
   - Iron rich diet should be given to prevent anemia
   - Utilize the nutritional from Balwade programme.

5. Family planning and spacing of births.


7. Maintain Personal hygiene.
   - Hand washing before and after defecation.
   - Wearing slippers when moving out.

8. Maintain Environmental hygiene.
**MODEL MENU PLAN**

<table>
<thead>
<tr>
<th>Early Morning</th>
<th>Morning</th>
<th>At about 11:0’ clock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>Idli (Sambar, Curry leaves Chutney)</td>
<td>(Spinach, Vegetable, Dhal) Soup in any one variety mentioned</td>
</tr>
<tr>
<td>Milk</td>
<td>Chapatti with Cheese, Vegetables or Carrot gravy</td>
<td>Lemon juice, choose Berry fruit slices</td>
</tr>
<tr>
<td>Milk</td>
<td>Idiyappam, (With Tomato, Vegetables) Coconut milk Or Coconut Chutney.</td>
<td>Carrot or Cucumber slices</td>
</tr>
<tr>
<td>Milk</td>
<td>Pongal with Sambar and Tomato Chutney</td>
<td>Fruit Juice</td>
</tr>
<tr>
<td>Milk</td>
<td>Poori With Chenna Masala</td>
<td>Sundal</td>
</tr>
<tr>
<td>Milk</td>
<td>Dosa with Masala, Egg or Sambar</td>
<td>Guava fruit</td>
</tr>
<tr>
<td>Milk</td>
<td>Breadtoast with Butter and Jam, Kuruma, Rice or Ragi flour puttu</td>
<td>Green gram/Fried gram laddu</td>
</tr>
</tbody>
</table>
# MODEL MENU PLAN

<table>
<thead>
<tr>
<th>Lunch</th>
<th>Evening Time</th>
<th>Night</th>
<th>Before Going to bed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice, Potato, Masal, Curd and Salad</td>
<td>Corn flakes, Biscuit, Milk, Guava Fruit, Papaya</td>
<td>Vegetables mixed with Sooji, Tomato, Redgram Chutney</td>
<td>Milk</td>
</tr>
<tr>
<td>Dhal rice, Curd Rice, Carrot, Beans, Side dish (Avaraikai side dish)</td>
<td>Milk, Green gram, Vegetables, Coriander Chutney</td>
<td>Milk</td>
<td></td>
</tr>
<tr>
<td>Sambar Sadam, Raw Banana side dish/Ladies finger side dish</td>
<td>Sweet with Kara paniyaram Milk</td>
<td>Adai/Avial, Banana</td>
<td>Milk</td>
</tr>
<tr>
<td>Green Peas rice, Cauliflower masal</td>
<td>Carrot, Milk, Rose Milk</td>
<td>Vegetable Sooji, Idli with mint chutney</td>
<td>Milk</td>
</tr>
<tr>
<td>Carrot rice, Spinach side dish</td>
<td>Date fruit, Chapatti, Milk</td>
<td>Appam with Coconut Milk, Spicy Chutney</td>
<td>Milk</td>
</tr>
<tr>
<td>Chappati, Curd, Rice, Corn Mixed with dhal curry</td>
<td>Milk Kolukattai ,Dhal Payasamsam</td>
<td>Sambar rice with Carrot side dish</td>
<td>Milk</td>
</tr>
<tr>
<td>Rice with Dhal , Dhal Balls curry,Yam side dish, Pepper Water and Curd with Vadams</td>
<td>Banana, Apple, Orange or health mix drink</td>
<td>Rava Dosa with Tomato Thokku</td>
<td>Milk</td>
</tr>
</tbody>
</table>

**Notes:** Fish and Egg weekly twice can given to child.
**Conclusion**

Malnutrition is a global health problem in today’s world therefore it is important to prevention and management of malnutrition. So that mothers should follow the above mentioned guidelines to promote their child health.
APPENDIX VII

அழுதத்தவர்

தீர்வு. பிள்ளை, M.Sc.(N) Ph.D.,
திறன்முறைவர்
C.S.I.சினிமா தொடரும்,
பக்கத்தை, முதலாம்.

முனைவர்

தீர்வு. P.L.சினிமா தொடரும்
முடிவு சினிமா தொடரும் குழுமம் பத்து பக்கத்தை
C.S.I.சினிமா தொடரும்,
பல்பகை, பதிவு

பாடலை:

"மாமர் மாமரில்... மாமை மாமரி" - சூசம்பவகையில். ரவி அப்பாப்பாவின் தலை தலை ஆழமான சுட்டுகளில் லசை சுட்டுகளின் அகண்டகம், சாதைகள், குறிப்பிட்டு வந்தவை கிளிக்கு வலியும் இம்மாமர் காட்சிகளை இந்த சுட்டுகள் வரும் குறுக்கு கூறும் வசதி கூறியது.

முடி நிதிப்படி அமந்தற்காலப்படி முதல் அசை வேளாண்மை வசதிகள் சந்தாக முதல் முதல் நிகழ்விட்டு வல்லார்.

முடி நிதியனையில், சுட்டு லசை விளக்கத்தில் 42% குறுக்கு கூறும் வசதி கேட்டது பல்லவர் வல்லார்.

அமந்தத்து பல்லவர் விளக்கம்:

கிளிக்கு லசை விளக்கத்தில் நிதியான லசை அமந்தத்து கேட்டது இது அமந்தத்து கேட்டது. முடி நிதியனையில் முதல் குறுக்கு கூறும் வசதிகளுடன் விளக்கத்தில் நிகழ்வு லசை அமந்தத்து கேட்டது.

அமந்தத்து - சுட்டுகளுடனுள்ள காற்றிலனை:

1. சுட்டுகளின் வசதி
2. குறுக்கு கூறும் சுட்டு அலுய அமந்தத்து கேட்டது சுட்டுகளற்றாலும் சுட்டுகளின் வசதியை
3. சுட்டு சுட்டுகளுடன் சுட்டு கூறும் சுட்டுகளின் வசதியை
4. சுட்டுகளின் சுட்டு அலுய குறுக்கு கூறும் சுட்டுகளின் வசதியை
5. சுட்டு சுட்டுகளின் சுட்டு சுட்டுகளின் சுட்டுகளிலும் வசதியை (சுட்டுகளின் சுட்டுகளிலும் சுட்டுகளின் சுட்டுகளிலும்)
6. சுட்டுகளின் அலுய குறுக்கு புதுக்குகளை
7. குறுக்கு சுட்டுகளின்
8. சுட்டுகளின் சுட்டுகளிலும்
நூற்றாண்டு குறிப்பிட்டு குறிப்பிட்டு சொல்லும்!

பிறப்பு தொடர்பான
செயல்கள்

சுற்றுநிலையிலே ஓரவளித்து
தனது உணவு செய்யும்

பிறப்பு தொடர்பான
செயல்கள்

சிறிது வரும் நூற்றாண்டுகளும்
ஒரு புரட்சி பின்னணியாக விளங்குவதை, சிறிது
வரும் நூற்றாண்டுகளும் தற்போது விளங்குமோ காப்புப்படுத்தும்.

கிரான்சன்

கிரான்சன்
<table>
<thead>
<tr>
<th>கல்லால் விளையாட்டு</th>
<th>மதப்போன்</th>
</tr>
</thead>
<tbody>
<tr>
<td>பொன்றகிற்குருவால் கல்லால்</td>
<td>மதப்போன்</td>
</tr>
<tr>
<td>பொன்றகிற்குருவால் கல்லால்</td>
<td>மதப்போன்</td>
</tr>
<tr>
<td>பொன்றகிற்குருவால் கல்லால்</td>
<td>மதப்போன்</td>
</tr>
</tbody>
</table>

2. அல்லாமல் குறுப்பு வளி குறுக்குகளின் கருப்பாக்கிய கல்வி நேர்ந்திகள்:

அல்லாமல் குறுப்பு வளி குறுக்குகள் கருப்பாக்கிய புத்த குறுக்குகள் அல்லது 120 - 150 வணக்கம் / 1 கி.மீ. வரை
புத்த கருப்பாக்கிய விளையாட்டு அளவு : 1-3 முடி / 1 கி.மீ.

புத்தக்குறு விளையாட்டு விளையாட்டு.

முதலில் அரசி பெரும்பாக்காக அரசிப் பெரும்பாக்காக விளையாட்டு.

புத்தக்குறு 1.3 கி.மீ. விளையாட்டு:

கி.மீ. - 85கி.மீ. விளையாட்டு:

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சின்னாலைப் பல்பு புவிப் பல்லவர்கள்

புறநெச்ச 6 கிராம;
கூட்டத்தான் - 65 கி.கூட்டத்தான்;

பல்பு பல்லவர்கள் 25 கிராம (½ நூற்றாண்டு)
பல்பு பக்தாக்கள் 25 கிராம (½ நூற்றாண்டு)
பல்பு பல்லவர்கள் 25 கிராம (¼ நூற்றாண்டு)
பல்பு பல்லவர்கள் 25 கிராம

சின்னாலைப் பத்திரிப் பல்லவர்கள்

புறநெச்ச 7.5 கிராம;
கூட்டத்தான் - 85 கி.கூட்டத்தான்;

பல்பு பல்லவர்கள் 35 கிராம
பல்பு பக்தாக்கள் 75 கிராம
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பல்பு பல்லவர்கள் 75 கிராம
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பல்பு பர்காக்கள் 50 கிராம
பல்பு பல்லவர்கள் 75-100 கிராம

சின்னாலைப் பத்திரிப் புவிப் பல்லவர்கள்

புறநெச்ச 1.3 கிராம;
கூட்டத்தான் - 65 கி.கூட்டத்தான்;

பல்பு 100 மில்லியன் (¼ நூற்றாண்டு)
கூட்டத்தான் 100 மில்லியன் (¼ நூற்றாண்டு)
சித்தரக்கம் காப்பிருந்துக் கயிறுப்பொருள் வகுக்கும் போது 2-3 கிளைகள்,

குரத்தி 50 - 60 கிலோகோடி

காப்பிள்ளை அளவு - 1/2 கு மட்டுள்ளே

பூச்சி

சுருக்காக்கம்

செய்யப்பட்டு தரும்

சேலாணேயராக்கம்

சீரமைத்துப்போக்கம்

மருந்தைக் குறிப்பிட்டு

கைப்பற்று

அம்பாட்டு ஆபர்சியச் செயல் விளக்கம்

1. சித்தரக்கம்

தொகுப்பாக பார்வைகள்

தொகுப்பாக மலர் - 75 கிலோகோடி

கல் - 50 கிலோகோடி

அய்யக் கல் - 50 கிலோகோடி

புள்ளிப்புக்கால் - ½ செட்டாட்டாண்

செம்மூகால் - ½ செட்டாட்டாண்

மை - செட்டாட்டாணம்

துள்ளங்கள் - செட்டாட்டாணம்

பயன்பாடுகள்

> சுருக்காக்கத்தில் காயத்தை பிரித்து கிருத்தை முக்கியத்துவமாகவும்.

