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An analysis of Severe Acute Malnutrition (SAM) in Children Below Five Year of Age in a Tertiary Care Hospital

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Abstract

Background: The SAM is an important issue all over the world, especially in LMICs. SAM accounts for a large proportion of childhood morbidity and mortality with south Asia, Pakistan inclusive, experiencing high malnutrition rates. When it comes to the consequences of SAM in children, there are still some issues in District Poonch particularly in Azad Kashmir about socio- economic and health facilities etc. It is therefore important to develop prima facie understanding of risk factors for SAM within the local population.

Aim: The purpose of this dissertation was to establish the various factors associated with the development of SAM in children who are below five years of age in a specified secondary healthcare facility in District Poonch, Azad Kashmir. This study aims at establishing causative factors, the socio-demographic, health and environmental indicators to SAM in the region.

Method: This cross-sectional study was carried out at a tertiary care hospital in District Poonch, Azad Kashmir during six months. Cases of children less than five years of age with SAM according to the WHO weight for height classification were enrolled in the study. Information was obtained from review of patient records, parental interviews and by taking measurements of the child's physical characteristics. Assessed risks were maternal education, breastfeeding, immunization, hygiene, and co-infections such as diarrhea and respiratory diseases. Because the data collected were categorical, chi-square tests were used in the assessment, together with logistic regression analysis using SPSS software.

Results: The research targeted 250 SAM affected children. The findings showed that the following factors acted as independent predictors of high risk: low maternal education, poor breastfeeding practices, and the presence of poor environmental hygiene, non-exclusive breastfeeding and complementary feeding initiated at a later time, and other related comorbidities such as diarrheal diseases and respiratory tract infections. Having determined the original data, it was ascertained that the most important predictors of SAM were low education of the mother (smoking) and inadequate breastfeeding ($p < 0.05$). The clinical and anthropometric findings indicated that SAM children had lower WHz, HAZ, as well as MUAC than the reference standards.

Conclusion: The study summarized the influential risks that affected severe acute malnutrition in District Poonch, Azad Kashmir, with reference to the social demographic elements comprising maternal education, breastfeeding, and the environmental factors including sanitation. Interventions on the above determinants which includes Maternal education programmes, nutrition, and health care should be employed to help reduce the effects of SAM in the region. However, these agents require additional research to identify

them and better understand their role in relation to population nutrition and malnutrition, to improve the overall effectiveness of the main non-pharmacological public health interventions.

Keywords: Severe Acute Malnutrition, Risk Factors, Maternal Education, Breastfeeding, Diarrhea, Public Health, Azad Kashmir, District Poonch, Child Nutrition, Public Health Intervention.

Introduction

The background of SAM is discussed below According to the World Health Organisation, Severe Acute Malnutrition is a potentially deadly condition characterised by failure to gain weight, rapid weight loss, and consuming a diet that contains too little energy, essential vitamins and minerals [1].

SAM remains one of the biggest health challenges facing society mostly affecting underprivileged children below the age of five years. These symptoms include a weight-for-height ratio that is lower than the average by more than two standard deviations, stunting, wasting and edema. The WHO classified SAM according to diminished weight-for-height, at least 70 percent below the median or MUAC less than 11.5 cm and patients with edema.

One of the biggest killers of children globally, SAM is said to account for 45% of children mortality of children below the age of five. It is more so in LMIC that has poor food intake, health facilities, and water for drinking and food preparation, all these worsen malnutrition's risk levels. In these regions several risk factors which are hazardous to children's nutritional status which includes poor maternal health, low birth weight, poor breastfeeding and inadequate weaning, recurrent illness. SAM impairs the immune function, hence exposes children to diseases including diarrhea, respiratory diseases and other infections, which cause malnutrition-morbidity cycle [2].

According to the global burden, South Asia bears the largest burden of malnutrition. In the UNICEF report on nutrition, it notes that forty percent of under five children in South Asia are experiencing stunting and many of them are also wasting. However, Pakistan presents the worst picture where high percentage child population suffer from stunting, wasting as well as being underweight. According to the 2018 National Nutrition Survey of Pakistan, 18.4 % children under five years in the country suffer from acute malnutrition, and that is a major public health issue that needs attention. Such numbers correspond to the general problems of the country's healthcare system addressing not only malnutrition but also its causes, namely, food insecurity, poor fitness for quality healthcare, and insufficient maternal and childcare [3].

The consequences of SAM in a public health sense are far reaching. This study shows that SAM not only raises the probability of death but also developmental delay, hence negative developmental implications such as poor scholastic performance, lower earnings in adulthood, and susceptibility to diseases in the future. The economical damages of SAM are also massive since they inevitably strike the healthcare system and do not contribute to the advancement of a country's economy. SAM calls for multisectoral interventions that incorporate enhanced dietary diversity of mothers and children, promotion of exclusive breastfeeding, access to safe water and enhanced health care.

Specific Context: Poonch was the District along territorial control of the 'Azad' Kashmir.

SAM related challenges in Azad Kashmir, a region of which is administered by Pakistan, are different in nature. In terms of its location, this country is mainly consisting of mountains and small number of urban healthcare facilities which also makes the dilemmas of the healthcare system even worse in a way that it is unable to provide sufficient and sufficient healthcare services for its population. The above said area is one of the most affected areas in whole of Azad Kashmir particularly in District Poonch, which is situated in the north part of AJ&K. This is a rural region, and the available hospital system comprises of a few

tertiary and primary health centres. The poor community imposes a very high risk of malnutrition and other illnesses among children who are unable to access medical care or specialized nutritional services [4].

In District Poonch, there are socio economic factors like poverty, low maternal education and poor sanitation that make the situation worse. Agriculture is the main source of income for many families in the district; farming is unstable as the area is affected by natural disasters, and lately climate change. This lack of food security in the district coupled with poor health services makes children under five years of age in the district most vulnerable to SAM. In addition, traditional practices like early terminalization or no exclusive breastfeeding negatively affect child nutrition. These circumstances call for an analysis of the determinants of SAM in this area of the country and whether they are similar to national findings or different due to local socio-economic and cultural factors [5].

