

# MALNUTRITION IS PREVALENT AMONG CHILDREN (2 MONTHS - 5 YEARS) SUFFERING FROM ACUTE RESPIRATORY TRACT INFECTIONS (ARI)

ABDUR REHMAN KHOKHAR<sup>1</sup>, M. SHAHID FARUQI<sup>2</sup>, ABDUL SATTAR<sup>3</sup>,  
Q. A. REHMAN<sup>4</sup>, KHAWAR IQBAL<sup>5</sup>

<sup>1</sup>DG Khan Medical College Dera Ghazi Khan, <sup>2</sup>Ameer-ud-Din Medical College/PGMI Lahore, <sup>3</sup>Khawaja Muhammad Safdar Medical College Sialkot, <sup>4</sup>PAEC Science College DG Khan, <sup>5</sup>CPMC Lahore

Correspondence: Dr. Abdur Rehman Khokhar, e-mail: drarkhokar@yahoo.com

## ABSTRACT

**Background:** Malnutrition is a worldwide problem and leading cause of childhood mortality and morbidity. Under nutrition in all its forms is still common in south East Asia.

**Objective:** To determine prevalence of malnutrition among children suffering from ARI and to find association between them.

**Patients and Methods:** This study was carried out at DHQ Hospital Dera Ghazi Khan from December 2008 to March 2009. Study population included children from OPD and indoor of Pediatric Department. It was a descriptive cross sectional study. Total of 350 ARI patients of age 2 months-5 years, 172 girls and 178 boys were enrolled. Responses to structured questionnaires were collected from all patients.

**Results:** Prevalence of malnutrition in age group 2 months-1 year was 19%. There is increased incidence of malnutrition with increase of age. At 2 years age protein caloric malnutrition PCM was 12.5% among boys and 14% among girls. At age group 3, 4, 5, PCM was 13%, 20%, 27% respectively.

**Conclusion:** The prevalence of mal-nutrition was high at age group 1 year than 2 - 8 months, 2- 4 years while the PCM was observed as high as 25% at age group 5 years. ARI has significant relation with protein caloric Malnutrition.

**Key words:** Malnutrition, Prevalent, Acute respiratory tract infection

## INTRODUCTION

Malnutrition is a common problem of developing countries like Pakistan. Perhaps the most outstanding achievements in field of nutrition, during last few decades has been the virtual banishing of large-scale famines, which for centuries have demicated large section of population.<sup>1</sup> Nutritional status is defined as state of balance between tissue nutrient needs and actual nutrient supply. No age is immune.<sup>2</sup> Well-being of population depends on social indications, such as economic status, life expectancy, health, education, and nutrition. Most important problems of developing world are wide spread child malnutrition, high infant mortality and low literacy.<sup>3</sup> Child malnutrition is the main key factor for illness and death. Globally more than half deaths of children are contributed by poor nutrition. The causes of child malnutrition are interrelated and multi-sectoral.<sup>4</sup> Several studies indicates that malnutrition is a reflection of poverty while people have not enough money to buy food.<sup>5</sup>

As Pakistan performance in social indicators including nutrition status is not satisfactory. According to National Nutrition Survey (2011), 33% of young children are underweight, while decline in underweight children is observed during last decade. Stunting and wasting have even shown deterioration.<sup>6</sup> Acute respiratory infections particularly pneumonia are leading causes of death and account for an estimated 3.9 million deaths among children under age of 5 years in developing world.<sup>7</sup> Every week about a ¼ million children die in developing countries from frequent infections in childhood. Associated problems are protein energy malnutrition, anemia, goiter and vitamin deficiencies.<sup>8,9</sup> Acute respiratory tract infections are more common among young children. According to WHO estimates about 4.3 million children die of ARI each year, which represents about 1/3 of all deaths in young children.<sup>10</sup>

