PREVALENCE OF STUNTING AMONG CHILDREN IN TEHSIL HAZRO

DR. ZAFAR EJAZ KHAN[1,] SAYED ALI MUZAFFAR[2], LATIF ULLAH KHATTAK[3]

[1](BDS, MPH, PhD SCHOLAR, FACULTY OF MEDICINE, PUBLIC HEALT, (EPIDIMEOLOGY), LINCOLN UNIVERSITY COLLEGE, MALAYSIA,
E-mail: drzafar@lincoln.edu.my , drkhan223@gmail.com)

[2](MEDICAL OFFICER, BUS, MPH, URBAN PULSE HERBOCEUTICALS, NOIDA)
F-mail: samuzaffar34@gmail.com

[3](MD, MSPH, MSC. Nutrition, BSc.Hons, Department of environmental design, health and nutrition sciences aiou Islamabad,
E-mail: dlukhattak@gmail.com

ABSTRACT

This abstract provides a summary of a study conducted in Tehsil Hazro, which examines the occurrence and factors contributing to stunting in children. Stunting refers to a condition where children experience impaired growth and fail to reach their full developmental potential. The study had the objective of assessing the prevalence of stunting and examining the factors contributing to its occurrence. The research employed an institutional-based cross-sectional design. Five schools were randomly selected, and a total of 100 children aged 8-10 years were chosen from these schools. Anthropocentric measurements were taken, and frequency distribution and t-tests were used to analyze the correlation between mothers' education and economic status with the child body mass index (BMI).The study's findings showed that 30% of the kids were stunted. While 55% were classified as normal. Additionally, 15% of the children fell into the overweight and obese category. The dietary intake of the majority of children consisted mainly of cereals, pulses, oil, and fats. However, stunted children had lower consumption of meat, milk, and fruits. The study also investigated the relationship between economic status and BMI, The study discovered a significant positive correlation with a t-value of 0.549.Similarly, a weaker correlation was observed between mothers' education and BMI, and with a t-value of 0.308 these findings suggest that economic status, maternal education, and malnutrition are the primary contributors to stunting.The findings of the study reveal a notable prevalence of stunting among children in Tehsil Hazro. The abstract concludes by recommending efforts to increase nutrition education and awareness among the general population, emphasizing the need to address the underlying causes of stunting to mitigate its prevalence.

KEYWORDS: Malnutrition, WHO, Socioeconomic status, SDGs, WHA, Stunting

CHAPTER 1: Introduction

1.1 Background:

The impact of stunting on children is significant, as it may have long-term consequences. Physical and cognitive impairments, reduced educational attainment, and increased vulnerability to diseases. Additionally, stunting has broader social and economic consequences for communities and nations, affecting productivity and hindering economic development.

Young children who exhibit stunting, also known as poor linear growth or low length or height for age, is influenced by various factors and determinants. These include antenatal, intrauterine, and postnatal malnutrition, often caused by insufficient or inappropriate nutrition as well as the effects of infectious diseases. The prevalence of childhood stunting remains a public health concern in several African countries (Flume et al., 2009).

According to the United Nations, more than 44% of Pakistani children under the age of five experience stunted growth due to chronic malnutrition (Ortiz et al., 2016). This places Pakistan among the ten countries in the world where stunting, wasting, or both affects more than half of the under-five population. Despite the country's increased commitment to social development in recent years, malnutrition in its various forms remains a pressing issue in Pakistan. The Pakistani government has made significant strides over the past 20 years. In various aspects of public health. Efforts to combat polio have yielded positive results, routine immunization rates have increased, and the number of children who are not attending school has decreased. (Hussain, Hussain, & Hamid, 2017)

1.2 Statement of Problem

The early years of a child's life are crucial for both physical and brain development, and proper nutrition is essential during this period. Research increasingly supports the notion that inadequate nutrition in early childhood can have enduring effects on cognitive abilities and future productivity (Victora et al., 2008). Stunting, which signifies impaired linear growth, including the growth of crucial organs like the brain, indicates that a child has experienced a deficiency in essential nutrients.

These connections emphasize the transformative potential of nutrition in the lives of vulnerable individuals and highlight its central importance in achieving the Sustainable Development Goals (Randhawa & Kumar, 2017).

Considering that stunting is prevalent in rural areas, this particular study aimed to determine the Stunting is common in school-aged children aged 8 to 10 years in Tehsil Hazro.

1.3 Study Objectives
This study was conducted

1. To investigate the rate of prevalence of stunting among children age 8-10 in Tehsil Hazro

2. To identify the causes of stunting among children age 8-10 in Tehsil Hazro

1.4 Significance of the study

According to the most recent data, the prevalence of stunting among children under the age of 5 in Pakistan stands at a high rate of 44%, ranking it as the third-highest in the world. It is noteworthy that stunting is slightly more prevalent in male children (48%) compared to female children (42%). On the other hand, Asia as a whole has experienced a positive trend, witnessing a substantial decrease in the number of children affected by stunting from 190 million (49% in 1990) to 100 million (28% in 2010).The study mentioned in your statement is valuable as it focuses on determining the prevalence and causes of stunting in Pakistan. Understanding the reasons behind stunting among children is crucial for identifying effective interventions and addressing the implications of reducing stunting. By identifying the factors contributing to stunting, policymakers, healthcare professionals, and relevant stakeholders can develop targeted strategies to combat malnutrition and improve child health and development.

It is evident that reducing the prevalence of stunting is a global and regional priority, given the decreasing trends observed in Asia and the significant impact it has on children's well-being. Continued research, data monitoring, and collaborative efforts are essential to deal with the root causes of stunting and ensure progress towards reducing stunting rates in Pakistan and globally.

1.5 Boundaries of the Study

This study was delimited to

- Tehsil Hazro

- School going children of age 08-10 years only

- Students of public schools only

CHAPTER 2: Review of related Literature

Stunting during early childhood has long-term consequences that impact various dimensions of an individual's life. It increases the vulnerability to mortality from childhood diseases, impedes cognitive development, diminishes educational attainment, and reduces the likelihood of attaining a stable income in adulthood (WHO & Mather's, 2016). Additionally, when combined with excessive

weight gain later in life, stunting further heightens the possibility of contracting chronic illnesses, such as diabetes that are associated with nutrition-related factors.

