



Prevalence of Severe Acute Malnutrition and Associated Mortality Rate in Infants in Tertiary Care Hospital of Hyderabad

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Authors' contributions

This work was carried out in collaboration among all authors. Authors ANJ and HS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors ZAQ and NAM managed the analyses of the study. Authors S. Baig and S. Bilal managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: In developing countries malnutrition is characterized as one of the major risk factors for death in children, due to improper management of cases, lack of resources and escaping the guidelines provided by WHO. However, it is also highlighted that prompt treatment and proper management can reduce the mortality rate and improve the quality of life in children. Current study is designed to investigate the frequency of SAM and its outcomes at time of discharge in tertiary care hospital of Hyderabad.

Study Design: A cross sectional study was performed.

Place and Duration of Study: Study was performed at nutritional stabilization center of pediatric department of tertiary care hospital Hyderabad from July 2019 to Jan 2020.

Methodology: Preformed proforma was designed to record the data of participants that included demographic and primary outcome variable. Hospital protocols using WHO guidelines i.e. 10 steps

for in-patient care of severe malnutrition were started & followed with feeding F-75 & F-100. Data was analyzed on SPSS-19, p-value <0.05 was considered as significant.

Results: Mean age of the study participant was 13 ± 6.3 months while majority of them were male (72%). About 70% participants were below normal as per weight to height ratio. Out of recruited participants (N=273) admitted in nutritional center prevalence of severe acute malnutrition was found to be 32.6%. After admission and management protocols 91.6% recovered however, mortality was observed in 8.9% participants.

Conclusion: We conclude that effective and prompt treatment measures and appropriate management of affected patients according provided guidelines shown decrease in mortality and increased the survival rate in admitted children.

Keywords: Malnutrition; mortality rates in infants; severe acute malnutrition.

1. INTRODUCTION

One of the significant health problem and strong risk factor for hospital admission is "Malnutrition", if managed appropriately patient may recover and if not than it may lead to many complications including death. It is defined as "medical condition caused by improper or insufficient diet" [1]. When a child loses his weight and become extremely thin the condition is known as Acute Malnutrition which is indicated by low weight for height or by MUAC [2]. Based on wasting acute malnutrition may be moderate acute malnutrition (MAM) or severe acute malnutrition (SAM) [1]. It is estimated that SAM has been responsible for 35-50% of deaths among children under five [3,4]. It is estimated that in developing countries 174 million under-five children are malnourished as indicated by low weight for age, and 230 million are stunted. Poor physical and cognitive development as well as lower resistance to illness are thought to be the consequences of malnutrition. It is now postulated that 6.6 million out of 12.2 million deaths among children under-five or 54% of young child mortality in developing countries is associated with malnutrition [5,6].

In multiple researches studied in developing countries malnutrition is characterized as one of the major risk factors for death in children, however, it is also highlighted that prompt treatment and proper management can reduce the mortality rate and improve the quality of life in children [7,8,9]. According to WHO management of SAM includes stabilization and rehabilitation, these both protocols are inpatient and administered by highly trained health professionals [10,11]. It has been reported in literature that case fatality rate is high in developing countries due to improper management of case, lack of resources and escaping the guidelines provided by WHO, the later mentioned is attributed to unskilled staff who is unaware of the severity and complications

of malnutrition [12,13]. But if the offer mentioned criteria is fulfilled the case fatality rate can be decreased and on the other hand this can be a mode of awareness in a population to emphasize on the diet that are taking and giving to new born [14].

According to published records 42% of children under the age of five in Pakistan are stunted while 31% are underweight and 14% are wasted [15]. Data regarding burden of malnutrition, its management and fatalities due to improper management may help in policy makers to set uniform criteria. The criteria should include WHO guidelines, availability of resources and measures that could be implemented in our setups to facilitate the community in order to improve their diet and ultimately health. Current study is designed to investigate the frequency of SAM and its outcomes at time of discharge in tertiary care hospital of Hyderabad.