Global data shows that incidence of ARI is same in developing and the developed world.<sup>11</sup> The most

severe manifestation of ARI, pneumonia occurs in 3-4 % of young children in developed world. Whereas in developing countries, 10-20% of these ARI patients end-up with pneumonia. More than 90% of ARI related deaths occur in developing countries.<sup>12</sup> Children below 5 years of age in developing countries constitute 16-18% of population and ARI contribute to nearly 1/3 of all deaths in this age group.<sup>13</sup>

## PATIENTS AND METHODS

This cross-sectional descriptive study was carried out at DHQ Hospital Dera Ghazi Khan from December 2008 to March 2009. Children between 2 months to 5 years, symptoms of cold/cough and noisy breathing were included. Those children who have history of sore throat, ear problem and recurrent wheeze were excluded. Primary data collection method was used in which two questionnaires were administered to collect data. (ARI questionnaire and Dietary questionnaire). We employed A.R.I, classification, recommended by World Health Organization (WHO). Each child was examined for ARI assessment, weight and height. These were compared with growth chart to evaluate the nutritional status. Dietary questionnaire included number of meals per day, number of serving per week, number of serving per day of different dietary items used by children of the studied population. Growth chart designed by WHO was used to assess nutritional status of ARI patients. SPSS version 13.0 was used to analyzed data.

## RESULTS

This study includes children of age 2 months to 1 years 150, 2 years 104, 3 years 46, 4 years 20, five years 30. Highest incidence of disease was at 2 months to 1 year of age (Table 1). ARI were classified into four groups, no pneumonia, pneumonia, severe pneumonia, very severe disease. During study 88 cases of no pneumonia, 43 cases of pneumonia, 24 cases of severe pneumonia and 17 cases of very severe disease were noticed among boys. In this study, among girls, 81 cases of no pneumonia, 42 cases of pneumonia, 8 cases of severe pneumonia and 27 cases of very severe disease were noticed (Table 2).

Weight of boys was more as compared to girls at age group 2-3 years, which was mode of study. While weight of girls was more than boys at age 4-5 years and compared the weight among genders, mean were  $9.96 \pm 4.87$  and  $9.02 \pm 3.88$  kg. Statistically the difference between weight is significant [ $p < 0.05$ ] (Table 3). When compared ARI disease, at age 2 months to 2 years, more boys visited hospital and at age 3-5 years more girls

visited hospital for ARI but overall disease severity was common among girls.

Comparison with growth chart, age group 2 months – 1 year boys suffering from no pneumonia, pneumonia, severe pneumonia, and very severe disease showed malnutrition 20%, 29%, 80% and 85% respectively while girls 9%, 25%, 29% and 55% respectively. Age group 1–5 year, patients suffering from no pneumonia, pneumonia, severe pneumonia, and very severe disease showed malnutrition 5.8%, 22%, 65% and 90% respectively.

**Table 1:** Age and sex distribution of ARI patients

Age	Boys	Girls	Total
2 months – 1 year	82	68	150
2 years	56	48	104
3 years	14	32	46
4 years	6	14	20
5 years	14	16	30

**Table 3:** Age-wise distribution of average weight (kg) of boys and girls

Age	Boys weight	Girls weight
2 months – 1 year	2.5 – 9.0	2.5 – 10.0
2 years	7.0 – 16.0	7.0 14.5
3 years	9.0 – 16.5	7.5 – 18.0
4 years	12.0 – 15.0	10.0 20.0
5 years	10.0 – 19.0	11.0 22.0
Mean $\pm$ SD	$9.96 \pm 4.87$	$9.02 \pm 3.88$
P value	0.048	

## DISCUSSION

Efforts have been made to assess nutritional status of children suffering from ARI, of age 2 months-5 years. By early detection of malnutrition we can prevent permanent disorders and save lot of resources.<sup>14</sup> World population will remains to be threatened by ill. Why poor and marginalized seems to take all brunt? Girl children showed high frequency of ARI, growth failures which indicate sex discrimination.<sup>15</sup> Obesity was noted among children eating diet having more than 30% fat. Growing problem of obesity is highlighted among developed nations. In 2005 the number of obese people hit one billion.<sup>16</sup>

Poverty is increasing worldwide due to unjust economic system which is skewed in favour of powerful multi-national cooperation. This problem is further precipitated by developed nations and multilateral institutions such as International Monetary Fund (IMF) World Bank, World Trade Organization.<sup>17</sup> Today more

than two billion people live on less than \$2 dollar/day. Commerce had grip on health policies too. The IMF-WB structural adjustment programmed (SAP) called for reduction in budget allocation for social services

including health which worsen delivery of health care services. Private health care industry is booming.