NICEF South Asia actively promotes evidence-based initiatives to tackle stunting and address different types of malnutrition affecting children, adolescents, and women. These initiatives are in line with the targets outlined in the Sustainable Development Goals (SDGs). To achieve these goals, a holistic approach that involves collaboration between sectors such as it is critical to priorities health, nutrition, water, sanitation, and hygiene (WASH), social policy, and education.

UNICEF has provided extensive support to provincial and regional governments in implementing and expanding multi-sectoral nutrition strategies. This includes the establishment of Scaling up Nutrition (SAN) Secretariats in all provinces, highlighting the commitment to addressing malnutrition and stunting holistically. By prioritizing evidence-based programs and adopting a multi-sectoral approach, UNICEF aims to achieve substantial advancements in reducing stunting and enhancing overall nutrition outcomes in South Asia.

➢ Stunting in South Asia

Between 2000 and 2017, South Asia saw a significant decrease in the number of stunted children. With approximately 30 million fewer stunted children recorded, dropping from 89.2 million to 59.4 million. However, the rate of reduction in the past three years, from 2014 to 2017, did not meet UNICEF's target of 12 million, with only 7-8 million reductions observed during that period. This indicates the need for increased efforts to ensure that women, to effectively prevent stunting, children and their families receive adequate support and services. Effective strategies include providing caregivers with guidance on optimal feeding practices during early childhood and improving access to affordable and nutritious foods. It is also crucial to prioritize prompt treatment for children with severe acute malnutrition and offer preventive services for adolescent girls and women who are malnourished, including those who have anemia.

1) Afghanistan

In 2017, UNICEF had a significant impact on helping the Afghan government, facilitating Afghanistan's participation in the Scaling up Nutrition (SUN) movement. This global partnership focuses on addressing nutrition challenges and promoting improved nutrition outcomes. This marked an important milestone for Afghanistan, becoming the 60th country to join this global initiative. Additionally, UNICEF assisted the government in launching the Food Security and Nutrition Agenda (AFSeN), which is a comprehensive framework involving multiple sectors and stakeholders. The AFSeN framework aims to ensure that all Afghan citizens, particularly children, have access to sufficient nutritious food both physically and economically.

2) Bangladesh
UNICEF has been instrumental in supporting Bangladesh's efforts in addressing nutrition challenges. The organization has provided valuable assistance in the development of the

National Plan of Action on Nutrition (NPAN) and the revitalization of the Bangladesh National Nutrition Council (BNNC), which serves as the central authority for nutrition policy and coordination. Additionally, UNICEF has introduced competency-based training programs for frontline workers and implemented a real-time monitoring system to guarantee efficient provision of nutrition services.

3) Bhutan

During the period from 2010 to 2015, Bhutan achieved noteworthy advancements in reducing stunting among young children, with the prevalence dropping from 33% to 21%. Stunting, however, is still a problem for Bhutan's public health. UNICEF played a pivotal role in assisting the country in addressing this issue by supporting the development of a comprehensive National Food and Nutrition Security Strategy and an Accelerated Plan for Nutrition. These strategic documents served as a roadmap for coordinated efforts across multiple sectors to enhance food and nutrition security in Bhutan.

4) India

UNICEF has played a vital role in advocating for and supporting India's initiatives to address nutrition challenges. Through sustained efforts, in 2017, the National Nutrition Strategy and the National Nutrition Mission in India received official approval, marking significant progress in addressing the nutrition challenges in the country. UNICEF has played a crucial role in supporting these initiatives by working closely with the government. One notable achievement has been the establishment of seven State Nutrition Missions, which promote collaboration among health and water, sanitation, and hygiene (WASH)), to enhance maternal and child nutrition outcomes. These collaborative efforts are aimed at improving the overall nutritional well-being of women and children in India.

This comprehensive approach aims to address the underlying factors contributing to undernutrition and enhance overall nutrition outcomes. UNICEF has expanded and enhanced nutrition programs in partnership with the government, focusing on preventing undernutrition during early life, providing care for severely wasted children, and enhancing the nutrition of adolescent women and girls. These efforts prioritize economically disadvantaged populations and marginalized children, ensuring a focus on the most vulnerable groups. UNICEF has also implemented the Swabhimaan demonstration program in collaboration with State Rural Livelihood Missions, aiming to enhance women's nutrition in three states. Additionally, the Weekly Iron and Folic Acid Supplementation (WIFS) program, supported by UNICEF, has been scaled up to cover 14 states, reaching 36 million adolescents and addressing anemia and micronutrient deficiencies.

5) Maldives

UNICEF is actively engaged in supporting the Maldives in implementing national standards and programs related to infant and young child feeding. Their efforts include strengthening the capacity of healthcare staff to provide effective counseling to mothers, particularly in areas with high rates of

undernutrition. Additionally, UNICEF is collaborating on the development of a behavior-change communication strategy that focuses on the critical first 1,000 days of life. This strategy aims to raise awareness among caregivers and provide guidance on optimal nutrition during this important period.

6) Nepal

UNICEF has played a vital role in supporting Nepal's implementation of the Multi Sector Nutrition Plan (MSNP) I, resulting in expanded access to nutrition services for children and women. By the end of 2017, MSNP I had been extended to 28 districts, benefiting over 700,000 children. In collaboration with the government, UNICEF has also contributed to the development of MSNP II (2018-2021), which aims to further enhance and broaden access to nutrition services. Notably, the government has allocated its own funds to cover approximately 60% of the US$ 500 million budget for MSNP II, demonstrating its commitment to addressing nutrition challenges.

7) Pakistan

UNICEF has actively supported provincial and regional governments in Pakistan in implementing multi-sectoral nutrition strategies. This involved establishing scaling up Nutrition (SUN) Secretariats in all provinces to coordinate and implement nutrition interventions effectively. Working in collaboration with the government, UNICEF has played a key role in developing the National Infant and Young Child Feeding Strategy and creating a comprehensive plan and budget for its implementation at the provincial and regional levels. The strategy focuses on promoting optimal feeding practices for infants and young children, addressing crucial aspects of nutrition and child development. Additionally, UNICEF has assisted the government in conducting a national assessment to evaluate and improve complementary feeding practices. This assessment helps identify gaps and challenges in complementary feeding and informs targeted interventions and policies to enhance child nutrition.

