NHM GUJARAT

A STUDY OF NRC AND PROFILE OF MALNOURISHED CHILDREN

By

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ROLL NO- PG/15/079

Under the guidance of

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Internship Training

At

NHM GUJARAT

A study of NRC and profile of malnourished children

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Research New Delhi

The certificate is awarded to

Surabhi Kaushik

in recognition of having successfully completed her

Internship in the department of

NRC

and has successfully completed her Project on

A study of NRC and profile of malnourished children

2nd Feb. to 30 AprIL

NHM GUJARAT

She comes across as a committed, sincere & diligent person who has

a strong drive & zeal for learning

We wish her all the best for future endeavors

Training & Development Zonal

Head-Human Resources

TO WHOMSOEVER IT MAY CONCERN

This is to certify that __Surabhi Kaushik_____ student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at___NHM GUJARAT from 1 FEB to 30 APRIL.

The Candidate has successfully carried out the study designated to him during internship Training and his approach to the study has been sincere, scientific and analytical. The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.

Dr. A.K. Agarwal
Dean Academics and Student Affairs
IIHMR, New Delhi

P K Panda
Professor and dean (research)
IIHMR, New Delhi

Certificate of Approval

The following dissertation titled **"A study of NRC and profile of malnourished children**" at "NHM GUJRAT" is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of Post Graduate Diploma in Health and Hospital Management for which it has been Submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name Signature

_____

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Certificate from Dissertation Advisory Committee

This is to certify that Surabhi Kaushik, a graduate student of the Post- Graduate Diploma in Health and Hospital Management has worked under our guidance and supervision. She is submitting this dissertation titled " A STUDY OF NRC and PROFILE OF MALNOURISHED CHILDREN" at "NHM GUJARAT" in partial fulfillment of the requirements for the award of the Postgraduate Diploma in Health and Hospital Management.

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

P K Panda

Professor and Dean(research)

IIHMR New Delhi

Dr. Shobhana Ben Mehata

CDMO Cum civil surgeon

Amreli

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH,

NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation **"A STUDY OF NRC AND PROFILE OF MALNOURISHED CHILDREN**" and submitted by **Surabhi Kaushik**. Enrollment No.PG/15/079 under the supervision of **Dr. Pradeep Panda** for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 1ST Feb to 30 April embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature

List of Abbreviations

AHS	Annual Health Survey
AWW	Anganwadi worker
ASHA	Accredited Social Health Activist
CHC	Community Health Centre
F-IMNCI	Facility Based integrated Management of newborn and Childhood illnesses
FRU	First referral unit
HIV	Human immunodeficiency virus
HFA	Height-for-age
IV	intravenous
IU	international unit
mcg	micrograms
MUAC	Mid-upper Arm Circumference
NACO	national AIDS Control organisation
NG	nasogastric

NRC	nutrition rehabilitation Centre
NFHS	national Family Health Survey
OPD	outpatient Department
ORS	oral rehydration Solution
PHC	Primary Health Centre
RCH	reproductive and Child Health
ReSoMal	rehydration solution for malnourished children
SAM	Severe Acute Malnutrition
SD	Standard Deviation
FRU	First referral

ORGANISATIONAL PROFILE

NHM GUJARAT

National Health Mission (NHM) encompassing two Sub-Missions, National Health Mission (NHM) and National Urban Health Mission (NUHM). It is both flexible and dynamic and is intended to guide States towards ensuring the achievement of universal access to health care through strengthening of health systems, institutions and capabilities.

Vision of the NHM

"Attainment of Universal Access to Equitable, Affordable and Quality health care services, accountable and responsive to people's needs, with effective inter-sectoral convergent action to address the wider social determinants of health".

- Safeguard the health of the poor, vulnerable and disadvantaged, and move towards a right based approach to health through entitlements and service guarantees
- Strengthen public health systems as a basis for universal access and social protection against the rising costs of health care.

- Build environment of trust between people and providers of health services.
- Empower community to become active participants in the process of attainment of highest possible levels of health.
- Institutionalize transparency and accountability in all processes and mechanisms.
- Improve efficiency to optimize use of available resources.

NHM is the combination of national programmes, namely, the Reproductive and Child Health II project, (RCH-II) the National Disease Control Programmes and the Integrated Disease Surveillance Project. NRHM also enable the mainstreaming of Ayurvedic, Yoga, Unani, Siddha and Homeopathy Systems of Health (AYUSH).

State Profile

Geography

Gujarat is situated between 20°1' and 24°7' north latitudes and 68°4' and 74°4'east longitudes on the west coast of India. It is bounded on the west by the Arabian sea, on the north-west by Pakistan, on the north by Rajasthan, on the east by Madhya Pradesh and on the south and south-east byMaharashtra.

The state of Gujarat occupies the northern extremity of the western sea-board of India. It has the longest coast line 1290 km among Indian states. The state comprises three geographical regions.

- The peninsula, traditionally known as Saurashtra. It is essentially a hilly tract sprinkled with low mountains.
- Kutch on the north-east is barren and rocky and contains the famous Rann (desert) of Kutch, the big Rann in the north and the little Rann in the east.
- The mainland extending from the Rann of Kutch and the Aravalli Hills to the river Damanganga is on the whole a level plain of alluvial soil.

History

Gujarat forms an area that housed the regions of the Indus Valley civilization and Harappan sites. Around 50 Harappan sites are found in Gujarat. Lothal, Rangpur, Amri, Lakhabaval, Rozdi etc. are some of these sites. This makes it an important territory that reveals the history of India. The Dravidian tribes were said to be the original inhabitants of this region. Even before the Aryan

occupation of Gujarat, it is said to have had trade contracts with Sumer, the Persian Gulf in about 1000-750BC. Rock edicts in the Girnar hills indicate that Ashoka extended his domain into Gujarat. It was during the Mauryan rule that this region witnessed the influence of Buddhism. The Mauryans also promoted trade and helped in spread of its culture. In about 150BC the Bactarian Greeks under Meander is said to have instilled their rule. Till 40AD they are said to have had trade contracts with Rome. From about AD130-390 the Scythians ruled it. After 300AD the Guptas established their reign which lasted till 460AD. The Vallabhi established their sway in between (500-700AD). After the death of Harshvardhana, the Gujjars controlled it till 746AD. The Solankis ruled over Gujarat till 1143. Gujarat attained its greatest territorial extent under the Solanki dynasty, from the 9th century. Muhammud of Ghazni attacked Somnath in Gujarat leading to the downfall of the Solankis. The conquest of Ala-ud-din Khilji king of Delhi in 1288 also influenced the conditions in Gujarat. The Sultans of Delhi had their sway over Gujarat from 1298-1392AD. Ahmad Shah I, the first independent Muslim ruler of Gujarat founded Ahmadabad in 1411. Then the Mughals ruled for about 2 centuries till the Marathas terminated their rule in the mid 18th century. It was during the18th century that Gujarat was divided among number of chiefs. From 1803-1827 the British set up their administration. The British East India company first head quarters in India was at Surat. It was later moved to Bombay. Finally on May1, 1960, the state of Gujarat was formed from the north and west portions of Bombay state, the remainder being renamed the state of Maharashtra.