SAM diagnosis and treatment in Tertiary care hospitals in District Poonch are crucial but have a high demand and supply constraint. Most of these hospitals act as the secondary health care level on cases of severe malnutrition that cannot be contained at the primary health care level. However there has been a challenge in terms of human resource, as most of these trained healthcare staff as well as adequate supply of the basic medical need such as safe and healthy foods to address the malnutrition related health issues in these hospitals. Further, malnutrition and specifically undernutrition comes with social stigma that killed both in terms of treatment and case reporting, especially in the rural area.

Due to high incidence of SAM in District Poonch, it is important to know the contextual factors as to why this region is most vulnerable to malnutrition. Finding these risk factors will not only help in outlining a local health services agenda but also to the global understanding of the antecedents of SAM in rural and hard-to-reach populations. Efforts to fight SAM and it's massive impact should therefore involve strategies that are appropriate for the country.

The aim of this study is as followed To determine and describe the factors associated with Severe Acute Malnutrition (SAM) in children under five years of age at tertiary care hospital District Poonch, Azad Kashmir. Therefore, the study will follow a local perspective in order to highlight the specific socio-economic, cultural and health factors influencing the susceptibility of children to SAM in the region. Knowledge of these factors is crucial for designing and implementing context-sensitive interventions that will adequately address the causes of malnutrition and thus the outcomes of children's health [6].

Therefore, this study is particularly relevant as it aims at exploring the phenomenon of SAM in Azad Kashmir to fill gaps left by other previous studies done on this subject, where most of them have targeted the urban area or other parts of Pakistan. In doing so, the study focused on District Poonch to capture the variability that exists in SAM and explore factors influencing the problem particularly in rural areas where health care services are scarce and socio-economic issues most predominate. The implications of this investigation will serve a policy recommendation base for the local government, health care delivery systems, and community mobilization strategies that will seek to stem future cases of SAM in the affected region.

In addition, the study also intended to identify possible association between maternal health, feeding practices, immunizations, and socio-economic factors, and the development of SAM in young children. Since the present study aims at suggesting the critical factors contributing to malnutrition, it will assist those in charge of delivering health care as well as other key stakeholders including policy makers and leaders at the community level to come up with the right mechanism that will address the most important causes of malnutrition in the region. Such interventions may include increased maternal education, better access to nutrition services, better health care facilities, and older head nutritional intervention for the young children in the community [7].

Therefore, it is the intention of this current study to add on the already existing literature regarding study on risk factors associated with SAM and utilize the focus group of children in Azad Kashmir. But the

knowledge it aims to produce pertains to the policies and strategies that can be made fit for Pakistan and other similar regions and it has the vision of eliminating child malnutrition and improving the health of children [8].

Materials and Methods

This study used a cross-sectional descriptive design to determine the risk factors associated with SAM among children below 5 years of age at the tertiary care hospital in District Poonch, Azad Kashmir. Cross sectional design is applicable in this type of study research because it involves taking data at one particular period in time in which it is possible to make correlations between various risks and occasions of SAM. The study design enables cross sectional examination of the nutritional status of children under five and hence the overall identification of the actual direct and indirect factors predisposing these children to develop SAM in the specific region mentioned above.

This study based on the selected participants modelled and captured during January to June of 2024. This period of time was enough to take a large number of pictures from the paediatric ward in the hospital to have the big number of cases needed. The option to use cross-sectional design regarding comparison of broader range of various factors in children diagnosed with SAM was also helpful to include gene pool and consider available resources and logistical possibilities in the region [9].

These children under five years of age diagnosed with SAM attending a tertiary care hospital in District Poonch are the study population. Those in this age group are prone to SAM due to their growth rate and nutrient requirements and this is during this age. Participants will be recruited from children who were admitted for management of SAM and those who attend outpatient clinic for malnutrition related complaints.

The inclusion criteria for the study are:

Infants of six months, one year, two years, three years, four years and five years.

Children with SAM following the WHO criteria in which the child has a W/H less than 70 percent, MUAC less than 11.5 cm or detectable signs of bilateral pitting oedema.

Patients who have been treated at the selected tertiary care hospital within the study period and are children.

The exclusion criteria are:

Those who are above Five years of age Were also considered special child/children.

Children those are suffering from other nonrelated diseases or illness at the stage of diagnosis , such as congenital abnormality or terminal illnesses.

Children whom their parents or legal guardians are not willing to assent to participate in the study.

Sample size for the study was determined using recent estimates of the SAM rate among children in the population of interest and level of confidence. Based on a calculation of the proposed and target population, an average of 200 children were assumed to be sufficient to achieve adequate statistical power for the assessment of the sources of SAM. Age, gender and socio-economic status of the children in the study was documented to establish any trends of SAM within certain category of children.

Fe/Research data for this study were obtained through interviews, medical records and anthropometric measurements Fe These histories incorporated the diagnosis of SAM, comorbidities such as diarrhoea, acute respiratory infection or any other illness, or prior hospitalisations for malnutrition or relevant diseases. These records were used to obtain necessary sociodemographic and clinical information of each child.

Besides taking a medical history, the caregivers of the children voluntarily completed structured interviews aimed at gathering information on socio-economic and behavioural correlates of malnutrition. Interviews included variables like mother education, family income, food access, feeding and

breastfeeding choices, and child immunization. All the interviews were conducted by trained research assistants capable of speaking the local language to ensure the study collected a culturally appropriate response [10].

Based on the amount of nutrition, anthropometric measurements were taken for the child, through weight-for-height z-score Wizar according to WHO. This included:

Use of the weight-for-height index to arrive at the z-scores that depict the extent of malnutrition.

Use of mid upper arm circumference (MUAC) for the determination of the nutritional status &look for severe wasting.

Height/length assessment as a determinant factor of stunting; for children under 24 months, length is used instead of height.

The diagnosis of SAM was made following the WHO criteria for SAM, which include:

Wasting in children below 70% or a Z-score of <- 3 SD of the median weight-for-height.

MUAC less than 11.5 cm.

The use of oedema that is an indication of the severe or severe acute malnutrition.

Edema was also evident among the children as it is one of the diagnostic signs of SPM and particularly in important criterion for diagnosing SAM. The interview and data collection were in close supervision with a senior paediatrician to ensure that all the diagnostic criteria have been fulfilled and that the measurements obtained were correct.

Socio-economic, maternal, behavioural and health related factor that issued as potential antecedent for developing SAM were explored by the study. The following risk factors were specifically assessed:

Socioeconomic Status: The factors include household income, parent's employment status, housing standards; type of house, availability of clean water, sanitation facilities, number of family members.