8) Sri Lanka

UNICEF has actively addressed the lack of progress in reducing malnutrition by supporting the development of a new Multi-sectoral Action Plan for Nutrition (MsAPN) in Sri Lanka for the period 2017-2021. This plan sets out clear objectives and strategies to improve nutrition outcomes across sectors. UNICEF also played a role in reviewing and updating the National Nutrition Policy and Micronutrient Strategy, ensuring they are based on the latest evidence and best practices. The organization also contributed to the costing of the health-sector component of the National Nutrition program, ensuring sufficient resources for effective implementation. In addition, UNICEF strengthened the data management and monitoring system in all 25 districts of Sri Lanka, improving the ability to track progress and make informed decisions.

➢ **Stunting and Malnutrition**

Micronutrient deficiencies, including anemia, present a significant public health challenge that can have far-reaching consequences for the development of nations. Anemia, characterized by low blood hemoglobin concentration, is a particularly prevalent and impactful form of micronutrient deficiency. It affects a staggering 2 billion people worldwide, with iron deficiency accounting for approximately 50% of anemia cases. Anemia can also be brought on by infections like malaria, tuberculosis, or HIV/AIDS as well as other micronutrient deficiencies like folate, riboflavin, vitamins A or B, and folate, riboflavin, and vitamin deficiencies. These hidden forms of malnutrition can have profound impacts on individuals and communities, affecting their health, development, and overall well-being.

Iron deficiency anemia has far-reaching consequences for individuals and societies. It negatively impacts birth weight, hinders cognitive and motor development in children, and reduces adult labor productivity. Alarmingly, nearly one in five children under the age of five worldwide suffer from some form of iron deficiency anemia, and severe anemia is associated with approximately 90,000 deaths annually.

Zinc deficiency is a significant contributor to child mortality, each year, an estimated 116,000 child deaths are attributed to zinc deficiency or the increased risk of inadequate zinc dietary intake. Zinc is essential for many physiological processes, including immune function and growth. Insufficient zinc intake can weaken the immune system and increase susceptibility to infections, leading to higher mortality rates among children.

> ➢ **Pakistan and Stunting**

Indeed, Pakistan faces significant challenges in addressing malnutrition, particularly stunting, wasting, and undernutrition among children under the age of five. The country is among the ten nations where more than half of the under-five population experiences one or both of these forms of malnutrition. This highlights the critical issue of malnutrition in its various types and forms within the Islamic Republic.

Despite these challenges, the Pakistani government has demonstrated an increased commitment to social development in recent years. Significant progress has been made in the initiatives to eradicate polio, improve routine immunization coverage, and decrease the number of children who are out of school. These efforts reflect the government's dedication to improving the health and well-being of its population. However, the progress in reducing stunting rates in Pakistan has been mixed, as indicated by the latest available data showing a concerning under-five stunting rate of 44% in the country. This places Pakistan as the third-highest country in terms of stunting prevalence globally. Additionally, stunting appears to affect male children slightly more than female children, with rates of 48% and 42%, respectively.

It is encouraging to see a decline in childhood stunting globally and regionally, indicating progress in addressing this critical issue. Asia has seen a significant reduction in stunted children, from 190 million in 1990 to 100 million in 2010. Reflects the collective efforts and interventions implemented to improve nutrition and child health.

If the current trend continues, it is projected that the global prevalence of stunting will further decrease to 21.8% by 2020, with Asia expected to fall below the symbolic 20% threshold. This is an important milestone in the fight against stunting, as it indicates improved nutrition and overall child well-being.

Pakistan has experienced a slower reduction in stunting prevalence compared to the global and regional trends. Over the period from 1990-91 to 2013, Pakistan's stunting prevalence decreased by 10 percentage points, from a rate of 54.5% to 44%. This reduction is relatively modest compared to the global decrease of 15 percentage points during the same period.

Furthermore, it is concerning to note that Pakistan experienced a reverse trend in stunting prevalence since 2001, with an increase of 3.3%. This reversal in progress is indeed striking and highlights the need for urgent attention and intensified efforts to address malnutrition and stunting in the country.

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i. Antenatal care and Pakistan's health system

Stunting reduction in Pakistan is significantly hampered by the country's failing healthcare system. Pakistan's healthcare system faces numerous challenges and ranks poorly compared to other countries on various health indicators, particularly in maternal, neonatal, and infant mortality.

The rankings you mentioned reflect the alarming situation in Pakistan's healthcare system. In 2015, Pakistan's ranking on the Maternal Mortality Ratio Index dropped to 149th out of 179 countries, compared to its previous ranking of 147th in 2014.The maternal mortality rate in Pakistan stands at 170 per 100,000 live births. Which is significantly higher than the rate in countries like Sri Lanka (30 per 100,000 live births).

The Maternal Mortality Ratio Index placed Pakistan 149th out of 179 nations in 2015, down from 147th in 2014. In comparison to Sri Lanka, where the rate is 30 per 100,000 live births, Pakistan has a maternal mortality rate of 170 per 100,000 live births.

Similarly, the under-five mortality rate in Pakistan in 2013 was 85.5 live births per 1000, nearly double that of India. The under-five mortality rate is used as a proxy indicator for a variety of variables, including parental education, healthcare access, and nutritional status. The high under-five mortality rate underscores the challenges faced by children in Pakistan and highlights the need for comprehensive interventions addressing healthcare, nutrition, and education.

The study conducted by Headey, Hoddinott, and Park (2016) assessed access to healthcare in Pakistan over the past two decades using two standard indicators: the percentage of women receiving four or more antenatal visits and the percentage of births that took place in a medical facility. The results demonstrate a noteworthy improvement in both indicators when examining the data for Pakistan (N = 4,865) between 1991 and 2013. However, it is worth mentioning that the progress made in Pakistan was comparatively smaller than that of other countries in the region, which achieved similar improvements in a shorter timeframe. Bangladesh and Nepal, despite facing more challenging initial circumstances, managed to make more substantial advancements in enhancing access to healthcare services.