The state of Gujarat has an area of 196,024 sq. km. and a population of 60.38 million. There are 25 districts, 170 blocks and 18539 villages. The State has population density of 258 per sq. km. (as against the national average of 312). The decadal growth rate of the state is 22.66% (against

21.54% for the country) and the population of the state continues to grow at a much faster rate than the national rate.

Health Profile

The Total Fertility Rate of the State is 2.3. The Infant Mortality Rate is 38 and Maternal Mortality Ratio is 122 (SRS 2010 - 2012) which are lower than the National average. The Sex Ratio in the State is 919 (as compared to 943 for the country). Comparative figures of major health and demographic indicators are as follows :

Demographic, Socio-economic and Health Profile as compared to India

Indicator	Gujarat	India
Total population (In crore) (Census 2011)	6.04	121.01
Decadal Growth (%) (Census 2011)	19.3	17.64
Infant Mortality Rate (SRS 2013)	38	42
Maternal Mortality Rate (SRS 2010-12)	122	178
Total Fertility Rate (SRS 2012)	2.3	2.4
Crude Birth Rate (SRS 2013)	21.1	21.6
Crude Death Rate (SRS 2013)	6.6	7.0

Indicator	Gujarat	India
Natural Growth Rate (SRS 2013)	14.4	14.5
Sex Ratio (Census 2011)	919	943
Child Sex Ratio (Census 2011)	890	919
Schedule Caste population (in crore) (Census 2011)	0.40	20.1
Schedule Tribe population (in crore) (Census 2011)	0.89	10.4
Total Literacy Rate (%) (Census 2011)	78.0	73.0
Male Literacy Rate (%) (Census 2011)	85.8	80.9
Female Literacy Rate (%) (Census 2011)	69.7	64.6

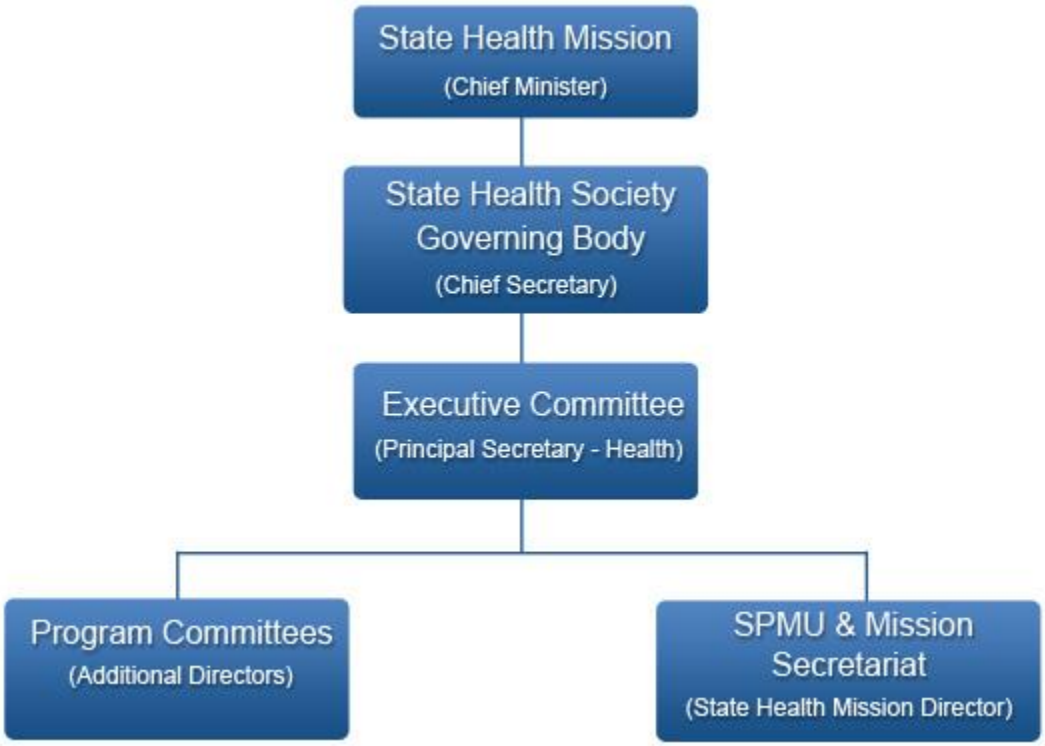
Health Infrastructure

Particulars	Required	In position	shortfall
Sub-centre	9156	7274	1882
Primary Health Centre	1433	1158	275
Community Health Centre	358	300	58
Health worker (Female)/ANM at Sub Centres & PHCs	8432	6431	2001
Health Worker (Male) at Sub Centres	7274	4874	2400

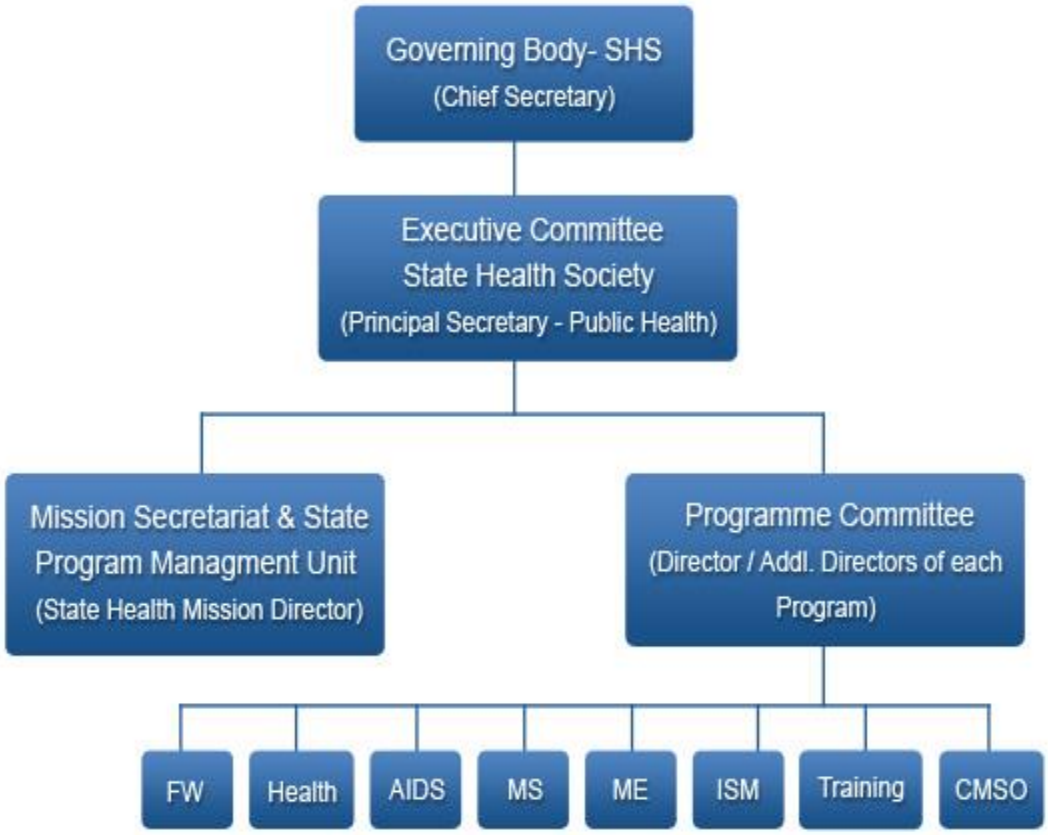
Particulars	Required	In position	shortfall
Health Assistant (Female)/LHV at PHCs	1158	875	283
Health Assistant (Male) at PHCs	1158	758	400
Doctor at PHCs	1158	778	380
Obstetricians & Gynecologists at CHCs	318	9	309
Pediatricians at CHCs	318	3	315
Total specialists at CHCs	1272	76	1196
Radiographers at CHCs	318	168	150
Pharmacist at PHCs & CHCs	1476	1428	48
Laboratory Technicians at PHCs & CHCs	1476	1365	111
Nursing Staff at PHCs & CHCs	3384	2705	679