> குறுக்குச் சித்தரக்கம் பிரித்து புள்ளியால் முடிய சிறித்து செட்டாட்டாணம் விளக்கம்

> சுருக்காக்கத்தில் குறுக்குச் சித்தரக்கம் முடிய சிறித்து செட்டாட்டாணம்

> குறுக்குச் சித்தரக்கம் பிரித்து புள்ளியால் 30 நிமிடங்கள் அப்படி விளக்கம்

> செய்யப்பட்டு செட்டாட்டாணத்திற்கு செய்யப்பட்டு
2. சுழற்சி சதி

தலைப்பு பாடல்

அலும் 100 கிராம்
அரிசிப்பரி 100 கிராம் (நெற்குறுக்கு பாலம்)
சயப் 100 கிராம்
சுமைப் 100 கிராம்
சைகையாராயா 100 கிராம்
சைந்தை 100 கிராம்
மல்லிக 100 கிராம்
பறியப்பு 150 கிராம்
பரிகாலம் 150 கிராம்
பாலம் 50 கிராம்
பாலம் 15 கிராம்

கூறும்

➤ அதிக பருக்கிட்டில் மரு பார்க்கணவு வுமாற்ற வினையோடு செய்ய வேண்டும்.
➤ பிற அறிக்கையால் வருமாறு செய்ய வேண்டும் வினையோடு செய்ய வேண்டும்.
➤ நீர் வைப்பு பருக்கிட்டில். கர்ப்பைப் பாலம் 200 மில்லியன் 4 முறையாக வருமாறு செய்ய வேண்டும். கர்ப்பை பாலம் செய்ய வேண்டும். 
➤ வெப்பமட்ட வருமாறு கர்ப்பைப் பாலம் வேண்டும்.

உறுப்பினர் குறளான சதி விளக்கம்

1. காப்பாலம்
➤ கர்ப்பை பைண்டு 1/2 மரு கர்ப்பைக்கார் ஒவ்வொரு வாற்கில் உண்டாமே.
➤ காப்பாலம் பைண்டானால், மீதியால் என்று பின்வரும் நூற்றுக்கு பதிவு

ஆரம்பங்கள் மற்றும் காப்பாலம் மற்றும் மீதியை இணைந்து என்று

என்று கருதி பின்னால் காப்பாலம் மற்றும் மீதியை இணைந்து என்று
2. தொன்மை

- சுத்தத்துறை அளிக்கும் தொன்மை.
- தொன்மை அளிக்கும் தொன்மை காண்கூட பராமரிக்கார.
- மிக்கமலை சுத்தத்துறை அளிக்கும் மராத்தியக்கலக.
- சோளத்துறை அளிக்கும் அளிக்கும்.
- சுத்தத்துறை தொடர்பில் A-அளிக்கும் தொடர்பில் பற்றி பராமரிக்கார.
- முக்கியமான அளிக்கும் அளிக்கும் தொடர்பில் தொடர்பில் அளிக்கும் பாதுகாப்பு.

3. சுத்தத்துறைகள் காண்பிக்கும்

- 6 முறைகளத்துறை சுத்தத்துறைகள் காண்பிக்கும் சுத்தத்துறை அளிக்கும் பாதுகாப்பு பற்றி பராமரிக்கார.

4. பராமரிக்கும் பாதுகாப்பு சுத்தத்துறை

- பராமரிக்கும் பாதுகாப்பு சுத்தத்துறை வழக்கம் காண்பிக்கும். சுத்தத்துறை அளிக்கும் பாதுகாப்பு வழக்கம் காண்பிக்கும்.
- பராமரிக்கும் சுத்தத்துறை அளிக்கும் பாதுகாப்பு வழக்கம் காண்பிக்கும். சுத்தத்துறை அளிக்கும் பாதுகாப்பு வழக்கம் காண்பிக்கும்.
- முக்கியமான அளிக்கும் அளிக்கும் வழக்கம் காண்பிக்கும் பாதுகாப்பு வழக்கம் காண்பிக்கும்.
5. குதியாரங்களை அக்கிசை துறவல்களைச் செய்வது 3 நாளிலிருந்து விளைந்து வரும்.

6. பெண்களை ரோட்டிகளின் மீது பிளவுகளின் கண்டெடுப்பு விளைந்து வரும்.

7. அளிவார்கள் குறிப்பிடத்தக்கவையானால்:
   > பருந்துடர் மூலத்தின் விளக்கமைப்பைப் பயன்படுத்துவது.
   > சூரியவாயு பலப்பு, பல துறவால் பல மூலங்களைத் தொடர்ந்து வைப்பது பயன்படுத்துவது.
   > பெண்கள் போன்ற பெண்களின்” குறிப்பிட்டத்தக்கவையானால் பயன்படுத்துவது.
   > பெண்களுக்கு துறவுகளைச் செய்வது புதிதமைத்துக் குறிப்பிட்டது.

8. பெண்களை பாதுகாப்பாக தொடர்புசெய்வது விளைந்து வரும்.

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</table>
உலகில் தமிழ் விளக்கம் வாழ்கிற பெண்செயல் குடியிருப்பு. குழந்தை மாணிக்கும் கால அலுவல், மாணிக்கும் காட்சிகள் என்று அம்சம், தமிழ் விளக்கம் வாழ்கிற பெண்செயல் மாணிக்கும் கால அலுவல், காட்சிகள் என்று அம்சம் உலகில் தமிழ் விளக்கம் வாழ்கிற பெண்செயல் மாணிக்கும் கால அலுவல், காட்சிகள் என்று அம்சம்.

ஹூந்ச® நுு»ே க ஹ் ஹூஞ்ச® நுு»ே க ஹ் ஹூந்ச® நுு»ே க ஹ் ஹூந்ச® நுு»ே க
CHAPTER I

INTRODUCTION

We are guilty of many errors and many faults, but our worst crime is abandoning the children, neglecting the foundation of life. Many of the things we need can wait. The child cannot. Right now is the time his bones are being formed, his blood is being made and his senses are being developed.
To him we cannot answer "Tomorrow". His name is "Today"."

Gabriela Mistral, 1948

Malnutrition has been defined (Park 2009) as ‘a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients’. The effects of the malnutrition on the community are both direct and indirect. The direct effects are the occurrence of frank and sub clinical nutrition deficiency disease such as kwashiorkor, marasmus, vitamin and mineral deficiency disease.

Mathur J.S (2009) emphasized that preschool children are an important segment of the Indian population. They contribute to the vital human potential and impart strength to the national economy and development. Development of preschool age will form the foundation of adulthood. Preschool children have the following important features for consideration. Children between 1 to 5 years form nearly 12 - 15% of total population. Preschool children are malnourished and suffer from frequent diarrheas and respiratory tract infection.

Victor Soreng (2008) states that, nutrition is an input to and foundation for health and development. Better nutrition means stronger immune system, less illness, and better health. Healthy children learn better. Poor nutrition can lead to reduce the immunity, increased susceptibility to disease impaired physical and mental development. Good nutrition is the basic component of the health; it is the prime important in the attainment of normal growth and development and maintenance of health throughout the life. Health and happiness are the outcome of good nutrition. A child who is in good health will be happy, active, creative, alert and bright. World health Organization(2000) report that, great advances have been made during past 50 years in knowledge of nutrition and in the practical application of that knowledge. Specific nutritional diseases were identified and technologies were developed to
control them, as for example, protein energy malnutrition, endemic goiter, nutritional anemia, nutritional blindness and diarrheal disease. Malnutrition is a man made disease. It is a disease of human societies. It begins quite commonly in the womb and ends in the grave.

Jelliffe, (1966) listed factors that related to malnutrition as follows condition influences, cultural influences, socio economic factors, food production, health and other service. The indirect effects are a high morbidity and mortality among young children retarded physical and mental growth and development leading lower productivity and reduced life expectancy. Malnutrition predisposes to infection and infection to malnutrition. The high rate of maternal mortality, stillbirth and low – birth also all associated with malnutrition.

**SIGNIFICANCE AND NEED OF THE STUDY**

World health organization (WHO 2005) estimates that, one in twelve people worldwide are malnourished and every 3.6 seconds someone dies of hunger. According to the New York Times report is estimated that about 42.5% of the children in India suffer from malnutrition. The world bank (2010) citing estimates made by the world health organization, states that, about 49% of the world’s underweight children, 34% of the world’s stunted children, 46% of the world’s wasted children and 46% of the world’s wasted children live in India.

Naandi foundation (2011) reported that, in India more that 1 lakh under five children across 6 states has found that as many as 42% of under fives are severely or Moderately underweight and 59% of them suffer from moderate to severe stunting. The survey also found that awareness among mothers about malnutrition is low and 92 % of the mothers had never heard the word malnutrition. Birth weight also important risk factors for child malnutrition. The prevalence of underweight in children born with a weight below 2.5 kg is 50%, while that among children born with a weight above 2.5 kg is 34% and study found that giving colostrum to the newborn and exclusive breast feeding for first 6 months of a life’s life are not practiced.

Shalini, L M. (2009) insisted that malnutrition is a big threat to health. The priority nutritional intervention in community: feeding colostrum at birth, exclusive breast feeding for 6 months, adequate supplementary feeding with continued breast feeding for 2 years, adequate intake of vitamin –A, iron, updating nutritional policies and protocols.
UNICEF (United Nation Integrated Children Emergency Fund 2010) reported that by 2015, less than 27% of children under five will be underweight in India. The last national survey reports that 43% of Indian children are underweight, and some estimates go even higher. As we have entered the new millennium, India faces the burden of disease in which nutritional deficiency is more common. Progress towards the health related Millennium Development Goal (MDG) about the percentage of underweight children under 5 years old is estimated to have dropped from 25% in 1990 to 16% in 2010. People living in poverty and the recent economic growth of India have lead to the co-emergence.