Country	4 or > antenatal visits (%)	Born in a medical facility (%)
% change in Pakistan (1991–2013)	134.6% (from 16.4% to 38.4%)	227.4% (from 15.2% to 49.8%)
% change in Bangladesh (1997–2011)	262.6% (from 6.6% to 24%)	462.9% (from 4.4% to 24.6%)
% change in Nepal (1996–2011)	417.8% (from 9% to 48%)	345.8% (from 7.9% to 35%)
% change in India (1993–2006)	43.7% (from 32% to 45.9%)	51.5% (from 29.9% to 45.4%)

Source: Figures from Headey et al. (2016)

ii. **Household assets and private wealth**

Economic wealth in driving sustained nutritional change and reducing stunting is crucial. A household's increased wealth allows for greater expenditures on food, healthcare, and other nutrition-related needs, which directly aids in the decrease of stunting. While the degree of association between wealth and stunting may vary across countries, the relationship remains consistently significant.

He study by Headey et al. (2016) provides valuable insights into the economic aspect of stunting reduction in Pakistan. He study indicates that Pakistan demonstrated relatively positive performance between 1991 and 2013 based on the constructed asset index, which used household assets as a proxy indicator for wealth. This aligns with the World Bank's poverty estimates, which also indicate improvements in household income and poverty reduction in the country during the same period.

It is worth noting that the asset index used in the study is specific to Pakistan and cannot be directly compared across countries. However, it serves as an important indicator of the country's economic progress and its potential impact on stunting reduction.

Country	Authors' asset index (1-10)

Pakistan % change (1991-2013)	52.9% (from 3.5 to 5.3)
Bangladesh % change (1997-2011)	144.7% (from 1.4 to 3.5)
Nepal % change (1996-2011)	285.2% (from 1 to 4)
India % change (1993-2006)	41.9% (from 2.4 to 3.3)

Source: Figures from Headey et al. (2016)

Multidimensional Poverty in Pakistan, UNDP 2016. According to district-level findings: "Larkana, Attock, Malakand, T.T. Singh and Hyderabad have made the most progress, reducing absolute poverty headcount ratio by more than 32 percentage points. In relative terms the best performers were the districts of Islamabad, Attock, Jhelum, Lahore, Karachi and Rawalpindi. On the other hand, some districts have experienced an increase in their poverty incidence. In absolute and relative terms, the districts of Umerkot, Harnai, Panjgur, Killa Abdullah and Kashmore have witnessed the highest increase in incidence of poverty."

iii.   Study examined maternal and paternal education and their impact on child health outcomes

Numerous social indicators are improved by increased access to education, especially for women and girls. Lack of education, particularly among parents, is a major contributor to poverty as well as undernourishment in children. A higher prevalence of stunting in primary school students is linked to less educated parents.

Numerous pathways are involved in how parental education impacts the health of children. These pathways include higher household income, delayed marriages, exposure to media, literacy, and participation in the labor market, health knowledge, and empowerment of mothers within the household. These factors collectively contribute to a reduction in chronic malnutrition among children.

The study conducted by Headey et al. (2016) examined the levels of education among mothers and fathers in the four countries under investigation. Using data from national Demographic Health Surveys on the number of years of schooling. Between 1991 and 2013, Pakistan improved in both maternal and paternal education. However, compared to Bangladesh and Nepal, Pakistan's progress in this regard was relatively less impressive. Both Bangladesh and Nepal achieved higher success in increasing the number of years of education for both mothers and fathers during similar time periods In other words, while India had a better starting point and Nepal is rapidly improving in terms of absolute years of education, Pakistan's development is comparatively more sluggish. These findings suggest that although there has been some improvement in educational attainment in Pakistan, the pace of progress is slower compared to some neighboring countries. Enhancing educational opportunities, particularly for girls and women, and addressing the quality of education are essential for accelerating the reduction of stunting and improving nutrition outcomes for children in Pakistan.

Country	Maternal education	Paternal education
% change in Pakistan (1991–2013)	98.7% (from 1.8 years to 3.5)	31.3% (from 4.5 to 5.9)
% change in Bangladesh (1997–2011)	122.4% (from 2.4 years to 5.3)	41.2% (from 3.5 to 4.9 years)
% change in Nepal (1996–2011)	211.1% (from 1.1 years to 3.5)	39.3% (from 4.0 to 5.6 years)
% change in India (1993–2006)	46.2% (from 3.4 years to 4.9)	13.0% (from 5.9 to 6.7 years)

Source: Figures from Headey et al. (2016)

iv. Fertility and demographic growth

Fertility rates have a significant influence on stunting prevalence and are influenced by various factors, including education. Higher levels of education, particularly for women, have been associated with several positive outcomes, including lower fertility rates.

When women have access to education, they gain greater knowledge about family planning methods and reproductive health, which enables them to make informed decisions about childbearing. With increased education, women often delay marriage and childbirth, leading to longer birth intervals and smaller family sizes. This can have a positive impact on nutrition and health outcomes for both mothers and children.

Headey et al. (2016) conducted a study focusing on fertility in the four countries, including Pakistan. They specifically looked at the average number of children per woman and the birth intervals (measured in years). Interestingly, Pakistan showed a distinct decrease in birth intervals and a significant decline in the average number of children per woman during the period from 1991 to 2013 Specifically, Pakistan experienced a decrease in birth intervals by 0.1 years during this period. However, it is worth noting that Pakistan had the smallest average birth interval among the four countries and did not show any improvement in this indicator over time. Additionally, In comparison to the other three countries, Pakistan had a higher average number of children per woman, while the remaining countries had less than three children per woman. Bangladesh, in particular, achieved a lower average of 2.5 children per woman in 2011.

Country	Birth intervals	Number of children
% change in Pakistan (1991–2013)	-3.8% (from 2.8 years to 2.7)	-13.4% (from 4.5 children to3.9)
% change in Bangladesh (1997–2011)	22.8% (from 3.4 years to 4.2)	-23.6% (from 3.3 children to 2.5)
% change in Nepal (1996–2011)	13.9% (from 3 years to 3.4)	-18.6% (from 3.4 children to 2.8)
% change in India (1993–2006)	0% (from 3 years to 3)	-6.9% (from 3.1 children to 2.9)

Information from Headey et al. (2016)

Fertility rates play a crucial role in determining and impacting the prevalence of stunting. In low and middle-income countries, fertility is influenced by various factors, primarily education, which can be viewed as a determining factor. Enhanced education for women can empower them within households, improve access to family planning methods, lead to a smaller desired family size, increase participation in the labor force, elevate opportunity costs, and ultimately result in improved access to healthcare.

