

**PROTEIN ENERGY MALNUTRITION – A REVIEW****Mrs. Gurjeet Kaur\* | Dr. Rajrani\*\****\* Research Scholar in Himalayan University, Itanagar in Arunachal Pradesh, India.**\*\* Research Supervisor in Himalayan University, Itanagar in Arunachal Pradesh, India.***ABSTRACT**

*The term protein-energy malnutrition (PEM) applies to a group of related disorders that include: Marasmus, Kwashiorkor, and intermediate states of marasmus-kwashiorkor. The reduction in the whole body responses reflects in the individuals organs. No physical system is found to be functioning normal in malnourished children or adult. Protein energy malnutrition (PEM) is clinical condition in both adults and children. PEM in childhood is common expression of poor income, illiteracy, poor sanitation, bad medical services etc. These factors act at a national, regional, village and individual family level. The review of Protein Energy Malnutrition as a scientific critical of most important published scholarly literature is given here. PEM is a topic of interest here to understand or to become aware of gaps and weak spot in earlier studies in order to justify a contemporary research.*

**Key Words:** *PEM, malnutrition, body weight reduction etc.*

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**INTRODUCTION**

Protein energy malnutrition (PEM) is clinical condition in both adults and children. PEM in childhood is common expression of poor income, illiteracy, poor sanitation, bad medical services etc. These factors act at a national, regional, village and individual family level. The adult height of mothers is short, reason being their own malnutrition during growth. Such women are liable to give birth to relatively small infants. Some women during pregnancy due to poor economic conditions are required to do labour work; they are given less medical attention or sometime no medical attention leading to under nutrition. In well-nourished people infection are tend to go fast but under nutrition person has to fight longer to overcome.

The review of Protein Energy Malnutrition as a scientific critical of most important published literature is given here. PEM is a topic of interest here to understand or to become aware of gaps and weak spot in earlier studies in order to justify a contemporary research.

1. **Literatures associated with the prevalence of PEM among kids.**
2. **Literatures related to risk elements associated with PEM among kids.**

**1. Literatures associated with the prevalence of PEM among kids.**

Samad, Noreen & Jabeen, Sadia & Liaqat, Amna & Zulfiqar, Iqra & Bano, Rahat. (2016). Malnutrition is the cellular misbalancing among the supply of energy and nutrients which are essential for maintenance, growth and particular functions. It becomes a major cause of mortality of children less than five years of age. The aim of present study to evaluate the serum analytes such as electrolyte (sodium (Na<sup>+</sup>), potassium (K<sup>+</sup>) and calcium (Ca<sup>++</sup>)), creatinine and blood components in malnourished than healthy children. We had collected the data of 300 malnourished children (100 marasmus, 100 kwashiorkor and, 100 healthy children) with age 6-36 months from Children complex Hospital Multan, Pakistan. Data was analyzed by Paired sample t-test by SPSS software. Then socio-demographic data of their mothers was also collected. The result showed that level of Na<sup>+</sup> and creatinine was high whereas, the levels of K<sup>+</sup> and Ca<sup>+</sup> were lower in both Marasmus and Kwashiorkor than control subjects. The levels of leukocytes, platelets and haemoglobin (Hb) were decreased in both diseases. Erythrocytes (RBCs) level was decreased in Marasmus while increased in Kwashiorkor. It is concluded that inadequate feeding practices, birth order, poverty, illiterate mothers, low nutritional quality of meals responsible for malnutrition. Feasible strategies are needed to address the dietary inadequacies and chronic malnutrition of rural infants.

Grover, Zubin & Ee, Looi. (2009). Protein energy malnutrition (PEM) is a common problem worldwide and occurs in both developing and industrialized nations. In the developing world, it is frequently a result of socioeconomic, political, or environmental factors. In contrast, protein energy malnutrition in the developed world usually occurs in the context of chronic disease. There remains much variation in the criteria used to define malnutrition, with each method having its own limitations. Early recognition, prompt management, and robust follow up are critical for best outcomes in preventing and treating PEM. Protein-energy malnutrition (Kalantar-Zadeh, Kamyar, 2008) is common in stage 5 chronic kidney disease (CKD) and usually associated with anorexia, chronic inflammation, kidney disease wasting (KDW), refractory anemia and poor outcome including high risk of cardiovascular disease and death. A take a look at end is given to estimate the prevalence of anaemia.

Fukagawa, N.K. (2001). Protein-energy malnutrition. Protein-energy malnutrition (PEM) is not limited to the severe cases seen in developing countries. Individuals with varying degrees of malnutrition are seen in both inpatient and outpatient settings in the U.S., and all ages may be affected. By definition, PEM results from inadequate intakes of protein, energy fuels, or both. Deficiencies of protein and energy usually occur together but when one predominates and the deficit is severe, kwashiorkor (primarily protein deficiency) or marasmus (predominantly energy deficiency) ensues. However, in many cases, it is difficult to recognize which deficit predominates.

Carmalt, James. (2000). Alpacas commonly present with clinical signs of weight loss and ill thrift but often have no other abnormalities on physical examination, making diagnosis difficult and frustrating for veterinarians. Protein-energy malnutrition is a diagnosis of exclusion supported by basic protein-energy calculations, body condition scoring, and feed analysis. Although protein-energy malnutrition has been described in domestic ruminants, this syndrome has not been studied in camelids.

