

A Study on Determinants of Malnutrition in India

► Presented by:

Dr Monika Singh

► Guided by :

Dr Piyusha Majumdar

Assistant Professor

PRESENTATION OUTLINE

- ▶ INTRODUCTION
- ▶ REVIEW OF LITERATURE
- ▶ METHODOLOGY
- ▶ RESULTS
- ▶ DISCUSSION
- ▶ LIMITATIONS
- ▶ CONCLUSION
- ▶ REFERENCES

INTRODUCTION

- ▶ Lack of diversity in food is a particularly severe problem among poor populations in the developing world, where diets are based predominantly on starchy staples and often include few or no animal products and only seasonal fruits and vegetables. For vulnerable infants and young children, the problem is particularly critical because they need energy- and nutrient-dense foods to grow and develop both physically and mentally and to live a healthy life.
- ▶ Maternal nutritional status is a proximate determinant of a child's nutritional status and should be considered in programmes aiming at improving child health. Birth weight has a strong negative effect on subsequent weight gain.
- ▶ Families with greater incomes and resources tend to have more diverse diets, but they are also likely to have better access to health care, and better environmental conditions. Children in wealthier households are better off and grow better for a number of reasons, but improved nutrient adequacy may be one important way in which household wealth and resources translate into better outcomes for children.

REVIEW OF LITERATURE

Literatures with year	Conclusion
1. Mitra A, Et al (1985)	It reported that the basic causes of undernutrition or malnutrition in developing countries are poverty, poor hygienic conditions and little access to preventive health care .
2. Khongsdier R, Et al (2002)	Study on Khasi Children of Meghalaya described that the girls begin their adolescent growth spurt at the age of 10 and gain the maximum growth velocity of 3.25 cm at 12 years of age.
3. Gautam S, Et al (2007)	It provided comparative information with the conclusion that people in the upper socio- economic status are more concerned for their children nutrition at all age levels along the course of maturity.
4. Dabbs GR, Et al (2009)	Anthropometric measurements like stature, sitting height, weight and indices based on these measurements like body mass index (BMI) have been extensively used to define the extent of malnutrition.

RATIONALE OF THE STUDY

Nutritional deficiencies contribute to high rates of disability, illness and death. They also affect the long-term physical growth and development of children and may lead to high levels of chronic illness and disability in adult life. In addition, high rates of malnutrition jeopardize future economic growth by reducing the intellectual and physical potential of the entire population. Hence, it's relevant to examine the prevalence & pattern of malnutrition in India.

METHODOLOGY

► Type of Research

It is a retrospective study .

► Objectives

1. To examine the burden on nutritional rehabilitation centers
2. To see the association of malnutrition with socio demographic characteristics
3. To evaluate the factors associated with malnutrition significantly
4. To recommend measures for public health officials & policy makers to decrease the prevalence of malnutrition.

► Data Sources

Data collected by Ministry of Health & Family Welfare and National Family & Health Survey-IV was utilized for study

.

METHODOLOGY

► Dependent Variables

Malnutrition (Stunted, Wasted, Underweight)

► Independent Variables

Place of residence, Mother's Education, Wealth Index, Working Status, Number of children, Husband's multiple sexual partner, Child's birth weight, Pre-natal visits, Type of toilet facility, Source of drinking water & Place of delivery

► Data Analysis

Binary Logistic Regression for examining the effects of various determinants of malnutrition.