Headey et al. (2016) conducted an independent analysis of fertility using two indicators across the four countries, including Pakistan. These indicators included measuring birth intervals in years and the average number of children per woman. Interestingly, Pakistan exhibited a distinctive reduction in birth intervals and a significant decrease in the average number of children per woman during the period from 1991 to 2013.

Specifically, Pakistan experienced a decrease in birth intervals by 0.1 years during this period. However, it is worth noting that Pakistan had the smallest average birth interval among the four countries and did not show any improvement in this indicator over time. Additionally, Pakistan had the highest average number of children per woman, while the other three countries had fewer than three children per woman. Bangladesh even achieved a lower average of 2.5 children per woman in 2011.

v. **Open defecation and sanitation issues**

Gaining insight into fertility rates and their future trajectory is essential for understanding trends and making projections for the year 2030. Pakistan, specifically, is undergoing a gradual demographic transition. Pakistan is predicted to have 342 million people by 2050, making it the sixth most populous nation in the world after India, China, the USA, Indonesia, and Nigeria...

As of 2014, Pakistan has the highest population growth rate in South Asia, standing at 1.49%. Additionally, the country also has the highest birth and fertility rates compared to other nations in the region. This population growth poses a challenge to the government's strategy in reducing chronic malnutrition among children under the age of five (U-5) since it needs to take into account the implications of this growth. The specific details of how the government's strategy aligns with this demographic challenge are uncertain at this stage.

Pakistan faces demographic challenges influenced by various factors, including low contraception usage. In 2014-2015, the overall Contraceptive Prevalence Rate (CPR) was 25.54%, showing regional disparities with Baluchistan having the lowest CPR at 6.93% and the Federal District of Islamabad having the highest at 41.36%. In comparison, Bangladesh has a contraceptive prevalence rate above 60%. Furthermore, there is concern as the latest national CPR in Pakistan slightly decreased compared to the previous measurement, with a rate of 27.41% in 2013-14. Analysis of fertility rates based on age-specific indicators also reveals concerning trends.

Country	Open defecation (cluster %)
% change in Pakistan (1991–2013)	(From 50.2 to 22.1) -55.9%
% change in Bangladesh (1997–2011)	(from 26.0 to 4.8) -81.6%
% change in Nepal (1996–2011)	(from 86.8 to 48.5) -44.1%
% change in India (1993–2006)	(From 63.5 to 45.6) -28.2%

Information from Headey et al. (2016)

Pakistan has shown promising advancements in enhancing access to sanitation facilities over time. Prior to 2007, over 50% of the population lacked access to improved sanitation. By 2015, Pakistan had made significant progress in reaching the Millennium Development Goal for sanitation, with around 64% of the population obtaining improved sanitation access. This achievement places Pakistan among the countries that have successfully met the target set for sanitation under the MDGs. Despite the global and regional trends of decreasing stunting prevalence, Pakistan has experienced an increase in stunting prevalence since 2001, with a 3.3% increase. Light of the worrisome trend, the Pakistani government has established an ambitious target to decrease the prevalence of stunting from 44% to 34% by 2017. This goal aims to enhance the nutritional well-being of approximately 1.9 million children who were previously affected by stunting. Furthermore, Pakistan has shown its commitment to the Sustainable Development Goals, which encompass objectives to eradicate hunger and ensure universal access to nutritious food, particularly for marginalized populations, by the year 2030.

To achieve these goals, concerted and consistent action is required, involving various stakeholders in the field of nutrition. It is important to address the underlying drivers of stunting, which include

inadequate dietary intake and diseases. This requires a comprehensive approach that encompasses improving access to nutritious food, promoting health and hygiene practices, enhancing healthcare services, and addressing socio-economic factors that contribute to malnutrition. By addressing these factors, Pakistan can make progress in reducing stunting and improving the overall nutritional status of its population.

Various factors contribute to the issue, including an unfavorable household environment, insufficient access to healthcare services, insecurity in obtaining adequate food within households, and inadequate practices in caring for and feeding women and children. Understanding and addressing these determinants is crucial for developing effective policies and actions to reduce chronic malnutrition.

Despite experiencing economic growth, poverty reduction, and improvements in sanitation access, Pakistan still faces substantial challenges in its healthcare and education sectors. The healthcare system faces challenges due to insufficient public funding, ineffective management, and a lack of adequate professional training. Similarly, the education system faces issues such as inadequate funding, disparities across provinces, and a lack of quality education. These challenges in healthcare and education have a direct impact on the nutritional status of the population and hinder efforts to reduce stunting.

**CHAPTER 3: Methodology**

3.1 Study Locale

The data of 100 students was collected from 05 public schools with the prior consent of deputy district education officer Hazro.

3.2 Population

Population of this study was comprised of children age 8-10 studying in public schools of Tehsil Hazro.