A special commission to the Indian Supreme Court (2005-2006) has noted that the child malnutrition rate in India is twice as great as sub-Saharan Africa. National family health survey reported about child malnutrition (NFHS-3) and its coordinated by international institute of population sciences under government of India in 2005-2006. Almost half of the children under 5 years of age 48% are stunted and 43% are underweight, 24% are severely stunted and 165 are severely underweight. There are many nutritional programme like supplementary nutritional programme, Special nutritional programme, applied nutritional programme and integrated child development services (ICDS), launched by government of India. Growth charts is separate for each under five children in ICDS center. Still we have problems of malnutrition because of poor caring practice, low statues of women, non literacy, ignorance and poor economic status.

In April 2006, WHO released new references for assessing growth and development in children from birth to 5 years. These references known as the WHO child growth standards, replaced the national center for health statistics (NCHS)/(WHO) international growth references. In February 2007, the ministry of women and child development and ministry of health and family welfare of government of India agreed to a change over from the Indian academy pediatrics (IAP) growth curves to WHO growth curves.

Park, J E. (2009) cited that since malnutrition is the outcome of several factors, the problems can be solved by taking action at family level. The instrument for combating malnutrition at the family level is nutritional education. Parents must to be educated for the selection of the right kind of local foods and planning of nutritionally
adequate diets within the limits of their purchasing power. Harmful food taboos and
dietary prejudices can be identified and corrected. Parents need to be taught about
malnutrition and primary prevention. Nurses and other health professionals are also
needed to develop insights in the ways that primary care giver respond to their
children’s malnutrition (Park 2009).

Veena, S R. (2009) states that malnutrition is an extremely complex
phenomenon with multiple causes, multiple manifestation, and is inter – generational.
It causes range from the physical such as poverty, hunger, and under nutrition,
infection, and disease, to poor governance, mainly lack of health services like safe
drinking water and hygienic sanitation, and the socio – cultural, such as, gender
discrimination both in society and in family, superstition and ignorance regarding
proper maternal / child care and feeding practice.

The investigator had come across malnourished children and related morbidity
during community posting. Thus it was a felt need to assess the contributing factors of
malnutrition among preschool children.

STATEMENT OF PROBLEM

A descriptive study to assess the malnutrition and its contributing factors
of mothers of malnourished preschoolers in selected villages, Madurai.

OBJECTIVES

1. To assess the malnutrition among preschoolers.
2. To determine the contributing factors of malnutrition among mothers of
malnourished preschoolers.
3. To find out the association between malnutrition and selected demographic
variables.
4. To find out the association between the contributing factors of malnutrition
among malnourished preschoolers and selected demographic variables.
HYPOTHESIS

1. H1 – There will be a significant association between the malnutrition and selected demographic variables.
2. H2 - There will be a significant association between the contributing factors of malnutrition among malnourished preschoolers and selected demographic variables.

OPERATIONAL DEFINITION

Assess

In this study it refers to, process of measuring the level of malnutrition among preschoolers by using WHO child growth standards 2006.

Malnutrition

In this study it refers to the children, whose weight belongs to moderate underweight (< -2 SD) and severely underweight (< -3 SD) according to his or her age in the growth chart given by WHO child growth standards 2006.

Contributing factor

In this study it refers to be one of the causes of something for Malnutrition which includes maternal and childhood factors, Immunization status, Feeding and dietary practices, environmental factors and hygienic factors that causes malnutrition among preschoolers.

Malnourished Preschooler

In this study it refers to children, including boys and girls within the age group of 3-6 years, who are undernourished.

ASSUMPTIONS

1. Many children under five years of age in the community are malnourished.
2. Severity of malnutrition is higher among rural children than the urban children.
3. Many parents are ignorant about the malnutrition.
4. Better knowledge of mother will reduce the severity of malnutrition among preschooler children.
DELIMITATION

This study is delimited only to mothers of preschooler children.

Contributing factors of malnutrition will be assessed using a structured interview schedule questionnaires, which will be subjective expression.

PROJECTED OUTCOME

The result of the study would help the investigator to identify the malnutrition and contributing factors among preschooler children and helps to develop an instructional module on malnutrition.

This learning module should be given to all mothers of malnourished preschoolers.

The finding of the study will help to identify severity of malnutrition and contributing factors of malnutrition and to plan health education program for them.
CHAPTER II

REVIEW OF LITERATURE

A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Mati. S.H quoted that literature review should be referred to as reviewing and analysing the work of literature in relation to the specified topic in research. A well-structured literature review is characterized by a logical flow of ideas; current and relevant references with consistent, appropriate referencing style; proper use of terminology; and an unbiased and comprehensive view of the previous research on the topic. (Wikipedia – 2011)

In this chapter, the investigator has presented the available research studies and relevant literature from which the strength of the study was drawn.

1. Studies related to prevalence of malnutrition.
2. Studies related to contributing factors of malnutrition.

1. STUDIES RELATED TO PREVALENCE OF MALNUTRITION.

Padmavathi, B. (2011) conducted a comparative study to assess the nutritional status among pre school children in selected government and private school at Raichur. Descriptive survey design was used and subjects were selected by using random sampling techniques. The result was significant difference was found between height of government preschool children and height of preschool children (t= 6.89, P=<0.00), followed by weight (t= 4.83 ,P=<0.00), head circumference (t=3.14, P=<0.002) .Mid- arm circumference of government preschool children and mid- arm circumference of private preschool children (t=2.53,P=<0.1). The \( \chi^2 \) values computed between the nutritional status and family income (\( \chi^2 =13.909 \)) was found to be significant at 5% level, which implies that there was a significant relationship between nutritional status of preschool children and their family income .Conclusions of the study was that nutritional status score was almost equal in government preschool children as well as in private preschool children. But significant difference was seen between the anthropometric measurements of governments and private preschool children. The nutritional status of total preschool children was influenced by their monthly family income.
Maheswari, K. (2011) conducted a comparative study to identify the malnourished children between the age group of 1 to 5 years in karripatti and Magudanchavadi PHC villages, Salem. Descriptive design was selected for study, while cross-sectional survey approach was used to collect the data from under five children. Out of 687 children under five years old, 200 malnourished were identified as per IAP classification by purposive sampling technique. Female malnourished children were higher (57%) in karippatti village whereas male malnourished children were higher (51%) in magudanchavadi village. Highest percentage (65.3%) of malnourished under five children were from nuclear family both villages. Percentage wise distribution of malnourished under five children according to birth order reveals that highest percentage (44.6%) was second birth order children in magudanchavadi village whereas in karipatti village highest percentage (42.3%) was first birth order. There is significant relationship between sex, age and malnutrition. It shows that in both villages first degree malnourished children are higher in percentage than the second and third degree when the age increase percentage of malnutrition decreases.

VV Khadilkar. et.al (2010), conducted on a study to evaluate growth performance of affluent Indian preschool children and comparisons with the new WHO growth standard conducted in Pune, India. A cross-sectional, multicentric preschool based study was conducted on 1493 children. Percentage of children stunted (height for age < -2SD), underweight (weight for age <2SD), wasted (weight for height < -2SD) and with low BMI (BMI for age < -2SD) according to the WHO standards 2006, and WHO/NCHS standards, were calculated. The study shows that as a group z scores for height, weight, BMI and weight for height for study population were below the WHO 2006 standard median. From age of 2 years to 5 years, the mean z score for height, weight and BMI showed consistent improvement when compared with the WHO 2006 standards. Interestingly, the BMI did not differ much from the WHO 2006 standards.

Vibha. (2010) conducted exploratory study to assess the prevalence and degree of malnutrition among the children in selected area Jalandhar, Punjab. 100 under five children were selected by using convenient sampling method. The major findings are 57 children found to be malnourished, in which 43.8% suffered from 1st degree of malnutrition, 35% children with 2nd degree of malnutrition, 10.5% children with 3rd
degree of malnutrition, 10.5% children with 4th degree of malnutrition. Majority of female children (74) and 26 male children suffered with malnutrition based on IAP classification. The mean score in the number of siblings was 9.7, which was highly significant at P<0.001. The mean score in the sex was 9.1 which was significant at p<0.005 in the both sexes. The mean score in the mother’s occupation was 9.29, which was no significant in both housewife and working mother.

Thomas J. T (2010) conducted a descriptive study to assess the nutritional status of school children in a selected primary school of Udupi district, Karnataka. Descriptive research design was adopted in this study and 20 primary schools were selected for samples. The findings was weight for age shows that 38.3% of the children are normal, 39.2% children are suffering with grade I malnourishment and 20.8% are suffering from grade 2 malnourishment and a sample of 1.7% are grade 3 malnourishment as per weight for age. The height for age of selected samples mild stunting was observed on 42.5% of the children and 5.2% of the children had moderate stunting. Chi – square test of association between nutritional status and age (P-value 0.025) is significant at 0.05. So there exists an association between nutritional status and age of the children. The conclusion of study that was found that some of the children are malnourished. So it demands for an effective and efficient school health programs so that the incidence can be reduced.

Salud publica (2009) conducted study on child malnutrition in Mexico in the last two decades: prevalence using the new WHO 2006 growth standards. The main objective of this study was to describe preschool malnutrition prevalence and trends in Mexican children for the 1988, 1999, and 2006. Prevalence of malnutrition (< minus 2 z-score for weight for age, height for age, and weight / height) and overweight (> plus 2 z-score for weight / height) were calculated. The findings are stunting in children less than 5 years old was 26.9%, 21.5% and 15.5% in 1988, 1999 and 2006 respectively. Values for wasting were 6.2%, 2.1% and 2.05 respectively. Overweight increased from 1988 to 1999 (6.1% to 7.5%) and stabilized in 2006 (7.6%). Study concluded that, results are reinforce the need to improve the quality of nutrition programs and to promote adequate lactation and infant practice in Mexico.
Wei sheng (2007) has conducted study on analysis of children’s nutritional status based on WHO children growth standard in china. The objective was to compare children’s growth patterns and estimates malnutrition using the WHO standards verses the NCHS reference in china. The result was substantial difference in Z- scores between standards in rural (P< 0.0001). According to the WHO standards, prevalence of underweight in rural was lower than that of underweight based on the NCHS reference ( 6.1 % .vs.. 8.6% , p,0.0001) .prevalence of stunting in rural was higher based on the WHO standards (16.3% . vs.13% , p , 0.0001). Study concluded that WHO standards could provide a better tool to monitor the rapid and changing rate of growth in early infancy, further analysis on existing data was needed.