Structure

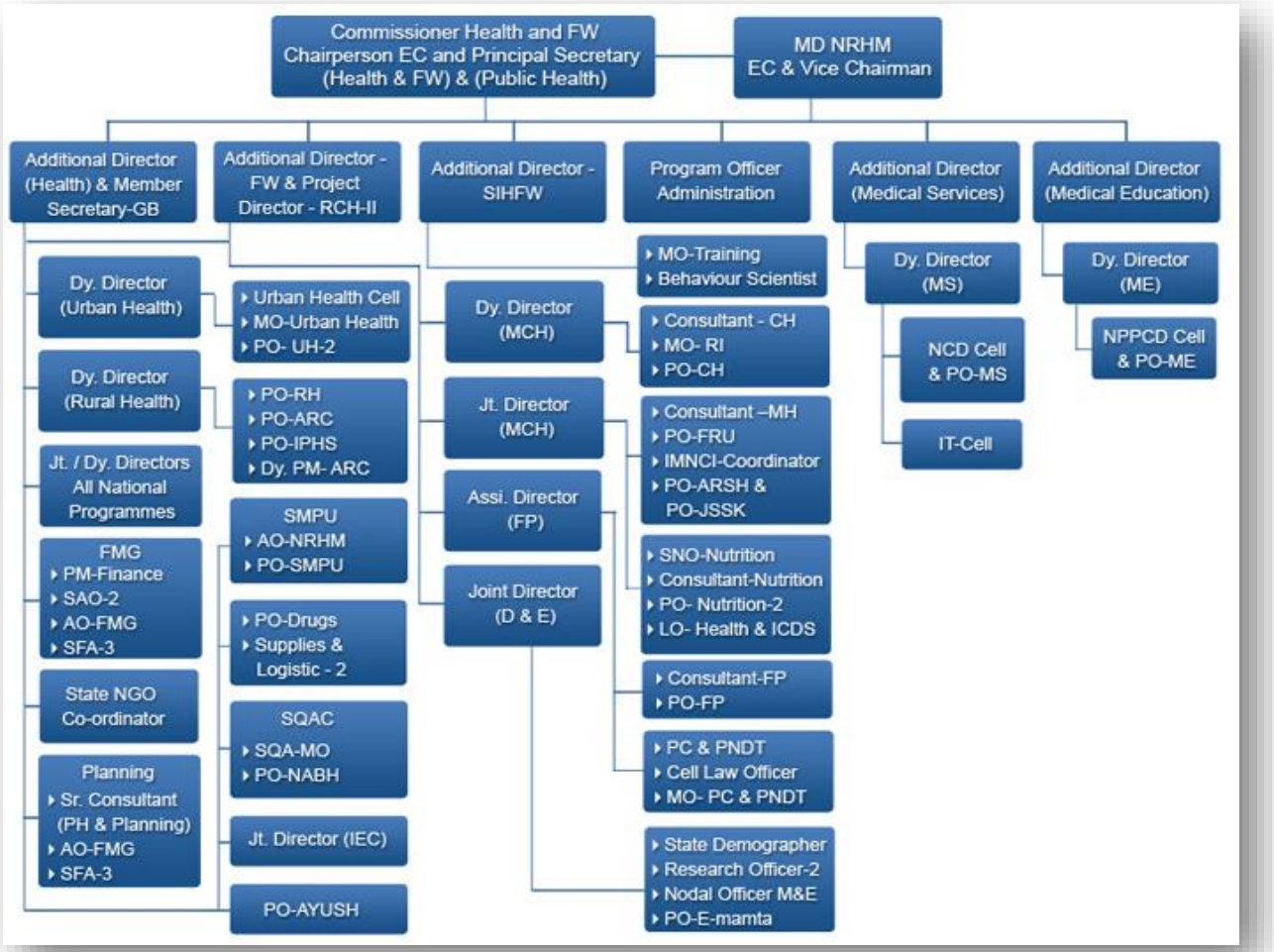
State Health Mission


State Health Mission
(Chief Minister)
State Health Society
Governing Body
(Chief Secretary)
Executive Committee
(Principal Secretary - Health)
Program Committees
(Additional Directors)
SPMU & Mission
Secretariat
(State Health Mission Director)

Integration of SHM, SHS & Programs



ORGANOGRAM


Commissioner Health and FW
Chairperson EC and Principal Secretary
(Health & FW) & (Public Health)
MD NRHM
EC & Vice Chairman
Additional Director (Health) & Member Secretary-GB
Additional Director - FW & Project Director - RCH-II
Additional Director - SIHFW
Program Officer Administration
Additional Director (Medical Services)
Additional Director (Medical Education)
Dy. Director (Urban Health)
Urban Health Cell
MO-Urban Health
PO- UH-2
Dy. Director (Rural Health)
PO-RH
PO-ARC
PO-IPHS
Dy. PM- ARC
Jt. / Dy. Directors All National Programmes
FMG
PM-Finance
SAO-2
AO-FMG
SFA-3
State NGO Co-ordinator
Planning
Sr. Consultant (PH & Planning)
AO-FMG
SFA-3
SMPU
AO-NRHM
PO-SMPU
PO-Drugs
Supplies & Logistic - 2
SQAC
SQA-MO
PO-NABH
Jt. Director (IEC)
PO-AYUSH
Dy. Director (MCH)
Jt. Director (MCH)
Assi. Director (FP)
Joint Director (D & E)
MO-Training
Behaviour Scientist
Consultant - CH
MO- RI
PO-CH
Consultant –MH
PO-FRU
IMNCI-Coordinator
PO-ARSH & PO-JSSK
SNO-Nutrition
Consultant-Nutrition
PO- Nutrition-2
LO- Health & ICDS
Consultant-FP
PO-FP
PC & PNDT
Cell Law Officer
MO- PC & PNDT
State Demographer
Research Officer-2
Nodal Officer M&E
PO-E-mamta
Dy. Director (MS)
NCD Cell & PO-MS
IT-Cell
Dy. Director (ME)
NPPCD Cell & PO-ME

Health Pyramid of Gujarat

India embarked on its journey to health after independence with a nation-wide network of efficient and effective health services based on what would later be called as the primary health care approach. Services were organised in a bottom up fashion, with a strong rural focus to attend to the needs of the underserved majority.