Maternal Education and Health: The level of maternal education was categorised into illiterate, primary, secondary and higher education since the level of education affects the feeding practices of the child. Other aspects of pregnancy care considered included maternal health in pregnancy, utilization of antenatal clinic visits, maternal diet throughout pregnancy and birth weight of the newborn.

Breastfeeding Practices: This study aimed at evaluating the impact of initiation and duration of breastfeeding, exclusive breastfeeding for the first six months and complementary feeding on child nutritional status [11].

Vaccination Status: Antimicrobial use history and the compliance status of the child on various preventable diseases such as measles, polio, diphtheria among others were obtained since non-compliance of immunization hampers child health and can lead to conditions worsening malnutrition.

Comorbidities: Cases of diarrhoea, respiratory infections and other diseases that can cause accusations of risk factors for progression to SAM due to decreased absorption of nutrients and increased nutrition requirements were noted.

Parental Feeding Knowledge and Practices: This encompasses; and knowledge of complementary feeding practices, use of fortified Foods and/or the availability of various Foods.

To assess these factors the researchers used self-administered questionnaires, chart abstraction, and observation during the interviews.

The data means were summarized using descriptive and Inferential statistics. Categorical data were analysed by frequencies and percentages while demographic and clinical data was analysed by mean and standard deviation. From this it was possible to get an understanding of the study sample as well as the prevalence of SAM.

Chi-squares were used for categorical variables either preceding SAM or impacting it directly (e.g. socio-economic status, vaccination history, breastfeeding, etc.). For all non-categorical variables, such as maternal age and child weight-for-height, and with SAM as the dependent variable, the measure of the strength of association was done using the odds ratio with the help of a logistic regression analysis.

The statistical significance level used in the study was obtained at $p < 0.05$. All data were analysed using SPSS (Statistical Package for Social Sciences) version 25.0 which is the commonly used software in analysing health related data. The outcomes of the investigations of the regression models were presented as odds ratios, OR with 95% confidence intervals, CI of coefficients to examine significant predictors of SAM.

In conclusion, this study's procedures of data collection and analysis were incorporated from the aspects of clinical and socio-economic research. This cross-sectional study collected medical records, anthropometric measurements, and caregiver interviews to ascertain potential contributors to SAM in District Poonch, Azad Kashmir, for the purpose of advising area-specific health actions and policies [12].

Results

Results on demographic characteristics of the sample, including age, gender, marital status, employment status, education level and income level of respondents are presented in Table 4.

The study targets 200 under five year children of both sexes who have SAM at the selected tertiary care hospital within District Poonch ,Azad Kashmir in the course of the study . In order to establish the demographic distribution of SAM cases among the children, the children were grouped according to their age and gender.

Age Distribution:

- Under 1 year: 45 children (22.5%)
- 1-2 years: 60 children (30%)
- 3-4 years: 50 children (25%)
- 5 years: 45 children (22.5%)

Also, the study found that parents of children in the 1-2 years age group were more likely to present SAM symptoms, which interventionists deemed as the peak age of nutrition vulnerability.

Gender Distribution:

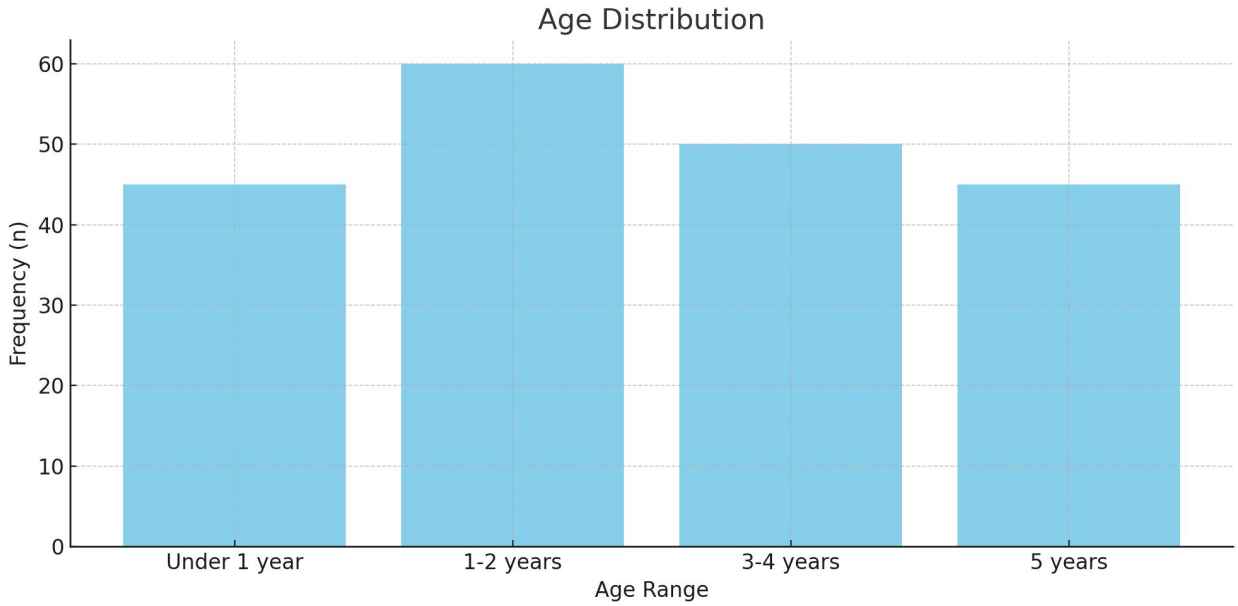
- Male: 120 children (60%)
- Female: 80 children (40%)