3.3 Sample

05 schools were selected randomly as a sample of the study and then 100 students of age 8-10 years 20 from each school were selected randomly from these 05 schools.
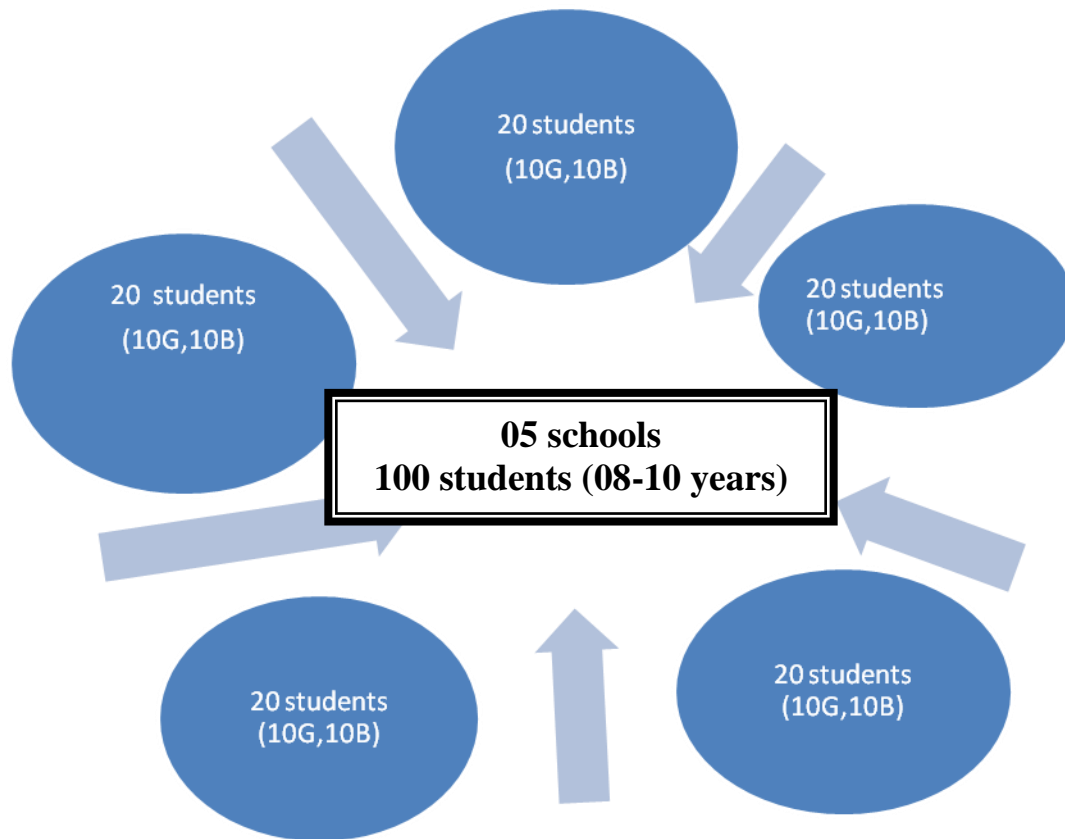
Research Design

The design of this study is institutional based cross sectional where randomly 05 institutions were selected then100 students were selected randomly from these 05 schools.

Inclusion criteria

The study included only the school going children in Tehsil Hazro. The children are aged in between 8 to 10 years. The students were selected by 05 public schools.

Exclusion criteria

The study did not include school going children in private schools. The study only includes children of public schools aged 08-10 years. The study did not include children lower than 8 years or above 10 years of age.

Study tools
the assessment tools were anthropometrics which aimed to assess the height, weight, age of the

children; BMI was calculated by CDA child BMI calculator with weight and height percentile. Further, a Food Frequency Questionnaire aimed to analyze their dietary patterns was taken. Along with this a short portion of the questionnaire which consists of their sociodemographic profile assessing mothers' educational level, working status and socioeconomic status.

Statistical Analysis of Data

BMI was analyzed by the height and weight. Stunting was compared with secondary data taken from National Nutrition Survey, 2018 and WHO data. Data is processed to SPSS and variables were tested for correlation through T value. Further, frequency distributions and graphs were processed and analyzed. Stunting was measured through all the variable testing and correlation.

CHAPTER 4: RESULTS & DESCRIPTION

Part A- Demographic Information

Table 4. 1   Frequencies of Ages of Children

	Frequency	Percent	Valid Percent	Cumulative Percent
8 Years	29	29.0	29.0	29.0
9 Years	36	36.0	36.0	65.0
10 Years	35	35.0	35.0	100.0
Total	100	100.0	100.0	

Table 4.1 indicates age frequencies of sampled children and it indicated very small difference between numbers as 29 children were of age 08 years, 36 students were of 09 years while 35 children were 0f 36 years of age.

Table 4. 2   *Frequencies of Gender*

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	47	47.0	47.0	47.0
Female	53	53.0	53.0	100.0
Total	100	100.0	100.0	

Table 2.2 stated about frequencies of gender of children included in study as 47 children were male while 53 children were female.

Figure 4. 1   Frequencies of Mother Education
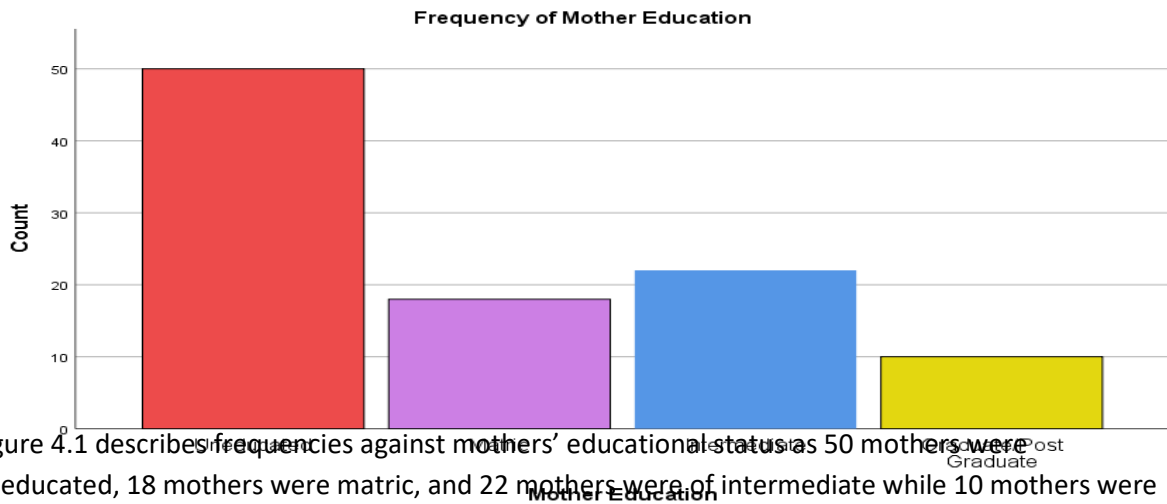

Frequency of Mother Education

Figure 4.1 describes frequencies against mothers' educational status as 50 mothers were uneducated, 18 mothers were matric, and 22 mothers were of intermediate while 10 mothers were graduate. Tehsil Hazro is at the border of Punjab and its borders are attached with KPK and due to the similar culture women education is not on their priority.