The primary tier has three types of health care institutions namely, a Sub-Centre (SC) for a population of 3000 to 5000, a Primary Health Centre (PHC) for 20,000 to 30,000 population and a Community Health Centre (CHC) for every 1,00,000 population.

The district hospitals function as the secondary tier of care for the rural population. Tertiary health care is provided by highly specialised hospitals and health care institutions that are well equipped with sophisticated diagnostic and investigative facilities.

The health set-up in Gujarat is thus designed in a three-tier fashion:

Health Services

The Gujarat health system is organized on the principle of a dynamic concentration of medical facilities round about the teaching hospitals having all the medical specialties and facilities for treating serious patients referred from lower tier hospitals and the radical downward flow of active services from the teaching hospitals to peripheral levels through mobile teams of specialists, are the essence

of a well organised regionalisation. " (Study Group on Hospitals, S.N. Chatterjee, 1975).

Medical relief is provided to the rural and urban people through 56 District and Taluka General Hospitals, 4 Mental Hospitals, 3 Specialty Hospitals (2 Ophthalmic Hospitals and 1 Infectious Diseases) and 60 Dispensaries. A total of 6,648 beds are available in these hospitals.

Class 1 District Hospitals are equipped with Operation Theatre, Intensive and Cardiac Care Units, X-Ray, Ultrasound and Laboratory facilities, E.C.G. and Blood Transfusion services. Sub-district (Taluka) Hospitals have limited specialties like Surgery, Obstetrics and Gynaecology, Paediatrics and Dentistry. Ambulance services are available round the - clock in both the categories of hospitals.

Services Provided At District Hospitals

Clinical	**Health Programmes**
General Medicine	RCH-II (Reproductive and Child Health)
General Surgery	RNTCP (Tuberculosis Control Program)
Ear, Nose, Throat	Malaria Control

Gynecology & obstetrics	Blindness Control
Routine and high risk obstetric care	Polio Eradication
Pediatrics and Neonatal services	Immunization
Orthopedics	National AIDS Control Programme
Ophthalmology	Family Planning I FRU
Dermatology	Thalassemia detection Programme
Dental Sciences	District Mental Health Programme
Imaging Services	Specialty services during School Health Programme
Physiotherapy Services	District Disability Rehabilitation Center
Dialysis Services	

Rural Health Structure

Sub Centers

The Grass Root Level Health Facility

Manpower

- One Auxiliary Nurse Midwife.
- One Male Health Worker.
- One Lady Health Worker from the PHC - supervision of six Sub Centres.

Function

Interpersonal and Behavior Change Communication related to ...

- Maternal and Child Health
- Nutrition
- Diarrhoea Control
- Family Welfare
- Immunization
- Control of Communicable Diseases Programme

Primary Health Centers

The Primary Healthcare Facility

Manpower

- One Medical Officer
- Fourteen paramedical and other staff

Function

- Out patients services
- In door patients - 4 - 6 beds
- Curative, preventive, promotional and Family Welfare Services

Community Health Centers

First Referral Unit with Specialized services

Manpower

- Four specialist doctors in the areas of Medicine, Surgery, Paediatrics and Gynaec- Obst.
- Nursing and Para Medical staff.

Function

- Out patients services
- In door patients; 30 beds
- Operation Theatre
- Labour Room
- X-ray Machine
- Pathological Laboratory
- Standby Generator

Project report

A STUDY OF NRC AND PROFILE OF MALNURISHED CHILDREN

Chapter 1

Introduction-

status of child undernutrition in india undernutrition is one of the most concerning health and development issues in india as in other parts of the world. undernutrition encompasses stunting (chronic malnutrition), wasting (acute malnutrition) and deficiencies of micronutrients (essential vitamins and minerals). the high mortality and disease burden resulting from undernutrition call for urgent implementation of interventions to reduce their occurrence and consequences and this would include determined action on the social determinents of undernutrition. nFHS 3 shows that the proportion of children who are stunted or underweight increases rapidly with the child's age from birth to age 20-23 months; peaking at age 20 months. even during the first six months of life, when most infants are breastfed, 20-30 percent of children are underweight. it is notable that by age 18-23 months, when many children are being weaned from breast milk, 30 percent of children are severely stunted and one-fifth are severely underweight.the levels of child undernutrition is unacceptably high in almost all states, even though some states like Goa, Kerala, Manipur, Mizoram, Punjab and Sikkim have lower levels. addressing under of

mortality and morbidity and is an underlying factor in almost one-third to half of nutrition in children under five years under nutrition is associated with high rates all children under five years who die each year of preventable causes.

Strong evidence exists on synergism between under nutrition and child mortality due to common childhood illnesses including diarrhoea, acute respiratory infections, malaria and measles.

according to the national survey (nFHs-3, 2005-06)

43 percent children under age of five years are underweight (low weight for age).

48 percent children under five are stunted (low height for age).

- 20 percent children under five years of age are wasted (low weight for height); over 6 per cent of these children are severely wasted (<-3SD). Since 'wasting' denotes acute malnutrition, these children are said to have Severe Acute Malnutrition or SAM.
- Addition nearly 70 percent children (6-59 months) have anemia. of these 26 percent are have mild anemia,
- 40 percent have moderate anemia and 3 percent have severe anemia.
- 22 percent newborns have low birth weight (below 2.5 Kgs).

Programmatically, it is helpful to categorise children with SAM into ‘complicated and uncomplicated’ cases based on clinical criteria as:

Facility/hospital-based care for children with SAM and medical complications. Home/community-based care for children with SAM but without medical complications.

Children with SAM, when managed in specialized units with skilled manpower and adequate resources for nutrition rehabilitation have very high levels of survival. However with an estimated 8 million children with severe acute malnutrition, addressing the problem through facility based approach alone is unfeasible. there is ample evidence suggesting that large numbers of children with SAM that do not have medical complications (85–90% of all

SAM children)1 can be treated in their communities without being admitted to a health facility. Besides, children managed at specialized units located at health facilities also need to be followed up at their households and communities after being discharged for continued care and support; and to prevent the relapse.

Severe Acute Malnutrition to facility based interventions should be put in place simultaneously. in other words, effective management of SAM must be based

on the basic principle of “Continuum of Care” - from the home and community, to the health center/health facility and back again. it must finally be recognized that although treatment is urgently needed for those who are severely undernourished, preventing child under nutrition is critical. nrCs will reduce child mortality but will not improve the general nutritional status of children in the community. From the perspective of health sector, the most important intervention is promotion of appropriate infant and young child feeding and nutrition practices and related maternal undernutrition. understanding malnutrition

What is malnutrition?

Malnutrition is a general term. it most often refers to undernutrition resulting from inadequate consumption, poor absorption or excessive loss of nutrients, but the term can also encompasses over-nutrition, resulting from excessive intake of specific nutrients. in subsequent text, we would use the words malnutrition and undernutrition interchangeably. An individual will experience malnutrition if the appropriate amount of, or quality of nutrients comprising for a healthy diet are not consumed for an extended period of time.