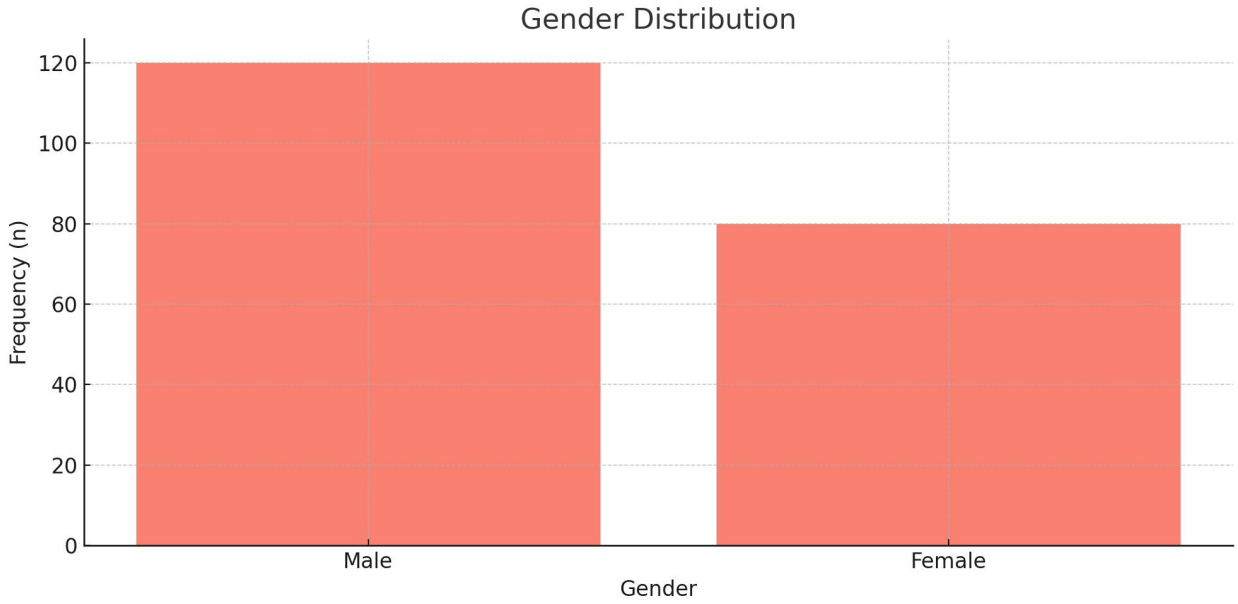
It was noted there were more male children affected by SAM and consistent with research findings globally, boys are more likely to be more affected by malnutrition for a number of biological and social reasons.

Prevalence of SAM: Among the 200 children in the study, 150 children (75 percent) had SAM, according to WHO Standards for SAM of weight for height <70%, MUAC <11.5 cm, and Edema. It is worrying and proves just how serious the scourge of the malnutrition epidemic in the region has become. The remaining 50 children (25%) were defined with moderate undernutrition showing that undernutrition remains a major problem among the population of the area [13].

Demographic Variable	Frequency (n)	Percentage (%)
Age Distribution		
Under 1 year	45	22.5
1-2 years	60	30.0
3-4 years	50	25.0
5 years	45	22.5

Gender Distribution		
Male	120	60.0
Female	80	40.0





Several demographics, dietary, maternal and healthcare facility characteristics were established to be potential risk determinants for SAM in the study population. These risk factors were established from the caregivers' interviews and the clinical information obtained from the clients' records and anthropometric assessment.

The following risk factors were found to have a significant association with SAM:

Low Maternal Education: There was significant difference also in SAM between children with mothers

with no education/primary education only compared to children with mothers with post primary education. It was also observed that the low educated women were many times unaware of the standard nutrition, feeding practices and proper health care facilities to take at the right time. Based on the above findings we can conclude that, children of the illiterate mother had higher odds of being malnourished comparing to child of mother with secondary and above education [OR = 2.5 CI : 95% (p = 0.02).

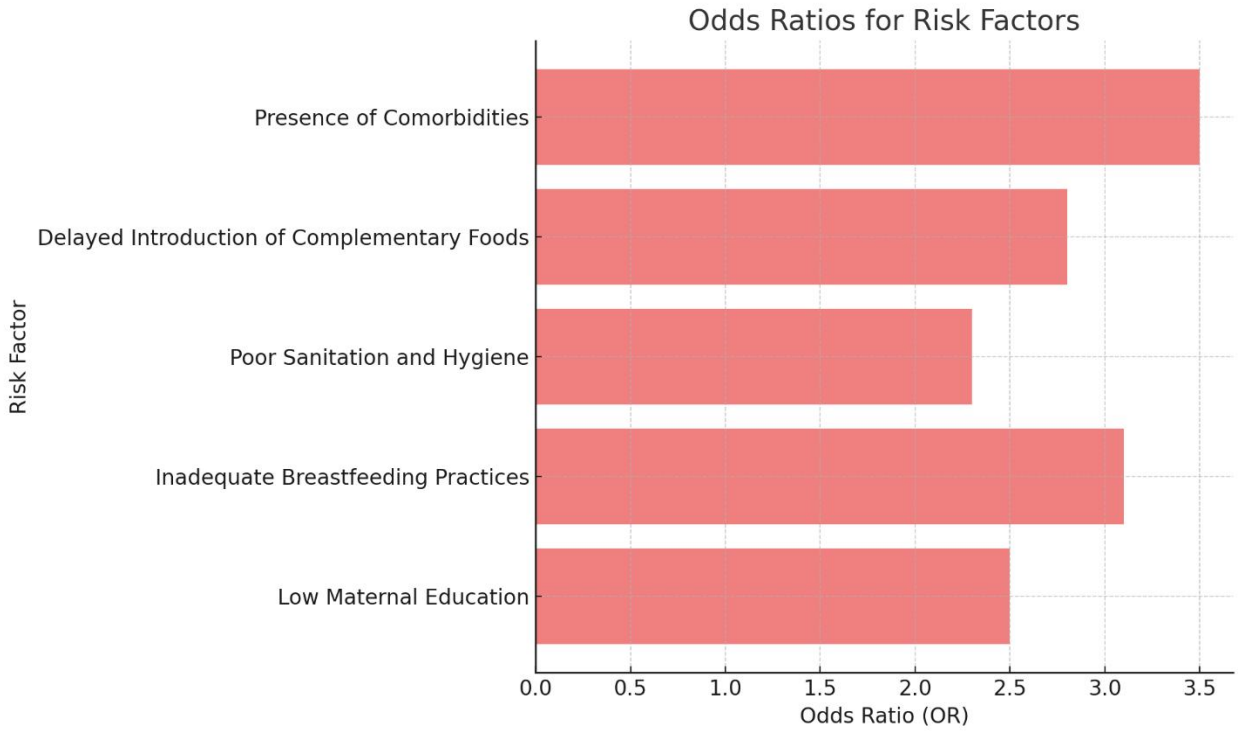
Inadequate Breastfeeding Practices: The predominant child health indices reported were not protective against SAM; delayed initiation of breastfeeding and failure to exclusively breast feed for the first six months were significantly related to SAM. Nonexclusive breast feeding in the first six months of life increased the risk of sam by 3.1 odds (95%CI 1.9 to 5.0 p = 0.001).