Figure 4. 2   Frequencies of Mothers' working status
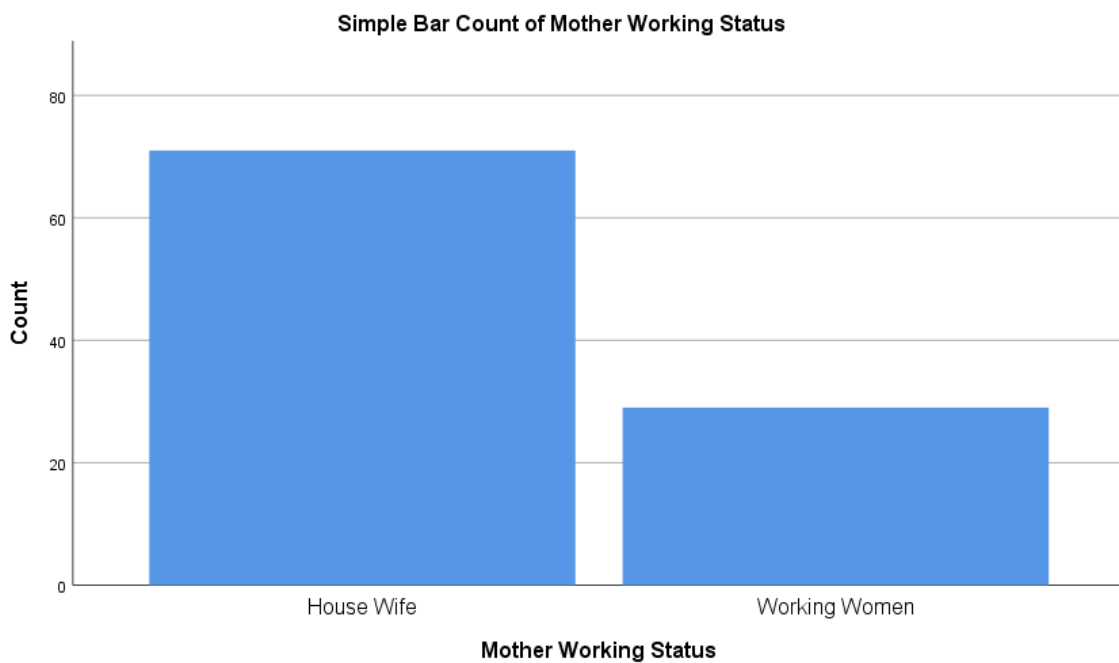

Simple Bar Count of Mother Working Status

Figure 4.2 illustrates the mothers' working status as due to the Pathan culture most of the women are house wife and only 28% women were working while 72% were house wives.

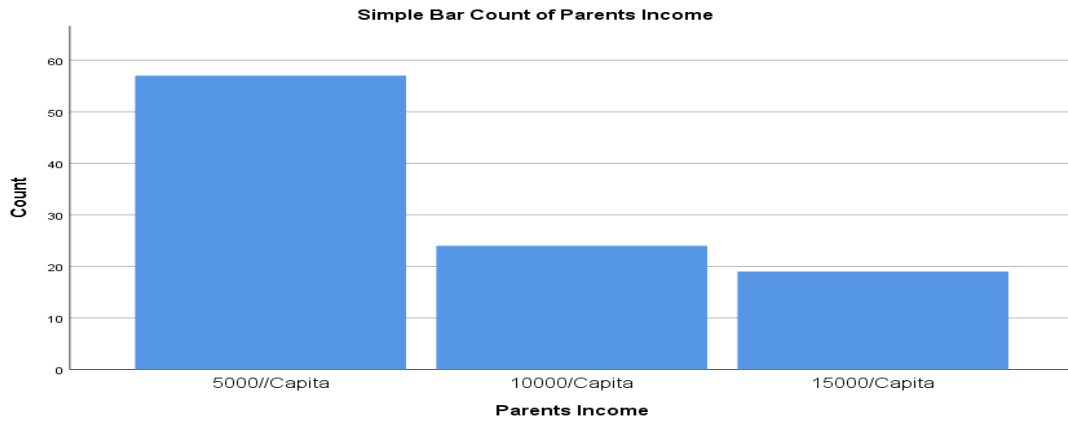*Figure 4. 3   Frequencies of Economy Status*

Figure 4.3 states the economical status of family of children. Economical statistics indicates that Tehsil Hazro is economically stable but here status shows that 67% children were from very low income class because most of the public schools students are from poor community due to less school fee and near to their homes.

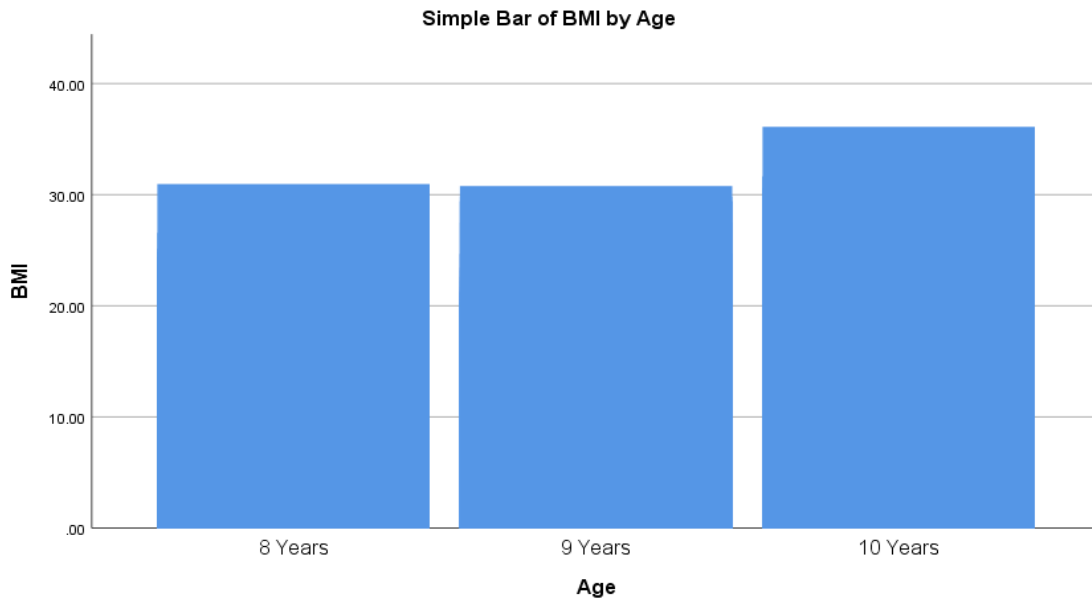### *Figure 4. 4 Frequencies of BMI of Children by Age*

Figure 4.4 indicates frequencies of BMI by age as 10th year is the rapid growth year so obvious difference can be observed in 10th year.