2. METHODS

It was a cross sectional study performed at nutritional stabilization center of pediatric department of tertiary care hospital Hyderabad from July 2019 to Jan 2020. Calculated sample size was 273 and by using non probability consecutive sampling children of both genders, with age range from 6 months to 5 years admitted in nutritional stabilization ward were recruited as study participants after taking consent from their parents. Preformed proforma was designed to record the data of participants that included demographic (age, gender, ethnicity) as well as data regarding primary outcome variable (i.e. recovery or death). Hospital protocols using WHO guidelines i.e. 10 steps for in-patient care of severe malnutrition were started & followed with feeding F-75 & F-100. Patients were followed on daily basis and outcome was reviewed on day seven to collect data in case of death or discharge with recovery.

Data was analyzed on SPSS V. 18, numerical data is represented in means \pm SD, categorical data is represented in frequencies and percentages, chi square test was applied to check the association among variables, p-value <0.05 was considered as significant.

3. RESULTS

The minimum age recorded in our data was 8 months and maximum was found to be 45 months (3 years 9 months). Mean age, weight, circumference of mid upper arm is represented in Table 1.

Table 1. Mean age, weight, height and circumference of mid upper arm of study participants

Variable	Mean \pm SD
Age	13 \pm 6.3 months
weight	5.08 \pm 1.7 kg
Height	65.77 \pm 11.56 cm
Circumference of mid upper arm	8.94 \pm 1.67 cm

Out of N= 273 participants, n=196 (72%) were males and n=77 (28%) were females that showed during study period more males were admitted in pediatric ward due to malnutrition. Weight to height ratio was categorized as normal and below normal in our study we observed n=191(70%) participants as below normal. Pedal edema were recorded in n= 56(20.5%). Out of recruited participants (N=273) admitted in nutritional center prevalence of severe acute malnutrition was found to be 32.6% (n=89). After admission and management protocols n=250 (91.6%) recovered however, mortality was observed in n=23 (8.9%) participants. Chi square analysis was not found to be statistically significant for various variables expressed in Table 2. Which states that in our region SAM does not typically lead to death and is not associated with age and gender of the victims.

Table 2. Chi-square analysis among different variables

Disease	Variable	p-value
Severe	Age	0.896
Acute	Gender	1.252
Malnutrition	Outcome (recovery or death)	0.802

4. DISCUSSION

Malnutrition is one of the major problems in Pakistan. One out of every third child is

malnourished in Pakistan as stated by PMRC National Health Survey (1990–1994), which also showed that about 30–40% of children have low height for their age (stunting) and over 14% have low weight for height (wasting) and a high proportion are under weight (35%) [16]. In our study the findings regarding prevalence (32%) of malnutrition were similar as that of Malawi et al. who have documented that the prevalence of SAM is 27.3% [17]. In our study the mean age of participants enrolled were 13 \pm 6.3 months, which is showing that the children of this group are more susceptible to malnutrition and as age advances the chances of getting malnourished decrease. The same findings were also observed in a study conducted in Karachi, which documented that about 40% of under one year children belonging to urban areas of Karachi are malnourished [18]. When assessed as risk factor for malnutrition we did not observe any significant difference between male and female participants which is in accordance with the findings of National Health Survey of Pakistan 1998, which is showing that there is no any gender based discrimination in care of children by parents and girls and boys under 5 years of age have similar health status [19]. Many studies have shown that if managed properly the sufferer can survive and mortality can be decreased as observed in our scenario as well, but it requires highly skilled staff, advanced equipment, awareness “better to be spread in local languages” and uniform policy that can be implemented timely and show favorable outcome. With recent trends the targets cannot be achieved. Implementation of cost effective strategies can help to reach the millennium developmental goal [20].

5. CONCLUSION

The prevalence of severe acute malnutrition was 32.6% (89/273) in our setup, the recovery rate was found to be 91.6% and mortality was recorded in 8.4% patients. We conclude that effective and prompt treatment measures and appropriate management of affected patients according provided guidelines shown decrease in mortality and increased the survival rate in admitted children.

6. STRENGTHS OF THE STUDY

To the best of our knowledge this is the first study in our clinical setup which is highlighting the prevalence of malnutrition and outcome after the admission.

7. FUTURE RECOMMENDATIONS

Multicenter data should be collected to document the actual prevalence rate of malnutrition in our region. Awareness programs should be arranged with short intervals to make the community conscious about malnutrition and its outcomes. Short term courses or training programs should be arranged for staff to teach them the updated management options.

CONSENT

As per international standard, parental written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical approval was taken from Ethics Review Committee of tertiary care hospital.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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