**Table 2:** Age-wise distribution of disease among boys and girls

Age	Boys				Girls			
	No pneumonia	Pneumonia	Severe Pneumonia	Very severe Pneumonia	No pneumonia	Pneumonia	Severe Pneumonia	Very severe Pneumonia
2m-1 year	50	13	5	14	33	8	7	20
2 years	22	24	10	1	16	18	12	3
3 years	8	2	2	1	18	10	2	2
4 years	2	2	2	-	4	4	4	-
5 years	6	2	5	1	10	2	3	2

Governments and health institutions are scrambling to cure symptoms without getting to bottom of issue.<sup>18</sup> Different Government Schemes are providing support to the poor families. The positive contribution of Lady Health Workers is noted for improving child nutritional status. No sustained reduction in poverty is noted during last five decades rather than it has fluctuated.

## CONCLUSION

Acute respiratory infect was more prevalent, and severe among severely malnourished children. Age group 2 months to 1 year was more vulnerable to infection than age group 1-5 years. Severity of ARI disease as well as growth failure and high frequency of malnutrition was observed among girls.

## REFERENCES

- de Onis M, Monteiro C, Akre J, Glugston G. The worldwide magnitude of protein energy malnutrition, an overview from WHO Global database on child growth. *Bulletin WHO* 1993;71(6):703-12.
- Hooley RA. Assessment of nutritional status. In: Perveen L, editor. *Human nutritional*. 2005; 210-4
- Linnemayr S, Alderman H, Ka A. Determination of Malnutrition in Senegal, household, community variables, and their interaction. *Econ Hum Biol* 2008;6(2):252-63.
- Cheah WL, Muda WA, Zamh ZH. A structural equation model of the determination of malnutrition among children in rural Kelantan, Malaysia. *Rural Remote Health* 2010;10(1):1248.
- Chirwa EW, Ngalawa H. Determination of child nutrition in Malawi. *South Africa J Econ* 2008;74(4): 628-40.
- National Nutrition Survey. Agha Khan University, Pakistan Medical Research Council and Nutrition Wing, Cabinet Division, Government of Pakistan, 2011.
- Moock PR leslie J. Childhood malnutrition and schooling in Teri region of Nepal. *J Develop Econ* 1986; 20: 33-52.
- WHO. Respiratroy infections. In: Park K, editor. *Textbook of preventive and social medicine*. 2005; 132-8.
- Koko U. WHO World Health House. New Delhi, WHO 1996;1-4
- WHO. ARI news causes of ARI Many unanswered questions AHRTAG London 2002:1-9.
- Leoswki J. Mortality from ARI in children under 5 year of age, Global estimate World Health Statistics 1986;39:138-44
- Khan MA. Acute respiratory infection in children: a case management intervention in Abbotabad, Fedral ARI cell PIMS ARI News 1993: 577-85
- WHO. The management of acute respiratory infection in children, practical guidelines for outpatients. WHO Geneva 1995:138.
- WHO. Draft report of WHO/FAO Expert consultants on diet nutrition. Global malnutrition 2002;6
- KoKo U. Child health today not tomorrow. Social attitude, the girl child. 8th Asian congress of paediatric. New Delhi 1996;1-15
- Barness LA. Prevention in children of adult diseases. In: *current concepts in Pediatric*, 1996;1-2
- John PC. Staying alive in an unjust world. *HAIN* 2006;8:2.
- Baqui AH. Urbanization and children health in developing countries. 8<sup>th</sup> Asian Congress of Pediatric, New Delhi 1994;1-4.