How can undernutrition be measured?

in children, undernutrition is synonymous with growth failure - undernourished children are shorter and lighter than they should be for their age/height. to get a measure of malnutrition in a population, young children are weighed and/or their height is measured and the results compared to those of a 'reference population' known to have grown well. Measuring weight and height is the most common way of assessing malnutrition in a given population. Such use of measurements of dimensions of the human body is known as anthropometry.

What are the types of under nutrition?

the three indices - weight-for-age, height/length-forage, weight-for- height/length are used to identify three nutrition conditions: underweight, stunting and wasting, respectively. each of the three nutrition indicators is expressed in standard deviation units (Z-scores) from the median of the reference population based on which under nutrition may be further classified as moderate or severe.

Underweight: underweight, based on weight for-age, is a composite measure of stunting and wasting and is recommended as the indicator to assess changes in the magnitude of malnutrition over time. this condition can result from either chronic or acute malnutrition, or both. Underweight is often used as a basic indicator of the status of a population’s health as weight is easy to

measure. evidence has shown that the mortality risk of children who are even mildly underweight is increased, and severely underweight children are at even greater.

An underweight child has a weight-for-age Z-score that is at least two standard deviations (2SD) below the median in the World Health organization Child Growth Standards.

Stunting: Failure to achieve expected height/length as compared to healthy, well-nourished children of the same age is a sign of stunting. Stunting is an indicator of linear growth retardation that results from failure to receive adequate nutrition over a long period or recurrent infections. it may be exacerbated by recurrent and chronic illness. it is an indicator of past growth failure. it is associated with a number of long-term factors including chronic insufficient nutrient intake, frequent infection, sustained inappropriate feeding practices and poverty. Stunting often results in delayed psycho-social and cognitive development and poor school performance. this in turn affects economic productivity at national level.

A stunted child has a height-for-age Z-score that is at least two standard deviations (-2SD) below the median for the Who Child Growth Standards.

Wasting: Wasting represents a recent failure to receive adequate nutrition and may be affected by recent episodes of diarrhea and other acute illnesses. Wasting indicates current or acute Source: UNICEF/India-2006/Anita Khemka Facility Based Management of Children with Severe Acute Malnutrition operational Guidelines 4malnutrition resulting from failure to gain weight or actual weight loss. Causes include inadequate food intake, incorrect feeding practices, disease, and infection or, more frequently, a combination of these factors. Wasting in individual children and population groups can change rapidly and shows marked seasonal patterns associated with changes in food availability or disease prevalence to which it is very sensitive .A wasted child has a weight-for-height Z-score that is at least two standard deviations (-2SD) below the median for the Who Child Growth Standards. severe acute Malnutrition (saM) Severe acute malnutrition is defined by very low weight-for-height/length (Z- score below -3SD of the median WHo child growth standards), a mid-upper arm circumference <115 mm, or by the presence of nutritional oedema.

SAM increases significantly the risk of death in children under five years of age. it can be an indirect cause of child death by increasing the case fatality rate in children suffering from common illnesses such as diarrhea and

pneumonia. Children who are severely wasted are 9 times more likely to die than well-nourished children.

using the new WHo Child Growth Standards in developing country situations results in a 2–4 times increase in the number of infants and children falling below -3 SD weight for height/length compared to using the former CHS reference. using the new standards increase the levels of malnourished children; however it also leads to earlier detection of malnutrition and in a less severe state; thereby providing an opportunity for faster recovery and lower case fatality rates. 2 Mid- upper arm circumference impact of under nutrition Children suffering from under nutrition begin their lives with a significant disadvantage.

Nutrition Rehabilitation Center (NRC) is a unit in a health facility where children with Severe Acute Malnutrition (SAM) are admitted and managed.

Children are admitted as per the defined admission criteria and provided with medical and nutritional therapeutic care. once discharged from the nrC, the child continues to be in the nutrition rehabilitation program till she/he attains the defined discharge criteria from the program.

in addition to curative care, special focus is given on timely, adequate and appropriate feeding for children; and on improving the skills of mothers and caregivers on complete age appropriate caring and feeding practices. In addition, efforts are made to build the capacity of mothers/caregivers through counseling and support to identify the nutrition and health problems in their child.

In district Amreli 14 MCTS is found but only 7 is functioning and three is officially closed and rest four do not have enough budget to function it . and these CMTC and NRC facing the problem of manpower. In NRC pediatrician is not present.

Chapter-2

PROBLEM STATEMENT

Under nutrition is one of the most concerning health and development issues in India as in other parts of the world. under nutrition encompasses stunting(chronic malnutrition), wasting (acute malnutrition)and deficiencies of micronutrients (essential vitamins and minerals). the high mortality and disease burden resulting from under nutrition call for urgent implementation of interventions to reduce their occurrence and consequences and this would include determined action on the social determinants of under nutrition.

NFHS 3 shows that the proportion of children who are stunted or underweight increases rapidly with the child's age from birth to age 20-23 months; peaking at age 20 months. even during the first six months of life, when most infants are breastfed, 20-30 percent of children are underweight. it is notable that by age 18-23 months, when many children are being weaned from breast milk, 30 percent of children are severely stunted and one-fifth are severely underweight. the levels of child under nutrition is unacceptably high in almost all states, even though some states like Goa, Kerala, Manipur, Mizoram, Punjab and Sikkim have lower levels.

According to the national survey (nFHs-3, 2005-06)

- 43 percent children under age of five years are underweight (low weight for age).
- 48 percent children under five are stunted (low height for age).
- 20 percent children under five years of age are wasted (low weight for height); over 6 per cent of these
- children are severely wasted (<-3SD). Since ‘wasting’ denotes acute malnutrition, these children are said to have Severe Acute Malnutrition or SAM

RATIONALE

- The study on NRC Gujarat in district is very less only one or two.
- Functioning of NRC in district.
- Demographic profile of the children
- Focus on more vulnerable groups of malnourished child

Chapter-3

REVIEW OF LITERATURES

A research article titled A Study to Evaluate the Effect of Nutritional Intervention Measures on Admitted Children in Selected Nutrition Rehabilitation Centers of Indore and Ujjain Divisions of the State of Madhya Pradesh (India).Background: The state of Madhya Pradesh has 1.3 million severely malnourished children. Nutrition rehabilitation centers (NRCs) were started in the state to control severe malnutrition and decrease the prevalence of severe malnourished children to less than 1% among children aged 1–5 years. The study group consisted of 48 boys and 52 girls; 60% were between 13 and 36 months of age. 93 children were analyzed for anthropometric indicators following a dropout rate of 7%. A statistically significant difference was obtained between the weight of children at admission and discharge (t=14.552, P<0.001); difference of mid upper arm circumference (MUAC) at admission and discharge was statistically significant (t=9.548, P<0.001). The average weight gain during the stay at the centers was 9.25 ± 5.89 g/kg/day. Though the number of severe malnourished children decreased from 85 to 43 following the stay at NRCs (χ^2 = 44.195, P<0.001); 48.78% of the children lost weight within 15 days of discharge from the NRCs. Dropout rates of 9.89%, 23.07%, 42.65%, and 61.76% for the study group were obtained during the follow-up period of 6 months for the four follow-up visits conducted 15 days, 1, 3, and 6 months after discharge. The mothers of the children lacked adequate information on health issues and composition and preparation of

therapeutic diets at the centers. RESULT; The NRCs were effective in improving the condition of admitted children, but the effects were not sustained following discharge due to high drop-out rate and lack of adequate parental awareness. There is an urgent need to link these centers with community-based models for follow-up and improve health education measures to maintain the gains achieved.