► Software Support

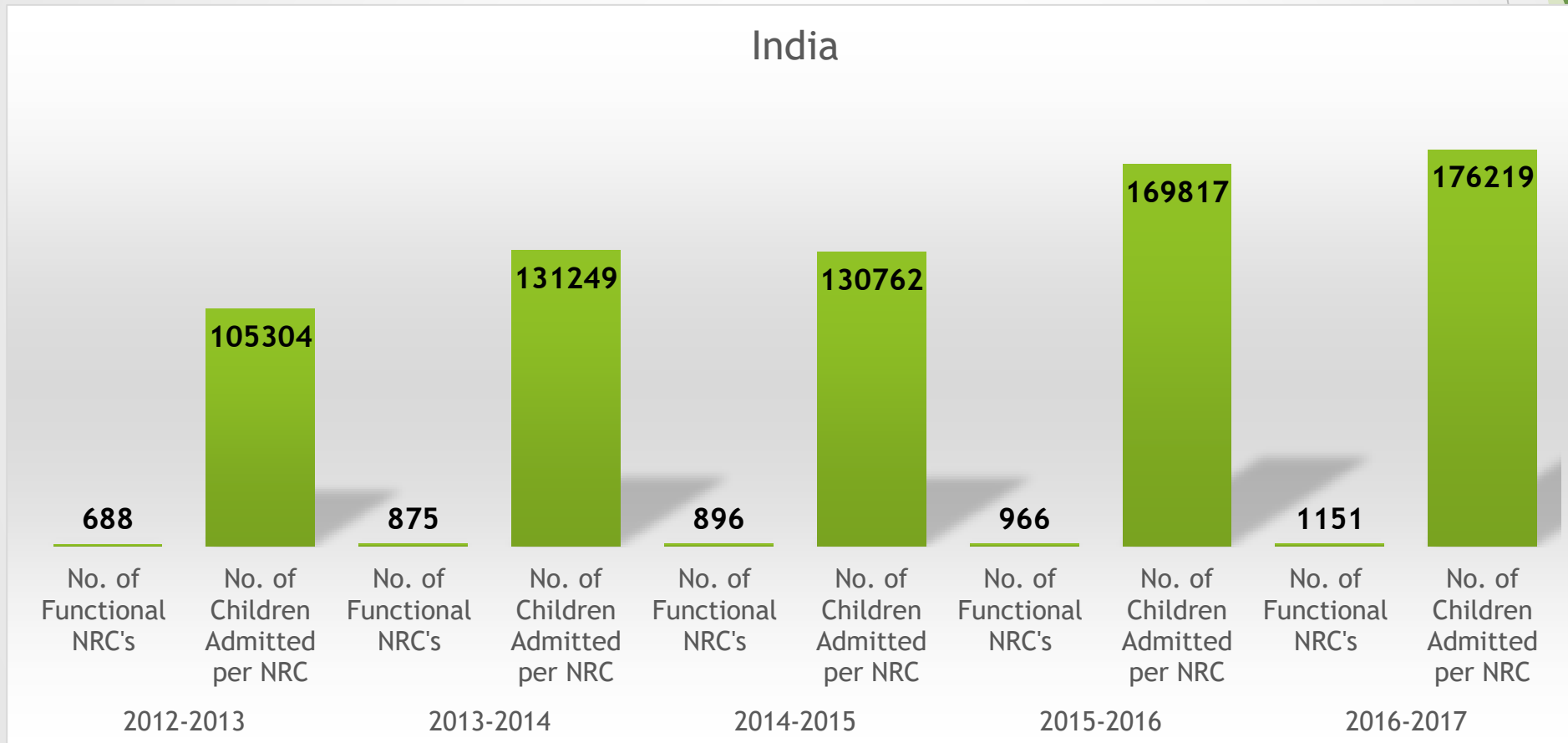
Entire Analysis was carried out using STATA 14 & MS Excel 2016 version.