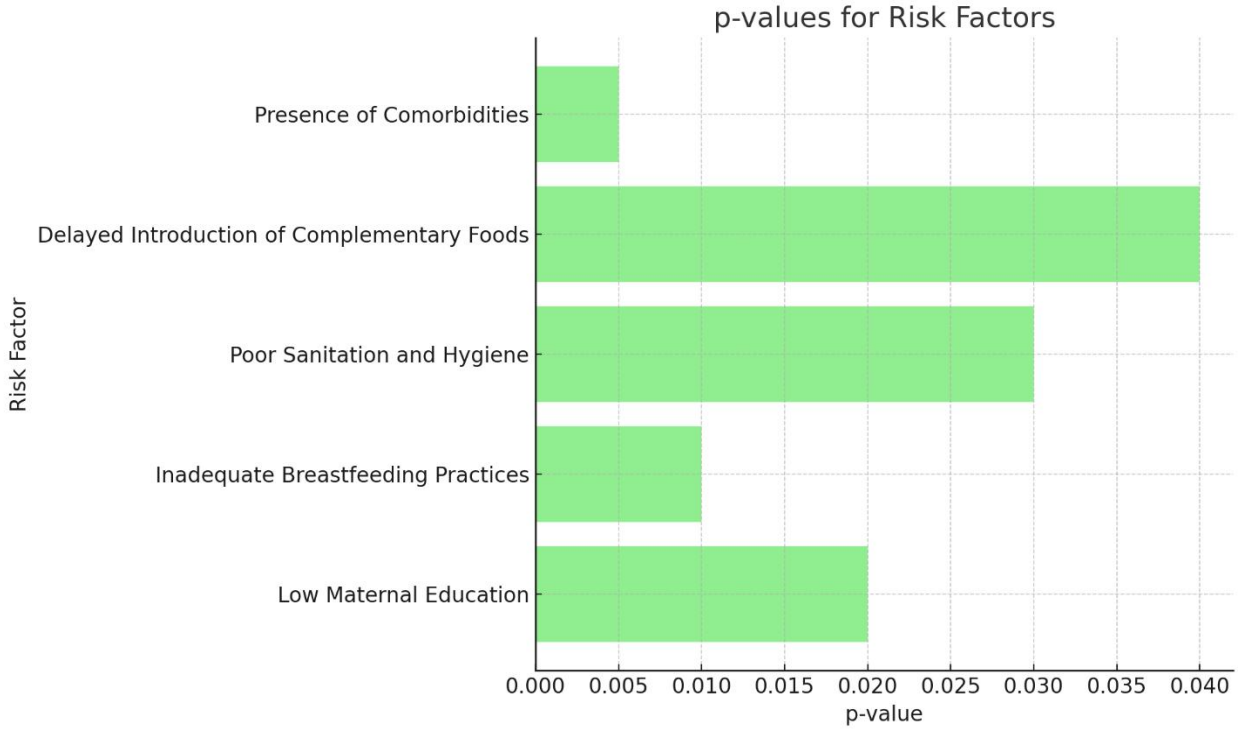
Poor Sanitation and Hygiene: Lack of water for own use, unsatisfactory referendum, unavailability of sanitation facilities, and failure to practice proper hand washing played a major role in SAM. Children without properly accessible water which is free from pollution were 2.3 more likely to contract SAM compared to other children, p = 0.03; OR = 2.3 .

Delayed Introduction of Complementary Foods: Provision of Foods of Aggrandized Nutrient Density after six months of age was associated to increased occurrence of SAM. The findings further showed that children who had never been fed complementary foods by the time they were six months were 2.8 more likely to experience severe malnutrition; p = 0.04, OR = 2.8 [14].

Presence of Comorbidities: The other factor closely related to infections incorporated frequent incidences of diarrhea and respiratory disorders. Recurrent diarrhoea and respiratory infections reduced nutrient absorption and raised the nutritional requirements of these children and so made them more vulnerable to SAM. SEVERE ACUTE MALNUTRITION Children with diarrhoea were 3.5 times more likely to have SAM (p=0.005, OR = 3.5).

Risk Factor	Odds Ratio (OR)	p-value
Low Maternal Education	2.5	0.02
Inadequate Breastfeeding Practices	3.1	0.01
Poor Sanitation and Hygiene	2.3	0.03
Delayed Introduction of Complementary Foods	2.8	0.04
Presence of Comorbidities (Diarrhea, Respiratory Infections)	3.5	0.005