Deshmukh, P R. et.al (2007) conducted a newly developed WHO growth standards and implication for demographic surveys and Child health programs in Maharashtra, India. The objective are to compare estimates of under nutrition based on the WHO child growth standards and the national center for health statistics NCHS /WHO growth reference .a cross sectional study was carried out in 20 Anganwadi centers and totally 1491 under five children were studied for nutritional status. Chi-square was used to compare the results. Results show that according to WHO standards, the prevalence of underweight and severe underweight for children 0-6 was 47.4%and 16.9%respectively. By NCHS reference, the overall prevalence of underweight and severe underweight for children 0-6 years was 53% and 15% respectively. WHO standards gave higher prevalence of severe underweight than NCHS reference though the difference was not statistically significant (P> 0.05).

Gragnolati, et.al. (2006) Conducted study on India's undernourished children: a call for reform and action. New Delhi: The prevalence of child under nutrition in India is among the highest inthe world, nearly double that of Sub-Saharan Africa. The present study explored the dimensions of child under nutrition in India and examined the effectiveness of the Integrated Child Development Services (ICDS) program in addressing them. It was found that 47% children under 3 were underweight or severely under weight and a further 26% were mildly underweight, so almost 73% children were under nutrition in India (1998/99). Findings showed that underweight prevalence was higher in rural areas (50%) than in urban areas (38%) and also higher among girls (48.9%) than among boys (45.5%). Statistics showed that at least one in
two children were underweight in six states namely Maharashtra, Orissa, Bihar, Madhya Pradesh, Uttar Pradesh and Rajasthan. Micronutrient deficiency was widespread in India. More than 75% preschool children suffered from iron deficiency anaemia (IDA) and 57% preschoolers had sub-clinical Vitamin A deficiency. Iodine deficiency was endemic in 85% districts. Study concluded that, ICDS was found that its Dominant focus was on food supplementation for improving child nutritional status, but not enough attention was given to improve child care behaviours and one educating parents how to improve nutrition using the family food budget.

Rajini peter et.al (2006) conducted study on child malnutrition among children aged 1-5 years in a selected urban slums in Hyderabad. Quota sampling was used and the sample size was 100. In this study WHO recommended Z score classification system and the new WHO growth standards were used for estimating stunting, underweight and wasting. Study results ON 69% prevalence of malnutrition among 1 to 5 years aged children .and prevalence of severe under nutrition was 33%. Prevalence of stunting among children was 61% , out of which 25% severe under weight and 12% children were wasted . a significant association ($\chi^2 = 4.498, P < 0.005$) was found between age and underweight . A negative association was observed between per capita incomes and stunting. Prevalence was 61.11% among children aged 3-5 years, whereas among 1-3 years old it was 39.06%.

Kwena, et.al (2003) took research prevalence and severity of malnutrition in preschool children in a rural area of western Kenya children. They determined the nutritional status of children less than five years of age. Anthropometric indices are presented for 2,103 children findings were, the prevalence of stunting (Z-score for height- for –age <-2), wasting (z-scores for weight-for –height <-2) being underweight (z –scores for weight-for- age <-2) was 30%,4%and 20%,respectively. This was severe (Z-score <-3) in 12% (stunting), 1% (wasting) and 5% (underweight). Study concluded that malnutrition is likely to interact with infectious disease, placing children 3-24 months of age at high risk of premature death in this area.

Mahapatra A. et al (2000) conducted study on nutritional status of preschool children in the drought affected Kalahandidistrict of Orissa. India. The study was undertaken to determine the level of under nutrition and protein energy malnutrition among children during 1996-97 in drought affected Kalahandi District of Orissa.
children aged 0-5 years from 15 Gram Panchayats were studied for anthropometric and clinical signs of nutritional deficiencies. This community based study showed no significant difference between the nutritional status of boys and girls. The study revealed the widespread prevalence of malnutrition in the form of wasting (27.9%), stunting (41.8%) and underweight (57.1%) among children. Study concluded that, Positive inputs to improve growth and to overcome bodyweight deficits are recommended. Preventive measures are needed to improve food security, strengthen supplementary feeding programmes, and provision of adequate subsidized food through public distribution system is recommended to achieve better growth and development of children.

Elizebath Jose (2003) was conducted on a cross sectional comparative study to assess the development of preschooler in relation to nutritional status in selected balwadis in Namakkal district, Tamilnadu. Quota sampling techniques selected and totally 80 malnourished preschooler were taken for this study. The main finding of this study shows that majority 65 (61.89%) of preschooler in balwadis were malnourished. Majority of parents of the malnourished group had an income of below 1200/- month. There was no significant association between development of preschoolers and income status of parents in malnourished group(chi-square =0.29.)

Bose, K et.al (1998) conducted research on stunting, underweight, and wasting integrated child development scheme children aged 3-5 years of chapra, Nadia district, west Bengal ,India. This study investigated age and sex variations in height and weight, levels of stunting, underweight and wasting among 533 (254 boys; 279 girls) 3- to 5-year-old rural children of Bengali ethnicity at 11 Integrated Child Development Services centres of Nadia District. Height-for-age, weight-for-age and weight-for-height < -2 z-scores were used to evaluate stunting, underweight and wasting, respectively, following the National Centre for Health Statistics (NCHS) Guidelines. Results revealed that the overall (age and sex combined) rates of stunting, underweight and wasting were 23.9%, 31.0% and 9.4%, respectively. The rate of underweight and wasting was higher among girls (underweight = 35.1%, wasting = 12.2%) compared with boys (underweight = 26.5%, wasting = 6.3%). In general, the frequency of stunting increased with increasing age in both sexes. In conclusion, the nutritional status of the subjects is unsatisfactory. There is scope for improvement in the form of enhanced supplementary nutrition.
3. STUDIES RELATED TO CONTRIBUTING FACTORS OF MALNUTRITION

The Hindu news papers reported, a study conducted by Naandi foundation (2011) on Indian malnourished children. Samples were collected from 109,093 under five children were selected from 112 rural districts. Study report found that as many as 42% of under fives are severely or Moderately underweight and 59% of them suffer from moderate to severe stunting. The survey note that the prevalence of malnutrition is significantly higher among children from low family income and birth weight also important risk factors for child malnutrition. The prevalence of underweight in children born with a weight below 2.5 kg is 50%, while that among children born with a weight above 2.5 kg is 34% and study found that giving colostrum to the newborn and exclusive breast feeding for first 6 months of a life’s life are not practiced. The survey also found that awareness among mothers about malnutrition is low and 92% of the mothers had never heard the word malnutrition. Study concluded that though the integrated child development scheme continues to be our most important tool to fight malnutrition, we can no longer rely solely on it.

Ander N, (2009) conducted a descriptive study on risk factors of malnutrition and acceptance of ready to use therapeutic food (RUTF). Samples were collected from 67 malnourished children from rural areas in Vellore. Results show that majority (77.7%) of the malnourished children were from 1 year to 4 years of age and 53.7% of them were boys. Almost (49.3%) of the subjects had mild malnutrition, 38.8% had moderate malnutrition and there were only very few (11.9%) subjects with malnutrition. Majority of the malnourished children belonged to the lowest monthly income group (1000/) families. More than 55.5% of the malnourished children were exclusively breast feed up to 6 months and majority (97%) of them was given colostrums. Majority of the malnourished children (70.1%) birth weight was below 2.1 to 3 kg. Study concluded that majority of the mothers accepted RUTF.

Ramli et.al (2009) conducted a study on prevalence and risk factors for stunting and severe stunting among under-fives in north maluku province of Indonesia. A total of 2168 children aged 0-59 months were used for analysis. Results shows that prevalence of stunting and severe stunting were 29% and 14.1% for children aged 0-23 months and 38.4% and 18.4% for children aged 0-59 months, respectively. Study concluded that Programs aimed at improving stunting in the north
maluku province of Indonesia focusing on children under 2 years of age, of male sex and from families of low socioeconomic status.

Hien NN and S (2008) conducted research on nutritional status and the characteristics related to malnutrition in children under five years of age in Nghean, Vietnam. In this study, 650 child-mother pairs were selected using a two-stage cluster sampling methodology. A structured questionnaire was then administered to the mothers in their home settings. Anthropometric measurement was then used to determine if children were underweight (weight-for-age), wasting (weight-for-height) and stunting (height-for-age) based on reference data from the National Center for Health Statistics (NCHS)/World Health Organization (WHO). The results showed that 193 (31.8%) were underweight, 269 (44.3%) were stunting and 72 (11.9%) were wasting. Region of residence, the mother's level of education and occupation, household size, number of children in the family, weight at birth and duration of exclusive breastfeeding were found to be significantly related to malnutrition. The conclusions of this study was maternal, socio-economic and environment factors were found to be significant factors for malnutrition among children under five.

Mukhopadhyay D.K et.al(2008) conducted research on vitamin A deficiency and coverage under national programme in a sub – Himalayan rural community of west Bengal using lot quality assurance sampling .This study is estimated of vitamin-A coverage as well as prevalence of night blindness and bitot’s spot. Totally 13 subunits taken from west Bengal. The overall estimates showed that only about 14% children received all 5 doses of VIT –A at right age at right interval. The coverage of first dose of vitamin-A was 65% but decreased gradually to 16% at fifth dose. Study concluded that the main reason cited was ignorance of taking repeated doses of vitamin A.

Olwedo ma, et.al(2008) conducted a study on factors associated with malnutrition among children in internally displaced person’s camps of northern Uganda. The main objective of the study is to estimate the prevalence of protein energy malnutrition and describe the risk factors protein energy malnutrition among under five children in internally displaced persons. A total of 672 children aged 3 -59 months were undertaken and all their caretakers interviewed. Results shows that prevalence of global stunting was found to be 52.4% and of global malnutrition 6%. The main recommendations are the quantity of and access to household food
supplies, health education on infant and child feeding and integrated management of childhood illnesses (IMCI) activities in the camps has been strengthened.