► Ethical Considerations

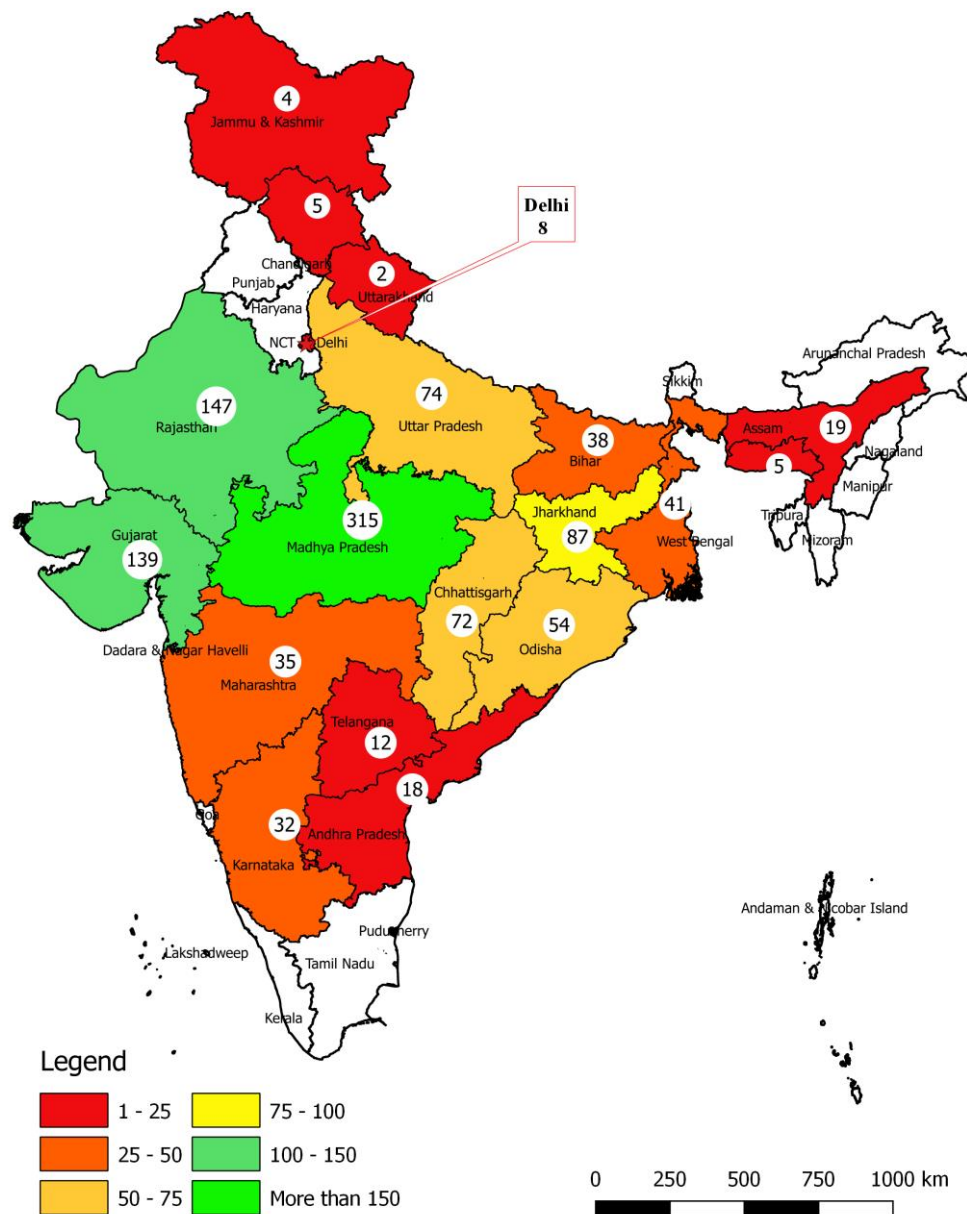
Data utilized for this study is widely available in public domain and therefore doesn't require any IRB or ethical permission

RESULTS

Graph representing burden on NRCs



State-wise NRC Map



Prevalence of various determinants associated with Nutritional Status of Children

Characteristics	Nutritional Status of Child	
	Stunted/Wasted/Underweight	
	Male	Female
No. of Children		
Single child	45.4	43.7
2 children	46.9	47.3
3 children	51.1	53.0
4 children	55.0	56.2
5 children	59.0	60.3
More than 5 children	58.1	59.3
Husband's Multiple Sexual Partner		
Doesn't have multiple sexual partner	49.4	49.9
Has multiple sexual partner	30.4	91.1

Place of Residence		
Urban	42.3	42.2
Rural	52.0	53.0
Wealth Index		
Poor	57.8	58.9
Middle income	47.7	48.8
Rich	38.2	37.4
Child's Birth Weight		
Low	53.9	54.9
Normal	46.3	46.6
High	39.6	37.2
Did not weigh	56.2	56.6

Prenatal Visits		
Did not visit any doctor/ ASHA/etc.	58.1	59.2
Visited someone	48.7	48.1
Type of Toilet Facility		
Basic	42.6	42.7
Poor	56.6	57.3
Advance	43.0	39.8
Water Source		
Poor	48.0	48.2
Adequate	51.0	51.8
Advance	45.8	46.0

Mother's BMI		
Low	59.6	59.6
Normal	49.4	49.4
High	36.4	36.4
Mother's Education		
Mother Non literate (including Upto 5 years education)	57.4	58.2
6-8 years	49.8	50.6
9-10 years	42.7	44.3
11-12 years	39.5	39.2
More than 12 years	32.9	30.9
Place of Delivery		
Home	56.4	57.4
Institutional	47.4	47.8

Odds Ratio of various determinants associated with Nutritional status of children

Children's Nutritional Status	Odds Ratio	Confidence Interval
No. of Children Ever Born		
Single child		
2 children	1.12***	(1.22,1.03)
3 children	1.16***	(1.3,1.05)
4 children	1.09	(1.26,0.94)
5 children	1.45***	(1.78,1.18)
More than 5 children	1.29**	(1.59,1.05)
Husband's Multiple Sexual Partner		
Doesn't have multiple sexual partner		
Has multiple sexual partner	1.34	(2.98,0.6)