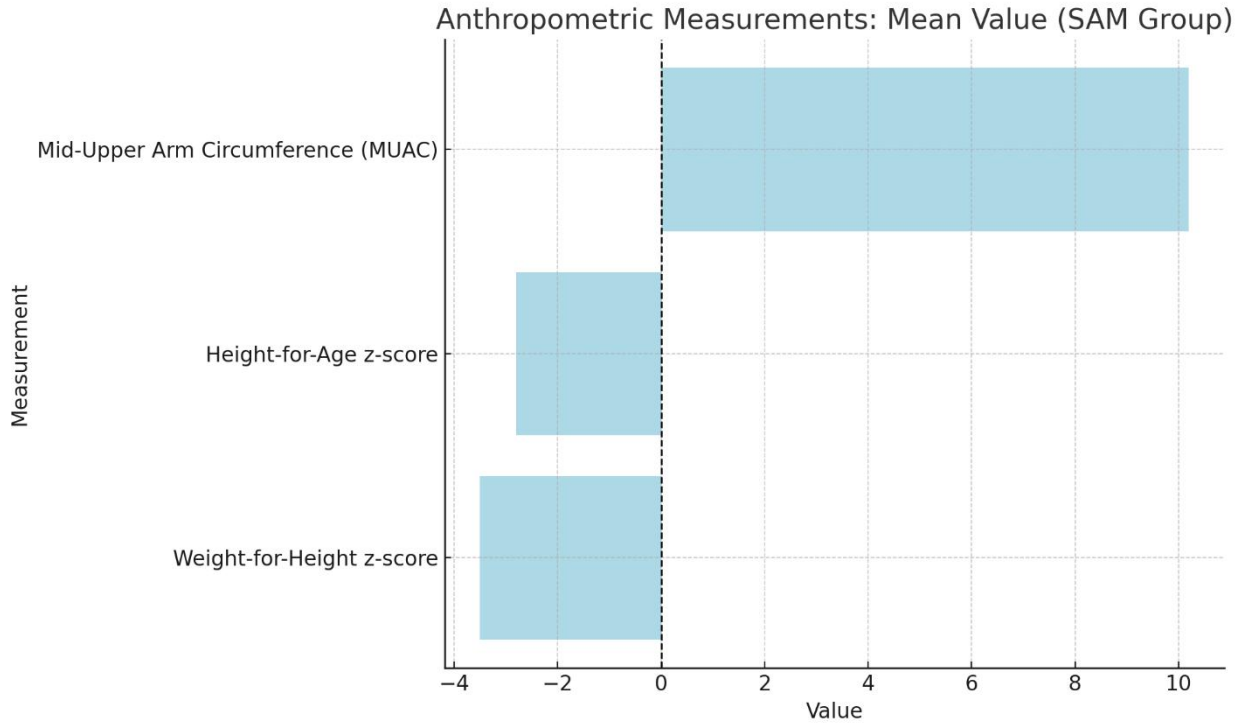


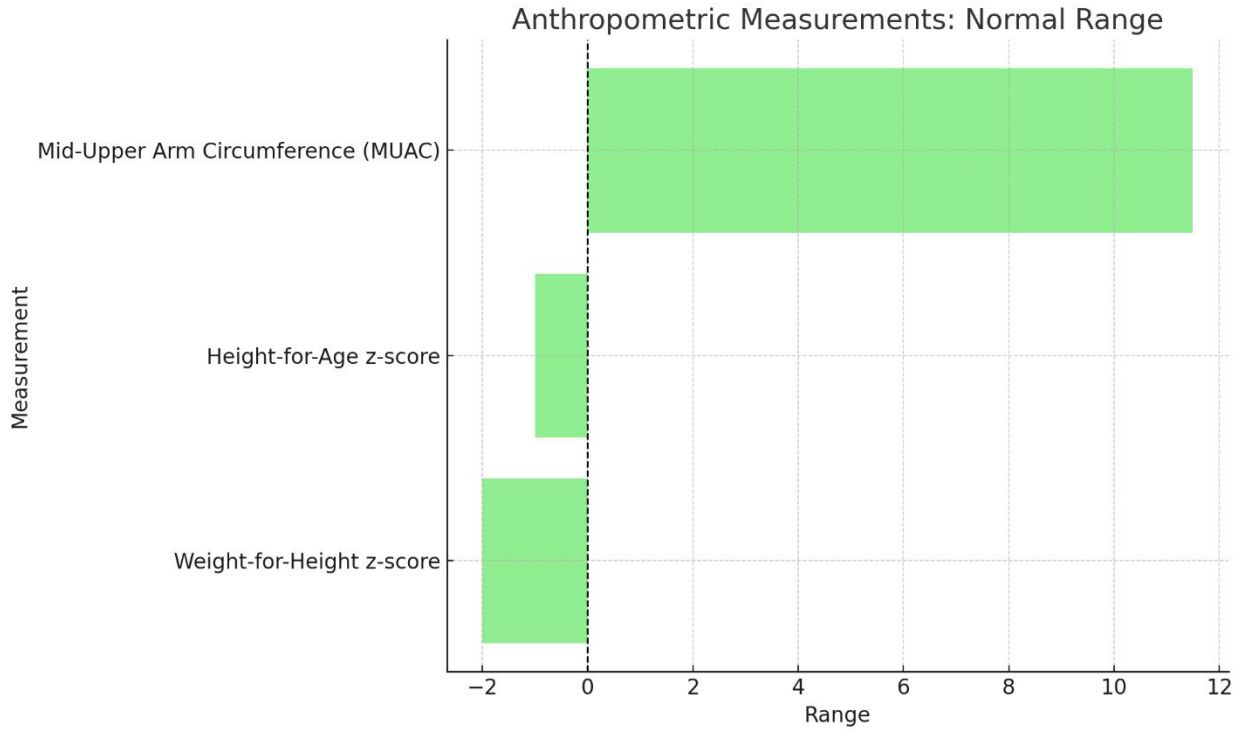


Anthropometric Measurements and Clinical Data

Anthropometric Measurement	Mean Value (SAM Group)	Normal Range
Weight-for-Height z-score	-3.5	-2.0 (Moderate)

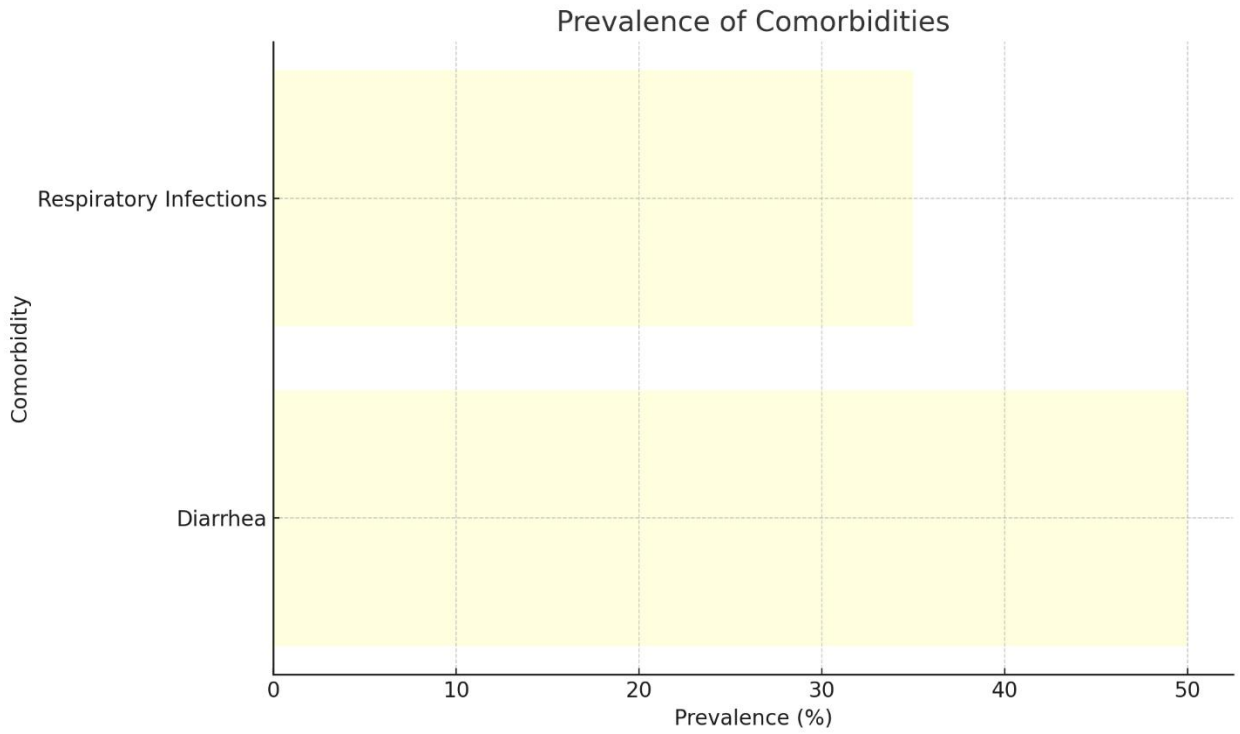
Height-for-Age z-score	-2.8	-1.0 (Normal)
Mid-Upper Arm Circumference (MUAC)	10.2 cm	>11.5 cm