2. A research article titled Effect of Nutritional Intervention in Undernourished Children at Nutritional Rehabilitation Centre Ongole Andhra Pradesh. Malnutrition is the major public health problem in many developing countries such as India. Effects of Malnutrition is a Pandora's Box of Illnesses including Stunted growth and Development of children in their prime years which causes Wasting, Vitamin Deficiency Diseases, increases the risk of infections, Convulsions, Cognitive Deficits. Malnourishment increases School dropout rates and Performance, increases Morbidity and Mortality and also increases Socio-economic Burden on families, Society, Nation and strains existing Health Care System and Economy. Hence Malnourishment Prevention and Rehabilitation services in the form of NRC Care are instituted by the Government of India. According to NFHS3 about 43% of children are suffering with underweight and 6.4% of children among them had severe acute malnutrition (SAM) in India. To support the growth and development of undernourished children, Government of India started Nutritional Rehabilitation Centers (NRC) in the year 2011. NRCs provide tertiary level of prevention measures such as disability limitation and rehabilitation to prevent further

complications. NRC is a unit of health facility, where children with severe acute malnutrition are admitted and managed till they are rehabilitated completely. Government of India established 896 NRCs throughout India and among them 30 NRCs are in Andhra Pradesh included a NRC which is functioning at Ongole in Prakasam District Based on this background the aim of the present study is to assess the effectiveness of nutritional intervention measures on malnourished children admitted at Nutritional Rehabilitation Centre, Ongole. In the current study, Table no.1 shows that, maximum number of under nourished children belongs to 49-60 months of age group (23.6%), followed by 37-48 months (21.8%) and 6-12 months age groups (20.9%). Males are more in number when compared to female children. Children belong to BC caste and SC caste are more in number when compared to children belong to ST caste and OC caste. Average number of days of stay at NRC for under nourished children is 12.28 ± 4.27 days. During their Stay al at NRC children gained weight on an average of 960 ± 500 grams. Mean weight gain per day of under nourished children at NRC is 80 ± 40 grams. Table no.2 shows that, mean of Z score of weight for age at the time of admission is -3.29 ± 1.24. It is improved to -2.50 ± 1.24 at the time of discharge. Average Z score of weight for height is improved from -3.16 ± 0.60 to -1.90 ± 0.70. There is no significant improvement in Z score of height for age. Body Mass index is improved from 12.32 ± 0.74 to 13.67 ± 0.99. Z score of BMI for age is also

improved from -3.00 ± 0.73 to -1.71± 0.83. Mid upper arm circumference (MUAC) improved by 0.56 cm from 12.31 to 12.87 cm. MUAC Z score is also improved from -2.91 to -2.37. Standard error of difference between two means of all anthropometric indicators is calculated. Statistical significance found for all the anthropometric indicators except Height for age.

3.A research article titled Role of NRCs (Nutrition Rehabilitation centre) in preventing malnutrition related deaths among under 5 children in Odisha.

Introduction;Acute malnutrition or wasting is a failure to gain weight or actual weight loss caused by inadequate food intake, incorrect feeding practices, infections or a combination of these. Considered both a medical and social disorder, **Severe Acute Malnutrition (SAM)** is defined by very low weight for height (Z-score below -3 SD of the median WHO child growth standards), or a mid-upper arm circumference <115 mm/<11.5cm, or by the presence of bipedal nutritional edema.Case fatality rate of SAM children with complications can be reduced by 90% through standard case management protocol like specialized treatment and prevention interventions at **NRCs (Nutritional Rehabilitation Centres).** Under national health programme in India, SAM cases are divided into two categories – those with medical complications such as *diarrhea*, *fever, and pneumonia*, needing facility based care and those without complications who can be managed in the community. Not more than 10% of SAM children require facility based care, after which follow up in the community is required to prevent relapse. The perception of severe under-nutrition as an abnormal condition can only be changed through

intense nutrition education of the community, regular weighing of children and discussion of weights with the parents, and through proper counseling at the NRCs. NRC activities also needs to be more interactive and engage mothers. SAM children with complications mostly come from remote and vulnerable tribal pockets. Pressure for livelihood generation and household management do not allow mothers to get admitted in NRCs along with their children. Hence, wage loss compensation for mothers admitted in NRC should be increased to the current minimum wage, along with increased attention to improve nutritional status of tribal women through life cycle approach. Innovative strategies like working with self-help groups (SHGs), and the National Rural Livelihoods Mission (NRLM) groups can also be adopted.NRCs will reduce child mortality but will not improve the general nutritional status of children in the community. Therefore preventive and promotive efforts must be continued. Strengthening of community based mechanisms for identification, prevention and management of severe acute malnutrition is a must, in the absence of which NRCs will not be effective. Facility based approach may prevent some under *5 deaths*, but will not be useful in addressing this problem in the community

Chapter-4

SPECIFIC OBJECTIVES

- To assess the functioning of NRC state of Gujarat in district Amreli
- To assess the socioeconomic and demographic profile of malnourished children who were admitted in NRC
- To assess the effect of NRC on malnourished children at the time of admission and and the time of discharge

METHODOLOGY

Study Design:-Cross-sectional study

Study Period:-three Month

Study area & group: The study has been conducted in amreli NRC & group was malnourished children admitted in NRC

Tools and techniques:-The data collection technique would be the secondary data that was made available by the organization format of the NRC .

Data Collection: - we have discussed the details with the staff members and parents of children.

Plan of data analysis:-The collected data will be compiled and analysed using various functions in Microsoft Office Excel software. Bar Charts and Pie Graphs will be used to represent the findings of this study, as and when required.

LIMITATIONS

1. Poor bed occupancy rate (just over 50%) – this is due to poor detection of SAM in the field due to low levels of use of Mid-Upper Arm Circumference (MUAC tape) and poor detection of SAM with complications