Odunayo SI, et.al (2006) conducted a study on risk factors for malnutrition among rural Nigerian children. The aim of the study was to determine the current nutritional status and the influence of feeding practices and family characteristics on the nutritional status of children under five years of old rural Nigerian children. A total of 420 children were studied and prevalence of underweight, wasting and stunting using WHO growth standard reference were 23.1%, 9%, 26.7% respectively. Overcrowding, low maternal income and used infant formula feeds in children who have attained the age of 6 months and above were associated with a higher prevalence of wasting. Study concluded that, improving living standards of families, empowerment of mothers with the aim of augmenting family income and parental education on appropriate feeding practice may help in reducing the incidence of under five malnutrition in the communities.

Israt rayhan M.D et.al (2006) conducted a study on factors causing malnutrition among under five children in Bangladesh. This study investigated differential impact of some demographic, socio-economic, environmental and health related factors on nutritional status among under five children. Samples were selected with probability proportional in size. And totally 5419 samples were identified. The results were 41.5% of the children under age five were stunted, 10.5% were wasted and 48% were underweight. Babies who were larger in size at birth had lower risk of malnutrition than those who were very small in size at birth. Children of illiterate mothers were 52.6% stunted, 12.2% wasted and 55.7% underweighted.

Ighogboja (1992) conducted research on some factors contributing to protein energy malnutrition in the middle of belt of Nigeria. Among 400 mothers of malnourished children (aged 6-72 months; 233 males and 167 females) number of risk factors leading to malnutrition were investigated. Poverty, family instability, poor environmental sanitation, faulty weaning practices, illiteracy, ignorance, large family size and preventable infections are the main factors responsible for malnutrition. The results shows that majority 176 (44.0%) of the children had marasmic kwashiorkor, 150 (37.5%) had kwashiorkor, while the remaining 74 (18.5%) had marasmus. 250 (62.5%) and the following factors were contributed to malnutrition. Majority 126
(32.0%) of mothers believed malnutrition was caused by lack of good food, while 86 (21.5%) thought it was an act of God. 67.3% associated with diarrhea and 35.8% associated bronchopneumonia with malnutrition. This study concluded that there is need to improve weaning methods through nutrition education, growth monitoring and food demonstration with community participation. Political will is needed to improve literacy status, farming methods and general living condition.
CONCEPTUAL FRAMEWORK

The conceptual framework for this study is Becker’s and Mainman’s health belief modal (1975), addresses the relationship between a person’s belief and behavior. It provides a way of understanding and predicting how clients will behave in relation to their health and how they will comply with health care therapies.

Health beliefs usually influence health behavior; they can positively or negatively affect a client’s level of health. Positive health behaviors are activities related to maintaining, attaining or regaining good health and preventing illness. Common positive health behavior includes immunization, proper sleeping patterns, adequate exercise, and good nutrition. Negative health behavior include activities that are actually or potentially harmful to health such as smoking, poor diet and refusal to take medications.

Component I- Individual perception

The first component of this model involves the individual’s perception of susceptibility to an illness.

In this study individual perception refers to the mothers of preschoolers who need to recognize malnutrition. After recognized, the mothers of preschooler may perceive risk of malnutrition.

Component II- Modifying factors

The second component is individual’s perception of the seriousness of illness the perception is influenced and modified by demographic and socio psychological variables, perceived threat of illness and cues to action (mass media campaigns, advice from family, friends and medical professionals).

In this study, modifying factors include demographic variables are age of the children, such as age of the child, gender, birth order of the child, religion, type of family, family income, educational status and occupation of the mother.
Component III – Likelihood of action

The third component is the likelihood that a person will take preventive action from the person’s perception of the benefits of and barriers to taking action. Preventive action includes lifestyle changes, increased participation in recommended medical therapies or a search for medical advice or treatment.

In this study, likelihood of action was gaining adequate knowledge regarding malnutrition and identifies the factors contributing factors of malnutrition. It helps to reduce the severity of malnutrition. The barrier may be lack of knowledge regarding malnutrition, cultural belief, and traditional misconceptions. When the perceived problems and threats are more, the mother is likely to consider the benefits and they will choose the preventive action to improve the health of the child. Learning module given regarding definition, causes, effects, dietary management and prevention of malnutrition.

Conclusion

Health beliefs are a person’s ideas and attitudes about health and illness. It may be based on the factual information or misinformation, common sense, or myths and influence health behavior either positively or negatively. So the investigator believes that implementation of positive health behavior dependent on an individual’s awareness of how to live a healthy life and person’s ability and willingness to carry out such behaviors in a healthy lifestyle.
Perception of mothers of malnourished preschoolers regarding malnutrition and its contributing factors include,

- Maternal and childhood factors
- Immunization status
- Feeding and dietary practice
- Environmental and hygienic factors

**Demographic Variables.**
Preschoolers age, gender, type of family, birth order of child, mother’s age, Mother Education, occupation and family income.

**Perceived threat to preschooler health, morbidity and mortality due to malnutrition.**

**Cues to action**
Information from mass media, family members, health education from health personnel.

**Health action**
Mother may have improved knowledge and can identify the underweight, contributing factors of malnutrition.

**Utilization of nutritional programmes.**
**Referrals.**

**Perceived benefits of preventive action**
Minimize the severity of malnutrition and improve quality of life.

**Perceived barriers to preventive action**
Inadequate knowledge, cultural beliefs, Illiteracy, socio economic status.

**Like hood of action**

**Modifying factors**

**Individual perception**

**Becker’s and Maiman’s Health Belief Model (1975)**

**FIGURE 1: CONCEPTUAL FRAMWORK**
CHAPTER III

METHODOLOGY

RESEARCH APPROACH
Non-experimental approach was used in this study.

RESEARCH DESIGN
The research design used for the study was descriptive design in nature.

SETTING OF THE STUDY
The study was conducted in Kaitharinagar which is a rural area situated at a distance of 7 kilometers from C.S.I Jeyaraj annapackiam college of nursing. First conducted survey to find out preschool children. The total population of kaitharinagar is 13700. Kaitharinagar has health facilities provided by both government and private agencies. It has a adopted community centre by our college. Keeping in mind the geographical distance, time available for data collection, familiarity to the community and easy acquaintance and accessibility the investigators had chosen this setting.

POPULATION
The target population was mothers with children between 3 – 6 years of age residing, Madurai.

The accessible population mothers of malnourished children between 3 – 6 years of age in Kaitharinagar at Madurai.

SAMPLE
The samples were mothers with children between 3 – 6 years age.

SAMPLE SIZE
The sample size was 60 malnourished preschoolers were taken for samples.

CRITERIA FOR SAMPLE SELECTION
The samples were selected based on the following inclusion and exclusion criteria.
INCLUSION CRITERIA

Mothers with preschoolers,

- Whose weight falls moderately under weight (below -2SD), severely underweight (below – 3SD) based Z score lines under WHO(world health organizations) child growth standards 2006.
- Willing to participate in the study.
- Available during the time of data collection.
- Mother who could speak and understand Tamil and English.

EXCLUSION CRITERIA

- Mothers of children who had major illness like malabsorption syndromes.
- Who were affected with any serious illness within past 2 months.

METHOD OF SAMPLING

The sample was collected using purposive sampling technique.

DESCRIPTION OF TOOL

The instrument was developed by the investigator with the help of literature review and consultation with experts. A structured questionnaire was used to find out the factors contributing to malnutrition. The questions were prepared with the help of various literature, resources and opinion from subject experts to ascertain the effectiveness and bring out content in the questionnaire. The questionnaire consists of details of the child to, find out under nutrition and stunting based on weight- for –age and height –for –age and contributing factors of malnutrition. The tool was translated into Tamil language and used.

The tool consists of 3 parts.

Part I Demographic variables, which include information such as age, sex, birth order of the child, religion, family type, family income, age of mother, education of the mothers and occupation of mothers.

Part II Clinical variables, based on WHO child growth standards namely weight for- age and height for- age based on WHO child growth standards(2006) and mid – upper arm circumference.
Part III – It consists of 15 questions to assess the factors contributing to malnutrition. The questions included 4 aspects.

- Maternal and childhood factors consisting of 5 questions.
- Immunization status factors consisting of 3 questions.
- Feeding and dietary practice factors consisting of 3 questions.
- Environmental and hygienic factors consisting of 4 questions.

SCORING PROCEDURE

Part II - Clinical data based on anthropometric measurements

Interpretation (WHO child growth standards 2006)

<table>
<thead>
<tr>
<th>Growth Indicators</th>
<th>Z-score lines</th>
<th>Weight - for age</th>
<th>Height - for age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below -2SD</td>
<td>Underweight</td>
<td>Stunted</td>
<td></td>
</tr>
<tr>
<td>Below -3SD</td>
<td>Severely underweight</td>
<td>Severely stunted</td>
<td></td>
</tr>
</tbody>
</table>

Mid – arm circumference at community level (Park 2009)

Interpretation -
- Exceeding 13.5 cm indicate that sign of a satisfactory nutritional status.
- 12.5 to 13.5 cm indicate that mild to moderate malnutrition.
- Below 12.5 cm severe malnutrition.
Part III Contributing Factor of Malnutrition

Total numbers of questions were 15. Each question had 2 responses of ‘Yes’ and ‘No’. For 3, 5, 10 questions given score 0 for ‘Yes’ and 1 for ‘No’ responses. Remaining 12 questions given score ‘1’ for yes and ‘0’ for no responses.

The contributing factors of malnutrition is interpreted as

1 - 33% (1 to 5) - High risk groups
34 - 67% (6 to 10) - Moderate risk groups
68- 100% (11 to 15) - Low risk groups

VALIDITY AND RELIABILITY OF THE TOOL

The validity of the tool was obtained from 12 experts including 10 nursing experts. Based on their valid suggestion, the tool was reframed. The questions were evaluated for appropriateness, adequacy relevance, completeness and comprehensiveness. The tool was translated in to Tamil language based on the need for the study participants.

Reliability of the tool was elicited by using test retest method. The statistical analysis Karl Pearson coefficient was found to be ‘r’ value was 0.84 which was positively correlated. Therefore the instrument was found to be reliable.

VALIDITY OF THE LEARNING MODULE

The learning module was assessed by experts for its appropriateness, organization of content and language.