**2. Literatures related to risk elements associated with PEM among kids.**

Elalaily, Rania & Soliman, Ashraf. (2018). Protein-energy malnutrition (PEM) is not limited to the severe cases seen in developing countries. Individuals with varying degrees of malnutrition are seen in both inpatient and outpatient settings in the U.S., and all ages may be affected. By definition, PEM results from inadequate intakes of protein, energy fuels, or both. Deficiencies of protein and energy usually occur together but when one predominates and the deficit is severe, kwashiorkor (primarily protein deficiency) or marasmus

(predominantly energy deficiency) ensues. However, in many cases, it is difficult to recognize which deficit predominates. Geographically, (Mollah AH) more than 70% of PEM children live in Asia, 26% in Africa and 4% in Latin America and the Caribbean. On the other hand bone lesions that are caused by failure of osteoid characterize Rickets, the growing cellular matrix of bone, to become mineralized.

Meena, Suresh & Suman, Rameshwar & Jain, Rupali & Meena, Pradeep. (2017). Severe acute malnutrition (SAM) is one of the most common health problems. SAM children are more prone to severe infections that culminate into different co-morbid conditions and consequentially lead to electrolyte derangements. Hence this study aims to find out the incidence of dyselectrolytemia (Na<sup>+</sup> and K<sup>+</sup>) in malnourished children with different clinical co-morbid conditions. Methods: It was a hospital based prospective, case-control study conducted on 100 children of complicated as study group and 50 children of uncomplicated SAM as control group, over a period of six months in year 2016. The children included as per WHO reference criteria of SAM in 6 months to 5-years age group. All the enrolled children were assessed with detailed clinical examination according to different co-morbidities, including anthropometry and routine investigations along with serum electrolytes (Na<sup>+</sup> and K<sup>+</sup>) and chest x-ray. Results: In our study, out of 100 complicated SAM children, dyselectrolytemia was present in 94.0% children. The SAM children with most co-morbidity had subnormal sodium ranging from 128-135 mEq/L while potassium was normal ranging from 3.68-4.34 mEq/L at the time of admission. It was to conclude that dyselectrolytemia is high in complicated SAM and it is mainly sodium disturbances in the form of hyponatremia in different co-morbid conditions. Hence, we recommend that due care is to be given for management of dyselectrolytemia in complicated SAM children.

Rahman, Atiar & Akhter, Shirin & Alauddin, Md & Rahman, Md. Atiar & Chowdhury, Mahmood. (2014). The study was carried out to identify the risk factors involved in the development of Protein Energy Malnutrition and its effect on the diarrheal electrolyte imbalance in Bangladeshi children. Among a 100 protein energy malnourished children, 64 ± 1.02% patients (Group-A) were edematous with 39 ± 0.93% kwashiorkor and 25 ± 0.78% marasmic kwashiorkor whereas 36 ± 0.86% (Group-B) was marasmic with 39 ± 0.77% diarrhoea. Thus the patients have been suffering from acute respiratory infection 25 ± 0.35%, septicaemia 29 ± 0.66%, tuberculosis 7 ± 0.36% and other secondary infections. The results demonstrate that protein energy malnutrition significantly affecting electrolytes of diarrheal children in Chittagong.

Villasís-Keever, Miguel & Pineda-Cruz, R & Halley-Castillo, E & Alva, Carlos. (2001). to assess the frequency and risk factors of malnutrition among children with congenital heart disease (CHD). Between August 1997 and May 1998, a cross-sectional survey was conducted among 244 children, at the congenital heart disease ward of the Cardiology Hospital, National Medical Centre "Siglo XXI", Mexican Institute of Social Security, in Mexico City. Study subjects were male and female children younger than 17 years, diagnosed with CHD and without any other congenital malformation. Weight/Age (W/A), Height/Age (H/A) and Weight/Height (W/H) were used to measure nutritional status; Z scores greater than -2 was the case definition of malnutrition. Risk factors investigated were age, sex, perinatal history, dietary factors and nutritional supplementation, socioeconomic status, and family composition and functionality. Four CHD groups were studied: acyanotic with and without pulmonary hypertension (APH, AWP) and, cyanotic with and without pulmonary hypertension (CPH, CWP). Statistical analysis consisted of the chi-squared, Mann Whitney's U, and Kruskal-Wallis tests. Confounding variables were controlled for with a logistic regression model; odds ratios (OR) and 95% confidence intervals (95%CI) were calculated. Older children were more likely to be well-nourished (OR 0.92; 95%CI, 0.89-0.96).

### CONCLUSIONS

PEM in childhood is common expression of poor income, illiteracy, poor sanitation, bad medical services etc. These factors act at a national, regional, village and individual family level. Malnutrition is frequent among children with CHD; it is more common in younger children and in those with cyanotic CHD. It's far endorsed that the primary health care's wishes to be bolstered, prevention, early prognosis, and treatment of anaemia. Educational programs directed to the families of these children are needed to prevent and decrease the frequency of malnutrition. Attention desires to be cantered on unique investigations to establish the precise cause of anaemia. The test concluded that there's want to set suitable anaemia statistics switch and thoughts-set exchange strategies inside the community to have a hit anaemia manipulate programme.

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