2. Due to lack and absence of staff problem in collecting data

3. Data is less due to poor admission

4. Defaulter rate is high

Chapter-5

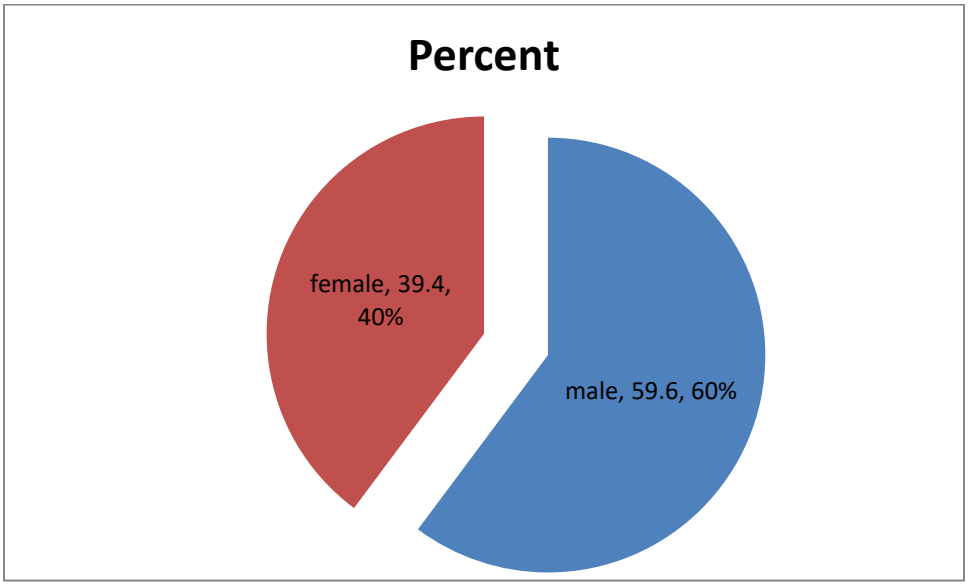
FINDINGS

1.Age

	N	Minimum	Maximum	Mean
AGE	94	9	60	26.24

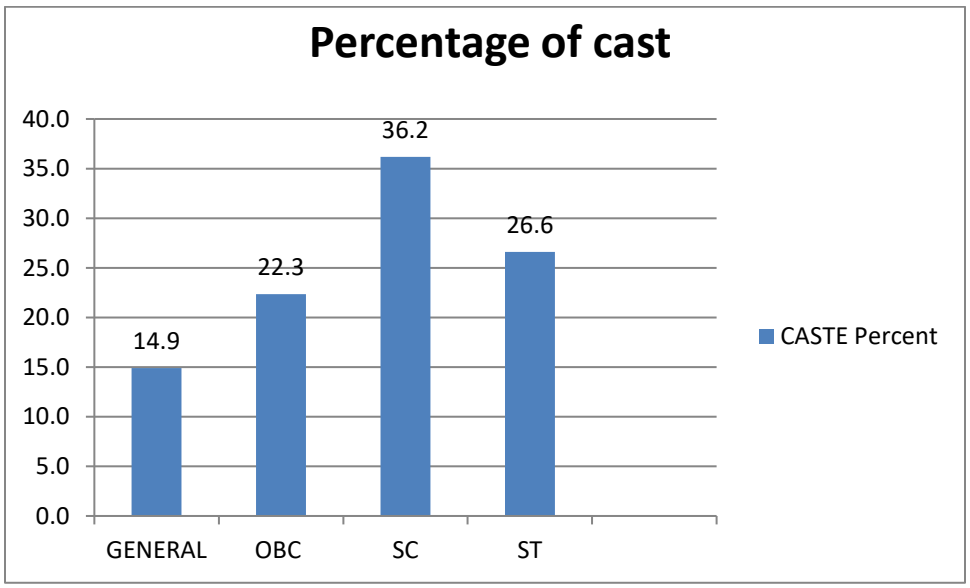
- In collected data out of 94 children minimum age is 9 month and maximum is 60 month and average is 26.
- 50% of children is age group of 6to 20 month 28% children is group of 21to40 month and 22 % from 41 to60 month group.

2.GENDER



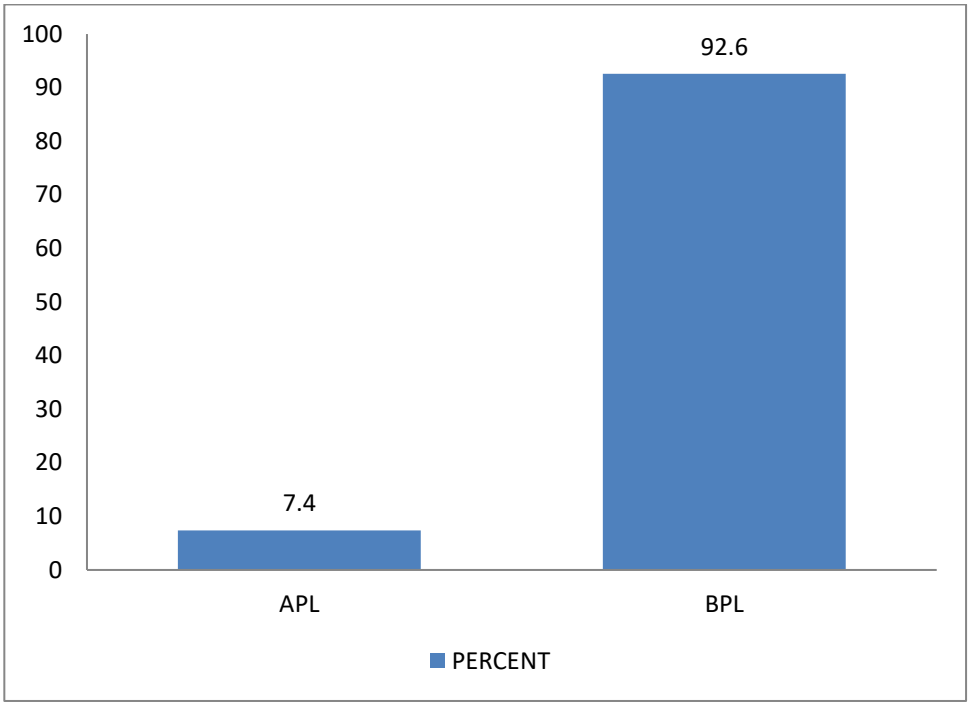
60 % of admitted malnourished children in NRC were MALE and 40 % were female

3.**CASTE OF CHILDREN**



General category malnourished children were 14.9 and OBC was

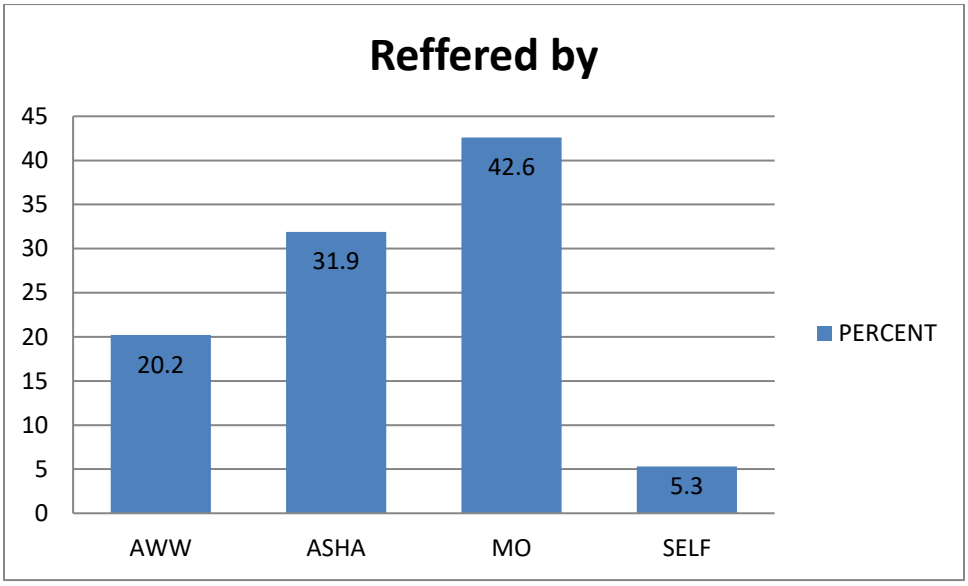
5. INCOME



Malnourished children who were admitted in NRC 92.6 % was BPL and 7.4 % was APL

6. REFERRED BY

- Most of them referred by medical officer 42.6



Section 2nd- Effect of NRC on admitted children

7. weight , MUAC, z score

	At the time of admission			At the time of discharge		
	min	max	avg	min	max	avg
weight	4.1	12.5	7.76	4	14	8
MUAC	8.5	12.5	11.6	9	13	11.89