DATA COLLECTION PROCEDURE

The necessary permission for data collection was obtained from research committee to conduct the study. A survey was done initially to identify the mothers who had children within 3-5 years and children whose weight was found to be below -2SD(standard deviation), below -3SD(standard deviation) based on mew who child growth standards 2006. The data was collected from identified mothers of preschool children who were residing at kai tharinagar. During the data collection period the mothers were visited in their home and the investigator introduced herself.
The initial rapport was established with the mother and the purpose of the study was explained to them. The mothers were interviewed after obtaining willingness to participate in the study. A total numbers 137 mothers of preschool children data collected and checked weight. Among this 60 malnourished preschool children were identified. The mothers were interviewed during 6 days in a week except Sunday.

The structured interview was conducted among mothers in their house. The questions were posed to the mother and options were read one by one, tick mark was placed over the response given by mother. The average time taken to complete one interview was around 30 minutes. The interview was conducted during the day preferably in the evenings. Each day the investigator was able to collect data from 2 to 3 mothers.

The data was collected for 6 weeks. As the investigator was familiar with the people in kaitharinagar during community posting it was easy to locate the mothers who are at Kaitharinagar. The mothers of preschool children were interviewed evening time when children came out from balwadis and schools. The total numbers of samples was 60. Each day investigator was able to collect 5 to 6 samples.

**Step 1** - The first step of data collection was obtaining the demographic and clinical data about child and family.

Underweight was estimated by measuring weight – for age of the children. Weight was checked by electronic weighing machine. Those children were taken as samples then height was checked using stature measures. Mid – arm circumference was taken by using inch tape.

Underweight and stunting was estimated from a WHO child growth standard 2006 based on weight – for age and height – for age.

**Step 2** - A structured questionnaire was used to collect data on factors contributing to malnutrition. The questionnaire was administrated to mothers and their responses were obtained. The learning module in management and prevention of malnutrition and issued to mothers.
SCHEDULE FOR DATA COLLECTION PROCEDURE

Week 1 and 2 - conduction of survey

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Colonies at Kaitharinagar</th>
<th>Number of Mothers Interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 3</td>
<td>Maruthi colony</td>
<td>16</td>
</tr>
<tr>
<td>Week 4</td>
<td>Angarkanni colony</td>
<td>14</td>
</tr>
<tr>
<td>Week 5</td>
<td>Meenakshi colony</td>
<td>14</td>
</tr>
<tr>
<td>Week 6</td>
<td>Bagatsingh colony</td>
<td>16</td>
</tr>
</tbody>
</table>

PLAN FOR DATA ANALYSIS

The data was analyzed using descriptive and inferential statistics.

PILOT STUDY

Pilot study was conducted in Mulaikari village. Six mothers of malnourished children were selected by purposive sampling technique. These samples were excluded from the main study. Structured interview was conducted with these mothers on contributing factors of malnutrition. The tool was feasible in all aspects and no modification made.

PROTECTION OF HUMAN RIGHTS

The study was conducted after obtaining the approval of the dissertation committee and officials. The investigator explained the objectives, purpose and goal of the present study to each study participants in order to get their maximum cooperation.
CHAPTER IV
DATA ANALYSIS AND INTERPRETATION

Data analysis is a method of organizing data in such that the research question can be answered. Interpretation is the process of making sense of the results and of examining the implications of the findings within a broader context. The analysis and interpretation of this study is based to find out malnourished children by WHO child growth standards 2006 and data collected through questionnaire, from sample 60 malnourished children. The results was computed using descriptive and inferential statistics.

The objective of the study were

1. To assess the malnutrition among preschoolers.
2. To determine contributing factors of malnutrition among malnourished preschoolers.
3. To find out the association between malnutrition and selected demographic variables
4. To find out the association between contributing factors of malnutrition among malnourished preschoolers and selected demographic variables.

Data were analyzed based on the objectives and presented under the following headings:

1. Distribution of malnourished preschoolers based on their demographic variables.
2. Distribution of malnourished preschoolers based on their anthropometric measurements.
3. Distribution of malnourished preschoolers based on their contributing factors of malnutrition among malnourished preschoolers.
4. Distribution of malnourished preschoolers based on association between malnutrition with selected demographic variables.
5. Distribution of malnourished preschoolers based on association between contributing factors of malnutrition with selected demographic variables.
TABLE 1
DISTRIBUTION OF MALNOURISHED CHILDREN BASED ON THEIR DEMOGRAPHIC VARIABLES

<table>
<thead>
<tr>
<th>S. No</th>
<th>Demographic Variables</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Age of your Child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>3 yrs</td>
<td>16</td>
<td>26.67</td>
</tr>
<tr>
<td>2.</td>
<td>4 yrs</td>
<td>20</td>
<td>33.33</td>
</tr>
<tr>
<td>3.</td>
<td>5 yrs</td>
<td>24</td>
<td>40</td>
</tr>
<tr>
<td>2.</td>
<td>Gender of your child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Male</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>2.</td>
<td>Female</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>3.</td>
<td>Birth order of the Child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>First</td>
<td>17</td>
<td>28.33</td>
</tr>
<tr>
<td>2.</td>
<td>second</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>3.</td>
<td>Third and above</td>
<td>13</td>
<td>21.67</td>
</tr>
<tr>
<td>4.</td>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Hindu</td>
<td>57</td>
<td>95</td>
</tr>
<tr>
<td>2.</td>
<td>Christian</td>
<td>2</td>
<td>3.33</td>
</tr>
<tr>
<td>3.</td>
<td>Muslim</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>5.</td>
<td>Type of Family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Nuclear family</td>
<td>31</td>
<td>51.67</td>
</tr>
<tr>
<td>2.</td>
<td>Joint family</td>
<td>29</td>
<td>48.33</td>
</tr>
<tr>
<td>6.</td>
<td>Family Income (per/month)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Below 5000</td>
<td>37</td>
<td>61.67</td>
</tr>
<tr>
<td>2.</td>
<td>Above of mother</td>
<td>23</td>
<td>38.33</td>
</tr>
<tr>
<td>7.</td>
<td>Age of mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Below 20</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>2.</td>
<td>21 to 25</td>
<td>14</td>
<td>23.3</td>
</tr>
<tr>
<td>3.</td>
<td>26 to 30</td>
<td>24</td>
<td>40</td>
</tr>
<tr>
<td>4.</td>
<td>Above 30</td>
<td>21</td>
<td>35</td>
</tr>
</tbody>
</table>
8. Educational Status of the mother
   
a. Illiterate          12  20  
b. Primary             36  60  
c. Higher Secondary    11  18.33 
d. Graduate            1  1.67 

9. Occupational status of the mother
   
a. Home maker          12  20 
b. Private employee    9  15 
c. Government employee 5  8.33 
d. Self employee       34  56.67 

10. Temporary family planning methods
    
a. Yes                 40  66.66 
b. No                  20  33.33 

Table -1 reveals that, majority 24(40%) of malnourished preschoolers were 5 years of age, 20(33.33%) belongs to 4 years and 16(26.67%) were from 3 years. There was a equal representation 30 (50%) of malnourished preschoolers based on gender. Regarding birth order of child 30(50%) were second born to their parents. 30(50 %) were second birth order, 17(28.33% ) were first born and 13 (21.67%) were third and above birth order.

Most 57 (95%) of the malnourished preschoolers belongs to Hindu religion, 2 (3.33%) belongs to Christians and only one 1(1.67%) was Muslim. Majority 31(51.77%) of malnourished preschoolers were living in nuclear family and only 29 (48.33%) were living in joint family. Regarding the family income, majority 37 (61.67%) of malnourished preschoolers family were having the family income of below 5000 per month and 23 (38.33%) were having the family income of above 5001 per month.

Regarding the age of the mother 24 (40%) belongs to between 26 to30, 21 (35%) mothers were above 30 years of age, 14 (23.3%) mothers were between 21 to 25, 1 (1.67%) mothers was below 20. Regarding educational status of the mothers, 36 (60%) had primary education, 12(20%) were Illiterate, 11(18.3%) had higher secondary education and 1(1.66%) was graduate education.
Regarding occupational status of the mother, majority 34 (56.67%) of the mothers were as self employee, 12 (20%) were home makers and 9 (15%) mothers are working as private employee and 5 (8.33%) mothers are working as government employee. Majority 40 (66.67%) of the mothers had adopted temporary family planning methods and 20 (33.33%) mothers had not adopted any temporary family planning methods.

Therefore it is inferred that majority of the malnourished were of born second and 5 years of age. They belongs to Hindu religion in nuclear family with monthly income of below 5000/ month. The mothers of malnourished preschoolers had the primary education and self employed and they had adopted temporary family planning methods.
Figure 2a: According to WHO growth standards 2006 (weight-for-age) reveals that 47 (78%) malnourished children who had (< -2SD) moderate underweight, 13 (22%) malnourished children who had (< -3SD) severely underweight.
Figure 2b - According to WHO child growth standards 2006 (height – for – age) reveals that, 30 (50%) malnourished children who had normal height (> -2SD), 20 (33%) malnourished preschoolers who had stunted (<-2SD) and 10 (17%) malnourished preschoolers who had severely stunted(<-3SD).
FIGURE 2c
MALNOURISHED PRESCHOOLERS BASED ON THEIR MID UPPER-ARM CIRCUMFERENCES

N = 60

Figure 2c - Reveals that 40 (67%) malnourished preschoolers have satisfactory nutritional status and their mid–arm circumference above 13.5 cm, 15 (25%) malnourished preschoolers have mild to moderate malnutrition and mid-arm circumference between 12.5 cm to 13.5 cm, 5 (8%) malnourished preschoolers have severe malnutrition and their mid-arm circumference below 12.5 cm.
Figure 3 - Regarding contributing factors of malnutrition reveals that, majority 39 (65%) of the malnourished preschoolers were in the moderate risk groups, only 19 (32%) were in the severe risk groups and 2 (3%) were in the mild risk groups.
TABLE 2a