Place of Residence		
Urban		
Rural	0.92*	(1,0.84)
Wealth Index		
Poor		
Middle income	0.76***	(0.84,0.69)
Rich	0.68***	(0.76,0.6)
Child's Birth Weight		
Low		
Normal	0.57***	(0.64,0.52)
High	0.37***	(0.51,0.26)

Prenatal Visits		
Did not visit any doctor/ ASHA/etc.		
Visited someone	0.98	(1.09,0.88)
Type of Toilet Facility		
Basic		
Poor	1.14***	(1.25,1.03)
Advance	1	(1.51,0.66)
Water Source		
Poor		
Adequate	0.88***	(0.96,0.8)
Advance	0.84***	(0.94,0.75)

Mother's BMI		
Low		
Normal	0.7***	(0.76,0.64)
High	0.45***	(0.5,0.4)
Mother's Education		
Mother Non literate (including Upto 5 years education)		
6-8 years	0.76***	(0.84,0.69)
9-10 years	0.62***	(0.68,0.55)
11-12 years	0.58***	(0.66,0.51)
More than 12 years	0.5***	(0.57,0.43)
Place of Delivery		
Home		
Institutional	0.97	(1.11,0.86)
Constant	4.97***	(6.32,3.91)

<0.01=***, <0.05=** & <0.1=*

DISCUSSION

- ▶ The presented study revealed that there are less chances of a child getting stunted, wasted or underweight if he/she doesn't have any siblings. Many studies have evidenced that socio-economic status is a major determinant of child nutrition.
- ▶ The study also found significant association between low income category family and their child getting stunted, wasted or underweight. This finding is supported by many literatures which states that diet quality is associated with economic status and lifestyle.
- ▶ Child's birth weight was found to have significant association with the dependent variable. A similar study evidenced that the prevalence of malnutrition was higher among children born with low birth weight as compared to a child born with normal weight.

DISCUSSION

- ▶ The study also found significant association between sources of water, type of toilet facility with a child getting stunted, wasted or underweight. Improved conditions of sanitation and hygiene practices are associated with reduced prevalence of stunting in rural India. Quality of WASH especially those related to the use of sanitary latrines, hand washing, and water treatment practices would also result in a significant decrease in prevalence of wasting among U5 children.
- ▶ We also found that the risk of a child getting stunted, wasted or underweight decreases with increase in mother's education level. A study from sub-Saharan Africa states that maternal education as a strong predictor of child stunting.
- ▶ The study also revealed that the risk of malnutrition is less among children who were born in healthcare institution then compared to home deliveries.

LIMITATIONS

Despite of significant findings the presented study had many limitations. As this study is based on secondary data, we are not aware how the data collection process was done with what level of accuracy, this limits the type of analysis to be performed. Further many individuals' responses were missing because of which we cannot generalize the study. Under reporting is inescapable.

CONCLUSION

Our study concludes that Wash practices, Mother's BMI, birth weight of the child to be the strong predictors for child nutrition.

The study further recommends that public health officials should visit the ground to understand the reality and avoid biases related to the supply of food packet's under Poshan Abhiyan. ASHA & AWW should be imparted with training from time to time so that they can create better awareness among the community. Government officials need to identify gaps in the current on-going nutritional programs and work on it with the help of experts in public health

REFERENCES

- ▶ Dewey K. Guiding principles for complementary feeding of the breastfed child.
- ▶ World Health Organization. Complementary feeding: report of the global consultation, and summary of guiding principles for complementary feeding of the breastfed child.
- ▶ Rahman M, Roy SK, Ali M, Mitra AK, Alam AN, Akbar MS. Maternal nutritional status as a determinant of child health. *Journal of Tropical Pediatrics*. 1993 Apr 1;39(2):86-8.
- ▶ Deolalikar AB. Child nutritional status and child growth in Kenya: socioeconomic determinants. *Journal of International Development*. 1996 May;8(3):375-93.
- ▶ Kabubo-Mariara J, Ndenge GK, Mwabu DK. Determinants of children's nutritional status in Kenya: evidence from demographic and health surveys. *Journal of African Economies*. 2009 Jun 1;18(3):363-87.
- ▶ Alkerwi AA, Sauvageot N, Nau A, Lair ML, Donneau AF, Albert A, Guillaume M. Population compliance with national dietary recommendations and its determinants: findings from the ORISCAV-LUX study. *British journal of nutrition*. 2012 Dec;108(11):2083-92.