	At the time of admission			At the time of discharge		
zscore	1	2	3	1	2	3
percentage	100	-	-	27	70	3

- Admitted children were at the time of admission average weight was 7.76 but at the time of discharge was 8 means it increased 0.24 gm.
- Min weight at the time of admission was 4.1 but at the time of discharge it is 4 and max weight at the time of admission is 12.5kg but at the time of discharge it is 14kg

- All the above data is showing that effect of NRC on weight is good because weight is increasing
- After the analyze the data MUAC is also increased:-

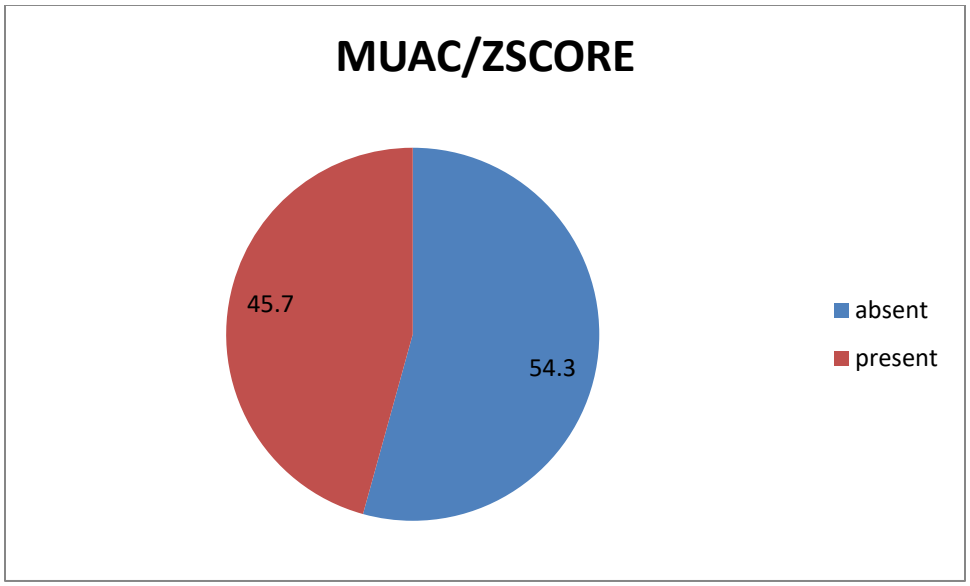
  -at the time of admission average is 11.6mm but the time of discharge its 11.89 which is increased and showing that after admission MUAC mm increased 0.29mm

  -min and max is also increased at the time of admission 8.5mm and on discharge time it was 9mm

  -max MUAC is 12.5 at the admission time and 13 at the discharge time

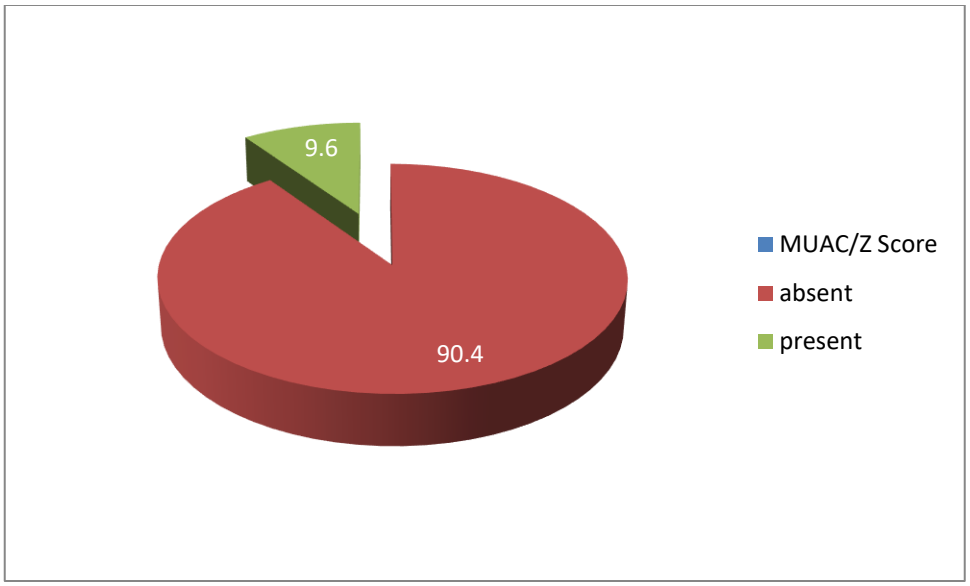
- **Z score** in given data set at the time of admission100% are equal or more then 3sd but after admission z score decreased up to 1sd which is good indicator
- **27%** is under 1sd and 70 % is under 2sd and 3% is under 3sd
- **3%** is sever malnourished

8. presence of both(MUAC<11.5AND Zscore<-3sd)



- At the time of admission 45.7 were had MUAC less than 11.5 and z score more then 3sd

- At the time of discharge 90% of children did not have these two values



But at the time of admission of both value was 45.7 % but at the time of discharge its decreased and it was 9.6 % only.

Chapter-6

RESULT

- **On** the basis of analyzed data male child is coming more than female child
- **SC** cast children are more than any of other cast category; SC 36.2% , ST-26.6%, OBC-22.3% , GENERAL is 14.9%
- **BPL** (92.6%) **category children are more than** APL(7.4) category children
- **Eff**ect of NRC on admitted children is good because their weight is increasing from7.76 kg to 8 kg
- MUAC is also increasing from 11.6mm to 11.89mm which is approx 12mm and its good
- Z score is also improved from -3sd to -1sd

- After analyzing the data only 3% re under the -3sd which is high at the time of admission which is 100%(from100%to 3%)
- Percentage of children who had MUAC< 11.5 and z score more then -3sdwas 45.7% but it decreased up to 9.6%

Chapter -7

RECOMMENDATIONS

- some children after admitting in the NRC they were had both (MUAC <11.5and z score >3SD) value which should be not present
- they can improve the diet quality of the children
- MO can refer more patient in NRC which is only 1ptient in November month and very few 1 or 2 in dec Jan Feb.

Chapter -8

Conclusion

After analyzing the data conclusion is effect of NRC is on admitted children is good. But they can improve further. BPL patient are more malnourished. Male child is more coming than female they can focus on female child.

We can focus on more area from patients are not coming.

Mostly patients are lower socio economic group.

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