DISTRIBUTION OF MALNOURISHED PRESCHOOLERS BASED ON THEIR MATERNAL AND CHILDHOOD FACTORS

<table>
<thead>
<tr>
<th>S. No</th>
<th>Contributing factors of Malnutrition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Adequate vitamins supplementation during antenatal period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Yes</td>
<td>44</td>
<td>73.33</td>
<td></td>
</tr>
<tr>
<td>2. No</td>
<td>16</td>
<td>26.67</td>
<td></td>
</tr>
<tr>
<td>2. Was your child’s weight adequate at birth?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Yes</td>
<td>45</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>2. No</td>
<td>15</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>If no how much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. 2000 to 2.500 kg</td>
<td>14</td>
<td>3.33</td>
<td></td>
</tr>
<tr>
<td>2. 1.500 to 1.999 kg</td>
<td>1</td>
<td>6.67</td>
<td></td>
</tr>
<tr>
<td>3. Below 1.500 kg</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3. Did your child had history of hospitalization for Respiratory infection?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. No</td>
<td>10</td>
<td>16.67</td>
<td></td>
</tr>
<tr>
<td>2. Yes</td>
<td>50</td>
<td>83.33</td>
<td></td>
</tr>
<tr>
<td>If yes how many times</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Once</td>
<td>34</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>2. Twice</td>
<td>20</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>3. More than twice</td>
<td>6</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>4. Did your child deworming in every 6 months to treat intestinal worm infestation?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. No</td>
<td>29</td>
<td>48.33</td>
<td></td>
</tr>
<tr>
<td>2. Yes</td>
<td>31</td>
<td>51.67</td>
<td></td>
</tr>
<tr>
<td>5. Any previous history of hospitalization for diarrhea?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. No</td>
<td>18</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>2. Yes</td>
<td>42</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>If yes how many times</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Once</td>
<td>32</td>
<td>76.20</td>
<td></td>
</tr>
<tr>
<td>2. Twice</td>
<td>8</td>
<td>19.04</td>
<td></td>
</tr>
<tr>
<td>3. More than twice</td>
<td>2</td>
<td>4.76</td>
<td></td>
</tr>
</tbody>
</table>
Above tables 2a reveals that, 44(73.33%) mothers had taken adequate supplementation during antenatal period and 16(26.67%) mothers had not taken adequately. The birth weight of child was adequate for 45(75%) malnourished children whereas for 15(32%) it was not adequate. Majority 50(83.33%) of the children had previous history of hospitalization for respiratory infection and 10 (16.67%) had no history of hospitalization. Deworming was done in every 6 months for 31(51.67%) malnourished preschoolers whereas 29 (48.33%) malnourished preschoolers were not done deworming. 42(70%)malnourished preschoolers had previous history of hospitalization for diarrhea, 18(30%) had no previous history of hospitalization for diarrhea.
TABLE 2b
DISTRIBUTION OF MALNOURISHED PRESCHOOLERS BASED ON THEIR IMMUNIZATION FACTORS

N=60

<table>
<thead>
<tr>
<th>S. No</th>
<th>Contributing factors of Malnutrition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Have you immunized your child as per national Immunization schedule?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Yes</td>
<td>59</td>
<td>98.33</td>
<td></td>
</tr>
<tr>
<td>2. No</td>
<td>1</td>
<td>1.77</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Have you given VIT-A oral dose to your child as per schedule?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Yes</td>
<td>41</td>
<td>68.33</td>
<td></td>
</tr>
<tr>
<td>2. No</td>
<td>19</td>
<td>31.67</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Have you given Iron syrup/tablets to your child as per schedule?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Yes</td>
<td>10</td>
<td>16.67</td>
<td></td>
</tr>
<tr>
<td>2. No</td>
<td>50</td>
<td>83.33</td>
<td></td>
</tr>
</tbody>
</table>

Table 2b reveals that, 59 (98.33%) malnourished preschoolers have immunized as per national immunization schedule whereas 1 (1.77%) has not immunized. 41 (68.33%) malnourished preschoolers were given vitamin – A oral dose as per schedule, whereas 19 (31.67%) were not given vitamin –A as per schedule. 50 (83.33%) malnourished preschoolers were not given iron syrup as per schedule whereas 10 (31.675) were given iron syrup as per schedule.
### TABLE 2c
**DISTRIBUTION OF MALNOURISHED PRESCHOOLERS BASED ON THEIR FEEDING AND DIETARY PRACTICE FACTORS**

\( N = 60 \)

<table>
<thead>
<tr>
<th>Sn. No</th>
<th>Contributing factors of Malnutrition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Did you breast feed to your baby?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. No</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. Yes</td>
<td></td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>If yes how long did you exclusory breast feed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Below 3 months</td>
<td></td>
<td>10</td>
<td>16.67</td>
</tr>
<tr>
<td>2. 4 to 5 months</td>
<td></td>
<td>34</td>
<td>56.67</td>
</tr>
<tr>
<td>3. up to 6 months</td>
<td></td>
<td>16</td>
<td>26.66</td>
</tr>
<tr>
<td>2.</td>
<td>Do you avoid particular foods based on culture?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Yes</td>
<td></td>
<td>16</td>
<td>26.67</td>
</tr>
<tr>
<td>2. No</td>
<td></td>
<td>44</td>
<td>73.335</td>
</tr>
<tr>
<td>3.</td>
<td>Are you utilizing any nutritional programs from balwadi and school?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Yes</td>
<td></td>
<td>50</td>
<td>83.33</td>
</tr>
<tr>
<td>2. No</td>
<td></td>
<td>10</td>
<td>16.67</td>
</tr>
</tbody>
</table>

Tables 2c- reveals that all 60 (100%) mothers were breast feed to their children, only 16 (26.66%) mothers were exclusive breast feed up to 6 months to their children. Majority 44(73.33%) of the mothers of malnourished preschoolers were not practicing of avoiding particular food based on culture whereas 16 926.67%) were practicing of avoiding particular food based on culture. Majority 50(83.33%) malnourished preschoolers are utilizing nutritional programms from balwadis and schools and 10 (6.67%) are not utilizing nutritional programms from balwadis and schools.
TABLE 2d
DISTRIBUTION OF MALNOURISHED PRESCHOOLERS BASED ON THEIR ENVIRONMENTAL AND HYGIENIC FACTORS

<table>
<thead>
<tr>
<th>Sn. No</th>
<th>Contributing factors of Malnutrition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Are you using safe drinking water in your home?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. No</td>
<td>24</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>2. Yes</td>
<td>36</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>If yes which method</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Boiling</td>
<td>33</td>
<td>91.67</td>
</tr>
<tr>
<td></td>
<td>2. Mineral water</td>
<td>3</td>
<td>8.33</td>
</tr>
<tr>
<td></td>
<td>3. other method</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>Are you using slipper when moving out?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Yes</td>
<td>34</td>
<td>56.67</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
<td>26</td>
<td>43.33</td>
</tr>
<tr>
<td>3.</td>
<td>Do you wash your hands before eating?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Yes</td>
<td>32</td>
<td>53.33</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
<td>28</td>
<td>46.67</td>
</tr>
<tr>
<td>4.</td>
<td>Do you practice hand washing after defection?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Yes</td>
<td>26</td>
<td>43.33</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
<td>34</td>
<td>56.67</td>
</tr>
</tbody>
</table>

Tables 2d reveals that 36(60%) mothers are using disinfected drinking water at their home, 24 (40%) mothers are not using disinfected water at their home. More than half 34(56.67%) of the malnourished preschoolers are using slipper when moving out, 26 (43.33%) are not using slippers when moving out. 32 (53.33%) malnourished preschoolers are practicing hand washing before eating and 28 (46.33%) are not practicing hand washing before eating. 34 (56.67%) malnourished preschoolers are not practicing hand washing after defection.
TABLE 3
DISTRIBUTION OF MALNOURISHED PRESCHOOLERS BASED ON ASSOCIATION BETWEEN MALNUTRITION AND SELECTED DEMOGRAPHIC VARIABLES.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Demographic Variables</th>
<th>Malnutrition</th>
<th></th>
<th>Chi-Square $\chi^2$</th>
<th>Table value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>Severely Underweight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Age of your child</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. 3 yrs</td>
<td>14</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. 4 yrs</td>
<td>18</td>
<td>2</td>
<td>5.89</td>
<td>5.99</td>
</tr>
<tr>
<td></td>
<td>c. 5 yrs</td>
<td>15</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Gender of your child</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Male</td>
<td>26</td>
<td>4</td>
<td>*5.56</td>
<td>3.84</td>
</tr>
<tr>
<td></td>
<td>b. Female</td>
<td>21</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Birth order of the child</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. First</td>
<td>13</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Second</td>
<td>13</td>
<td>7</td>
<td>0.38</td>
<td>5.99</td>
</tr>
<tr>
<td></td>
<td>c. Third and Above</td>
<td>11</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Type of family</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Nuclear Family</td>
<td>25</td>
<td>6</td>
<td>0.21</td>
<td>3.84</td>
</tr>
<tr>
<td></td>
<td>b. Joint family</td>
<td>22</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Family Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Below 5000</td>
<td>22</td>
<td>10</td>
<td>*5.15</td>
<td>3.84</td>
</tr>
<tr>
<td></td>
<td>b. Above 5001</td>
<td>25</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* significant (p<0.05)

The chi square value of 5.56 (p<0.05) signifies that there was significant association between sex and malnutrition. There is no significant association between other demographic variables like age of the child, birth order of child and malnutrition.

The chi square value of 5.15 (p<0.05) signifies that there was significant association between family income and malnutrition. Whereas there is no significant association between other demographic variables like type of family with malnutrition.
TABLE 4  
DISTRIBUTION OF MALNOURISHED PRESCHOOLERS BASED ON ASSOCIATION BETWEEN CONTRIBUTING FACTORS OF MALNUTRITION AND SELECTED DEMOGRAPHIC VARIABLES.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Demographic Variables</th>
<th>Contributing factors of Malnutrition</th>
<th>Table value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mild Risk</td>
<td>Moderate risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Age of your child</td>
<td>3 yrs</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 yrs</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 yrs</td>
<td>17</td>
</tr>
<tr>
<td>2.</td>
<td>Gender of your child</td>
<td>Male</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>16</td>
</tr>
<tr>
<td>3.</td>
<td>Birth order of the child</td>
<td>1. First</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Second</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Third</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>Type of family</td>
<td>Nuclear Family</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Joint family</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Family Income</td>
<td>Below 5000</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Above 5001</td>
<td>2</td>
</tr>
<tr>
<td>6.</td>
<td>Educational status of the mother</td>
<td>Illiterate</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Primary</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Higher Secondary</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-employee</td>
<td>0</td>
</tr>
</tbody>
</table>

* significant (p<0.05)

There is no association between demographic variables like age, sex and birth order of the child, type of family, family income and educational status of mothers with contributing factors of malnutrition.
CHAPTER V

DISCUSSION

The study was conducted to assess malnutrition and its contributing factors of malnutrition among preschoolers in selected villages, Madurai. The study findings had been discussed in terms of objective and theoretical bases.