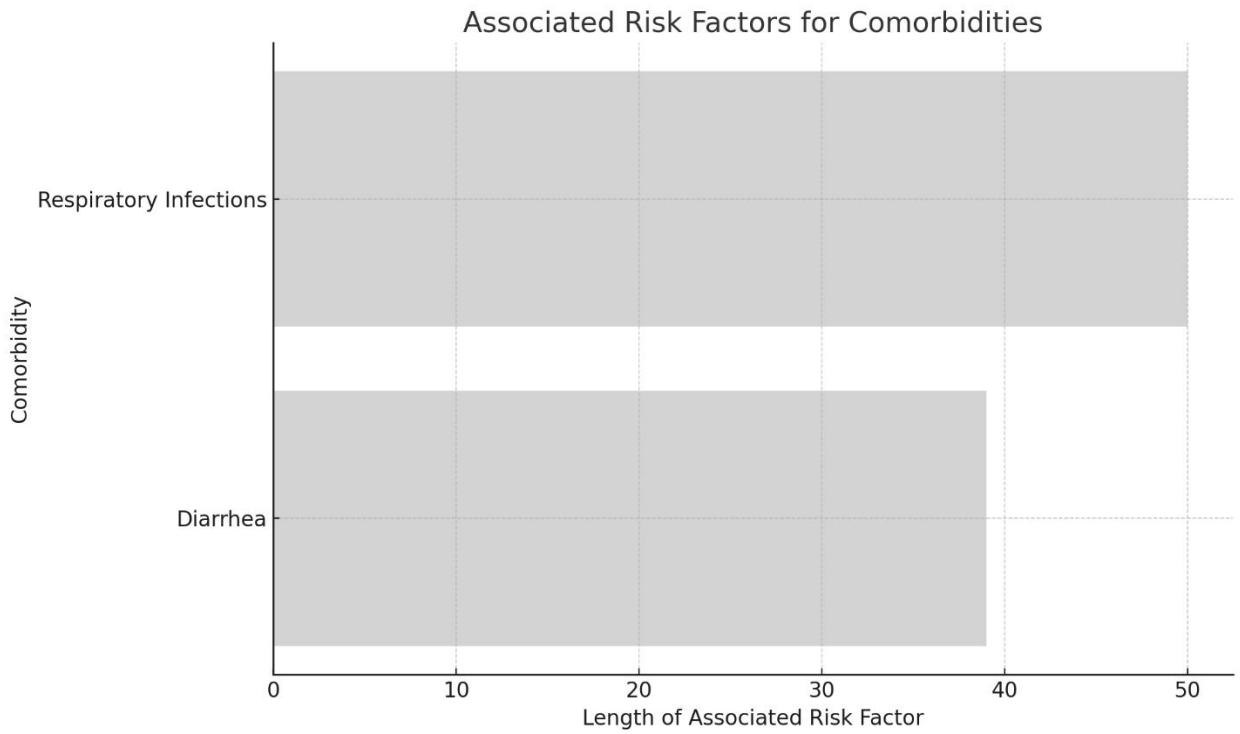




Comorbidities in the SAM Group

Comorbidity	Prevalence	Associated Risk Factor
Diarrhea	50% (n = 125)	Increases nutrient loss and dehydration
Respiratory Infections	35% (n = 87)	Increased metabolic demands and nutrient depletion





Therefore, this study finds few main risk factors of SAM in children under the age of five in District Poonch of Azad Kashmir. Such are low maternal education, inadequate breastfeeding, poor hygiene, delayed introduction of complementary foods and other related diseases like diarrhea, and respiratory illnesses. The clinical and anthropometric results provide evidence of the magnitude of the SAM problem in the given region, which indicated that most children were presented with both acute and chronic malnutrition indicators. Given the statistical significance of all the identified risk factors it behooves resource mobilization to target prevention interventions to the following areas: maternal education, breastfeeding practices, sanitation and control of common infections. These measures could help cut out the risk of SAM and better the nutritional state of children within this deprived region [15].

Discussion

The purpose of this research was to determine and describe the factors that placed children of under five years in District Poonch, Azad Kashmir and or themselves in risk of developing Severe Acute Malnutrition (SAM). It emerges from this study that a number of socio-demographic, health, and environment related variables are major determinants of high SAM in this region. Such factors include low maternal education, poor breastfeeding measures, poor hygiene, delayed introduction of complementary feeds, and common interacting diseases such as diarrhea and respiratory illness.

The information presented in the current investigation correlates with the worldwide and South Asian SAM risk factors identified in prior research. As a cross sectional prevalence study done globally it has been established that maternal education is one of the most important determinant factors of child malnutrition. An analysis of the results of the work by Gatica-Domínguez et al. (2018) established the fact that mothers with higher levels of education were found to practice good nutrition by exclusive breastfeeding and timely introduction of complementary foods. As it concerns inadequate breast feeding and SAM, there exists a number of related publications that indicated that exclusive breastfeeding during

the first six months would help to decrease risk of malnutrition and other related diseases among children (Victora et al., 2016). Paralleling the international trends noted in this study, we noted that lack of exclusive breastfeeding also increased the susceptibility of children to be affected by SAM.