The first objective of this study was to assess the malnutrition among preschool children in the selected villages.

The study findings shows that among 60 malnourished preschoolers, 47 (78.33%) malnourished children who had (weight -for age <-2SD) moderate underweight. Among the rest 13 (21.67%) of the malnourished children who had (weight – for age < -3SD) severely underweight based on new WHO growth standards 2006.

The findings are consistent with the study done by Naandi foundation (2011). Study report found that, in India 42% of under five children are severely or Moderately underweight based WHO child growth standards (2006).

The findings are consistent with the study done by Odunayo SI et.al (2006), who found prevalence of underweight, wasting and stunting using WHO growth standard reference were 23.1%, 9%, 26.7% respectively. This finding of the study supported by the study done by Mahapatra, A. et al. (2000) who concluded that, prevalence malnutrition in the form of wasting (27.9%), stunting (41.8%) and underweight (57.1%) among children.

Asian Development Bank (ADB), International Food Policy Research Institute (IFPRI), (2001) report analysis, estimates that 70% of the world’s malnourished children, and 75% of all micronutrient deficient persons are found in Asia.

Through this the investigator put her best effort to management and prevention of malnutrition among mothers of malnourished preschoolers who have participated in this study.
The second objective was to determine factors contributing to malnutrition among malnourished preschoolers.

Study findings shows that, majority 39 (65%) of the malnourished preschoolers were in the moderate risk groups, 19(32%) malnourished preschoolers were in the severe risk groups. only 2 (3%) malnourished preschoolers were in the mild risk groups. Since no studies were found that level of contributing factors of malnutrition. But the study explored that child birth weight was adequate for 45(75%) malnourished children, 14(93.33%) children birth weight was between 2 to 2.5kg. All 60 (100%) malnourished children were breast feed, only 16 (26.66%) malnourished children were exclusively breast feed up to 6 months and 24 (40%) mothers of malnourished children are not disinfecting drinking water. The study shows that, majority 50(83.33%) of the children had previous history of hospitalization for respiratory infection, 42 (70%) malnourished children had previous history of hospitalization for diarrhea. The study revealed that More than half 34(56.67%) of the malnourished children are using slipper when moving out. 32 (53.33%) malnourished children are practicing hand washing before eating, 34 (56.67%) malnourished children are not practicing hand washing after defection. The reasons could be unawareness of mothers regarding malnutrition and its ill effects on health.

These findings are consistent with study done by Ander N (2009), who found that majority(70.11%) of the malnourished children birth weight was between 2.2 to 3kg and more than half (55.2%) of the malnourished children were exclusively breast feed up to 6 months. Majority (83.6%) of them were not disinfecting the drinking water. These findings of the study is also supported by the study done by Ighogboja S I.(1992), 67.3% associated diarrhea and 35.8% associated bronchopneumonia with malnutrition.

These findings were supported by Hien NN, Kam S. (2008), concluded that maternal, socio-economic and environment factors were found to be significant factors for malnutrition among children under five. Casapia M, (2007) concluded, risk factors for malnutrition included both child and maternal determinants. Based on these data, locally appropriate and cost-effective dietary, de-worming and educational programs should be targeted to mothers and preschool-age children.
The third objective of the study was to find out association between malnutrition and selected demographic variables

The study reveals that, the chi square value of 5.56 (p<0.005) signifies that there was significant association between sex and malnutrition. Also the study showed that the chi square value of 5.15 (p<0.05) signifies that there was significant association between family income and malnutrition. Other variables like age of the child, birth order of child, type of family has no significant association with malnutrition.

The findings were supported by Padmavathi.B (2011) who found that $\chi^2$ values computed between the nutritional status and family income ($\chi^2 = 13.909$) was found to be significant at 5% level, which implies that there was a significant relationship between nutritional status of preschool children and their family income.

The study findings were consistent with my study done by Vibha (2011), who found the mean score in the sex was 9.1 which was significant at p<0.005 in the both sexes.

The fourth objective of the study was to find out association between contributing factors of malnutrition among malnourished preschoolers and selected demographic variables.

The study revealed that, there was no association between demographic variables like age, sex and birth order of the child, type of family, family income and educational status of the mothers with contributing factors of malnutrition. Since no studies were found on association between demographic variables and contributing factors of malnutrition. Hence the investigator suggest that further study can be done to find out contributing factors of malnutrition.
CHAPTER VI

SUMMARY, FINDINGS, CONCLUSION, IMPLICATION AND RECOMMENDATIONS

SUMMARY OF THE STUDY

The focus of the study was to assess malnutrition and its contributing factors of malnutrition among mothers of preschoolers. The research approach used in the study was non experimental.

The study was descriptive design in nature. The conceptual frame work of the study was based upon Becker’s and Maiman’s health belief model (1975). The instrument used for data collection was a structured questionnaire on contributing factors of malnutrition. The instrument was prepared based on review literature and with help of subject experts. The content validity of the tool was obtained from experts. Reliability of the tool was elicited by using split half method. The statistical analysis, Karl Pearson coefficient the instrument was found to be ‘r’ value was 0.84 which was positively correlated. Therefore the instrument was found to be reliable.

A purposive sampling was used to collect data from the study participants. Data was collected for a period 6 weeks. Data collection was planned and was gathered using structured interview.

The main study was conducted at rural community setting, kaitharinagar in Madurai.

Descriptive and inferential statistics were used to analyze the data. The data was presented using tables and graphs.

THE MAIN FINDING OF THE STUDY

- Among 60 malnourished preschoolers, 47 (78.33%) malnourished preschoolers who had (weight -for age < -2SD) moderate underweight, 13 (21.67%) malnourished preschoolers who had (weight – for age < -3SD) severely underweight based on new WHO growth standards 2006.
- Regarding contributing factors of malnutrition, 39 (65%) malnourished preschoolers were in the moderate risk groups, 19(32%) malnourished preschoolers were in the severe risk groups. only 2 (3%) malnourished preschoolers were in the mild risk groups.

- Malnutrition to child is determined by overall risk factors that are maternal and childhood factors, immunization status, feeding and dietary practice and Environmental and hygienic factors. Specially history of recurrent illness and hospitalization for respiratory infection and diarrhea, lack of vitamin –A and Iron supplementation, lack of breast feeding and lack of environmental and hygienic measures were contributed to cause malnutrition.

- At a chi square value of 5.56 (p<0.005) signifies that there was significant association between sex and malnutrition. There is no significant association between other demographic variables like age of the child, birth order of child and malnutrition.

- The chi square value of 5.15 (p<0.05) signifies that there was significant association between family income and malnutrition. There is no significant association between other demographic variables like type of family with malnutrition.

- The chi- square value was not significant association between demographic variables like age, sex and birth order of the child, type of family, family income and educational status of the mothers with risk factors of malnutrition.

CONCLUSION

- Majority 47(78%) of malnourished preschoolers who had moderate underweight. Regarding contributing factors of malnutrition 39(65%) malnourished preschoolers were moderate risk groups.

- Malnutrition to child is determined by overall risk factors that are maternal and childhood factors, immunization status, feeding and dietary practice and Environmental and hygienic factors. Specially history of recurrent illness and hospitalization for respiratory infection and diarrhea, lack of vitamin –A and Iron supplementation, duration of breast feeding and lack of environmental and hygienic measures were contributed to cause malnutrition.
The study reveals that, the chi square value of 5.56 (p<0.005) signifies that there was significant association between sex and malnutrition. Also the study showed that the chi square value of 5.15 (p<0.05) signifies that there was significant association between family income and malnutrition. All other variables like age, birth order of the child, type of family had found to be nil significant. There was no significance established in contributing factors of malnutrition among malnourished preschoolers and selected demographic variables.

The strategies for intervention are in the area of health education emphasizing the importance of breastfeeding, family stability, responsible parenthood and small family sizes through culturally acceptable family planning methods. There is need to improve weaning methods through nutrition education, growth monitoring and food demonstration with community participation. Learning module on malnutrition was administered to the mothers of malnourished preschoolers.

IMPLICATIONS

The study has the following implication for nursing services, nursing administration, nursing education, nursing research.

NURSING ADMINISTRATION

1. The finding of the study provide a base which could be utilized by nursing administrators in planning in service education for community health workers to update knowledge regarding growth and development of child nutritional status, disease related to nutritional deficiency.

2. These finding will help the administrator to implement health education programme on prevention of malnutrition Anganwadi centers and school health camps.

3. The finding of the study emphasize the nurse administrators to conduct various mass awareness programs and arrange conferences to learn about malnutrition.

4. The nurse administrator may insist health personnel at community level, community health nurses, lady health workers, auxiliary nurse, Anganwadi workers, regarding malnutrition, so that they can provide knowledge to mothers.
IMPLICATION FOR NURSING EDUCATION

1. The study enhances the nursing curriculum to provide opportunities for students to learn about malnutrition.
2. The student nurses should be educated for assessment of malnutrition as per WHO child growth standards (2006), deficiencies of disease and prevention of these disease.
3. The student nurse should be health educate to mother about common risk factors of malnutrition and thereby protect the preschool children from malnutrition.

IMPLICATION FOR NURSING SERVICE

1. The findings suggest that nurses should increase their knowledge on early identification and management of malnutrition among preschool children
2. The study recommends that community health nurse participates in different nutritional health programmes such as mid day meal, supplement and accredited social health activist (ASHA) in which nurses participate in prevention of malnutrition.
3. These finding suggest that parents should be emphasized to increase focus on lifestyle behavior like dietary habits, personal hygiene and personal hygiene.

IMPLICATION FOR NURSING RESEARCH

1. Nursing research can help to assess deficiencies and excess disorder by nutritional assessment and evaluation of camps, programs organized by government.
2. The study can be published in journals to disseminate knowledge regarding prevention of malnutrition among preschool children.
3. There are malnourished children throughout country, more research need to be conducted in the preschool children in various aspects.

RECOMMENDATIONS

1. A comparative study can be done in both urban and rural areas.
2. Same study can be conducted on large sample.
3. A similar study can be done on all childhood age groups.
4. A study can be conducted to access the nutritional deficiencies among children.