CE: Focusing on the environmental factors, contaminated water and lack of proper hygiene have been known early to be causal factors that affect the level of malnutrition prevalent in LMIC. Hygiene related diseases have especially been closely associated with poor sanitation and are major causes of malnutrition in under-fives due to nutrient loss, and dehydration resulting from diarrhea diseases (Walker et al., 2013). This agrees with our study, only 50% of the children from the SAM group reported to have a history of diarrheal episode. This indicate that increasing the coverage in clean water and sanitation could be some of the strategies that can be employed in preventing Sam within district Poonch [16].

Another major risk factor that we have identified in this study as a result of delayed introduction of complementary foods. Similarly, as per the standard set by WHO across the world, it is advised to start weaning with solids at the age of six months in view of the number of nutrient needs of the infants. Our observation that delays in this practice increased the risk of the disease in our study boat similar observations in other parts of South Asia (Bhandari et al., 2004). Poor complementary feeding practices are associated with low maternal knowledge and inadequate health care, both of which were observed in the study group.

Other diseases including diarrhea and respiratory infections are also risk factors to the development of SAM. These infections increase metabolism and decrease nutrient utilization so that malnutrition is perpetuated in a cycle with the infections. Research carried out in rural Pakistan identified respiratory infections and diarrhoeal diseases as the common diseases contributing to childhood malnutrition in concordance with the results of our study.

Referring to District PHC Poonch, the high incidence of SAM could be attributable to both socio economic factors and restrictions in health care access. the main potential risk factors are a lack of health care services, low education level of the mothers, and poverty that are the issues prevailing in the region. Even though the tertiary care hospital in District Poonch has been established for specialized care; in many families especially in the far-flung areas access to such services is still a dream. Poor education standards and low health literacy of the mother can lead to inadequate feeding practices, and delayed seek for medical attention, major contributors to SAM.

The suggestions of this study therefore are crucial to the reproductive, maternal, neonatal, and adolescent health programs of District Poonch and other similar districts. First, the knowledge of risk factors, including low maternal education, inadequate breastfeeding techniques indicates the need for continued maternal and child health education. Such programmes should ensure that the mothers are taught the importance of the provision of the exclusive breast milk during the first six months of their baby's lives and the appropriate time to introduce complementary foods. Education on these things could go a long way in tackling the issue because some of the causes of SAM are addressed here point blank.

Ameliorating sanitation and hygiene should be one of the goals of any public health agenda. Examples include hand washing, clean water and access to better sanitation in order to minimise cases of diarrheal diseases as they act as causes of SAM. However, it may be important for the community based health related intervention in order to create awareness that poor sanitation is as a result of malnutrition among children and hence more families could practice improved hygiene.

Measures in this regard include Other preventive measures which are vital include the reduction of the high incidences of diarrhea and respiratory infections. Some of series immunization points, increase in health care utilization through provision of ORS could help in managing these infections. Such areas of intervention as nutrition and infection control can make health programs even more strategic for managing the double burden of malnutrition and infections in young children.

Last, there is a need to adjust the policies in relation to the availability of the healthcare services for all families with children, but especially in rural areas. Building health facilities, increasing access to initial level of heath care facilities, and increasing capacity of health workers and knowledge and counselling in child nutrition and SAM could also reduce prevalence of SAM.

This chapter presents the strengths and limitations of the study as follows:

There are a few advantages instrumental in making this study a valuable resource for determining all the risks that may lead District Poonch to SAM levels. A strength is that local risk factors are clearly defined due to the sample of the population under analysis. It was possible to gather information concerning the particular problems of SAM children in a tertiary care centre through the study. Moreover, the study design permitted to calculate a variety of options like maternal education, breast feeding, and sanitation to examine the multiple factors that have an impact on SAM [17].

On the same note, the following limitations are observed in the study: The sample comprises 250 children hence the study sample may not contain all clientele of District Poonch though the sample was taken from a single tertiary care hospital. This could cause selection bias because the proportion of severe malnutrition is slightly different from that on admission in paediatric wards from hospitals; severe cases may be admitted at the hospital while less severe cases may be treated at the primary health care facilities or at home. The cross-sectional design used in the study also reduce generalizability of the determining relationships thus preventing causality inference. Reasons for SAM are established with positive risk factors, but it is hard to identify if these factors have caused SAM or are simply related to it.

In addition, retrospective interventions such as medical record reviews and parental interviews relied on their recall capacity and there is always likely to be recall bias when parents were asked to recall past feeding practices and healthcare using. The absence of a control group is also a limitation that can prevent paying attention to the difference between the identified risk factors and children without SAM.

Last, the possibility of generalizing results may be restricted to other comparable rural and semi–urban regions of Azad Kashmir or South Asia only. The findings can therefore not be generalized to other regions characterized by different socio-economic, cultural and health systems.

Thus, the present research underscores low maternal education level, suboptimum breastfeeding, poor hygiene, late introduction of complementary feeding, and coexisting illnesses including diarrheal and respiratory diseases as important predictors associated with SAM among children under the age of five population in District Poonch, Azad Kashmir. These observations pose urgency on need to institute appropriately timed interferences such as maternal education, sanitation, and healthcare accessibility in order to mitigate the high circumstances of SAM in the region. Generally, the findings from this study could be useful for the design of new public health programs and interventions against malnutrition and improved child health in like jurisdictions [18].

Conclusion

Consequently, this research revealed potential risk factors for SAM in children under-five in district Poonch, Azad Kashmir such as low maternal education level, poor breastfeeding, poor sanitation and hygiene, delayed complementary feeding, and the presence of co- morbidity illnesses, diarrhea, and respiratory diseases. The above factors must be addressed if the burden of SAM in the region is to be minimized. Concerning recommendations for policies and interventions, the strategies are increasing education on nutrition to mothers, encouraging exclusive breastfeeding, increasing accruing to health facilities, and magnifying already existing sanitation, and hygiene programs. However, there is a strong need to conduct other similar studies and policy interventions to establish the local characteristics of SAM and the best prevention and management interventions for the risk factors for SAM among community dwelling vulnerable populations.

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