Table 4. 3   *Frequencies of Cereals Intake Day/Week*

	Frequency	Percent	Valid Percent	Cumulative Percent
5days/Week	18	18.0	18.0	40.0
6days/Week	40	40.0	40.0	58.0
7days/Week	42	42.0	42.0	100.0
Total	100	100.0	100.0	

Table 4.3 describes the frequencies of cereal intake days / week. As wheat is included in our staple food so almost wheat as paratha and chapatti is the most consumable product and wheat intake is almost the high even in children of lower economical status while maize is also used in some of the families in a certain period of time when locally it is harvested.

Table 4. 4   *Frequencies of Fruits & Vegetables Intake Day/Week*

	Frequency	Percent	Valid Percent	Cumulative Percent
1 day/Week	1	1.0	1.0	1.0
2days/Week	3	3.0	3.0	4.0
3days/Week	7	7.0	7.0	11.0
4days/Week	8	8.0	8.0	19.0
5days/Week	26	26.0	26.0	45.0
6days/Week	33	33.0	33.0	78.0
7days/Week	22	22.0	22.0	100.0
Total	100	100.0	100.0	

Table 4.4 states the frequency distribution of vegetable and fruit intake. In Pakistan scenario fruits are very costly so every one cannot afford all fruits and Tehsil Hazro is not an agricultural land and cultivation of some vegetables are on a very small scale. It can be seen the splinted trend.

Table 4. 5   *Frequencies of Milk and Dairy Products Intake Day/Week*

	Frequency	Percent	Valid Percent	Cumulative Percent
1day/Week	11	11.0	11.0	11.0
2days/Week	16	16.0	16.0	27.0
3days/Week	3	3.0	3.0	30.0
4days/Week	4	4.0	4.0	34.0
5days/Week	18	18.0	18.0	52.0
6ays/Week	30	30.0	30.0	82.0
7days/Week	18	18.0	18.0	100.0
Total	100	100.0	100.0	

Table 4.5 elaborates the frequency of milk and dairy products intake days per week and it shows that most of the children 66% children are taking milk or milk products at least 5days a week, but 34% children are those who take milk 3-1 day a week and this trend indicates the cause of their slow growth.

Table 4. 6   Frequencies of Meat, Poultry and Fish Intake/Week

	Frequency	Percent	Valid Percent	Cumulative Percent
1/Week	11	11.0	11.0	11.0
2/Week	16	16.0	16.0	27.0
3/Week	3	3.0	3.0	30.0
5/Week	18	18.0	18.0	48.0
6/Week	31	31.0	31.0	79.0
7/Week	21	21.0	21.0	100.0
Total	100	100.0	100.0	

Table 4.6 indicates meat, poultry and fish intake and the trend is almost the same as milk intake. 30% of the children were taking meat, poultry or fish 3-1 day a week which is the source of protein and the main nutrient for rapid and healthy growth. As Tehsil Hazro is located near the river Sindh and fish is locally available, is mainly a part of meal especially in winter

Table 4. 7   Frequencies of Grams and Pulses Intake/Week

	Frequency	Percent	Valid Percent	Cumulative Percent
4/Week	7	7.0	7.0	7.0
5/Week	27	27.0	27.0	34.0
6/Week	38	38.0	38.0	72.0
7/Week	28	28.0	28.0	100.0
Total	100	100.0	100.0	

Table 4.7 shows the positive trend towards grams and pulses intake and most of the children take grams and pulses as grams are part of almost one meal a day.

Table 4.8   *Frequencies of Fats and Oil Intake/Week*

	Frequency	Percent	Valid Percent	Cumulative Percent
3/Week	12	12.0	12.0	12.0
4/Week	21	21.0	21.0	33.0
5/Week	38	38.0	38.0	71.0
6/Week	18	18.0	18.0	89.0
7/Week	11	11.0	11.0	100.0
Total	100	100.0	100.0	

Table 4.8 states the frequency of fats and oil intake. Locally Desi Ghee is available in Tehsil Hazro due to the rural culture so use of Desi Ghee is very common in the village. Table shows mix trend in using oil and fats. As paratha is the commonly included in meal and during cooking of any meal oil is used so mostly children take oil in their diet.

Table 4. 9   Frequencies of Others Intake/Week

	Frequency	Percent	Valid Percent	Cumulative Percent
1/Week	11	11.0	11.0	11.0
2/Week	29	29.0	29.0	40.0

3/Week	41	41.0	41.0	81.0
4/Week	17	17.0	17.0	98.0
5/Week	2	2.0	2.0	100.0
Total	100	100.0	100.0	

Table 4.9 illustrates the intake of sack or junk food as burger, French fries, carbonated drinks. Due to the rural area the trend of junk food is not very obvious in Tehsil Hazro and mostly children take homemade meal. Almost 80% children take these hunk food 1-3 days a week while this trend can be seen so high in cities.

Table 4.10 Prevalence of stunting

Status	Count
Normal	55
Obese	07
Overweight	08
Underweight	30

Table 4.10 indicate the prevalence of stunting in the sample children as trends shows that 30 children were stunted and their BMI was below the normal standard.

Table 4. 11   Correlation between Mother Education and BMI of Children

		BMI	Mother Education
BMI	Pearson Correlation	1	.308[**]
	Sig. (2-tailed)		.002
	N	100	100
Mother Education	Pearson Correlation	.308[**]	1

Sig. (2-tailed)		.002	
N		100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.11 describes the positive correlation of .308 between the BMI and mothers education as coefficient value is .308 which indicates the though mothers education does not have a very strong correlation with BMI but this positive correlation shows that mothers education effects children BMI because an educated women can choose healthy diet for their children.

Table 4. 12   Correlation between Economy Status and BMI of Children

		BMI	Parents Income
BMI	Pearson Correlation	1	.549[**]
	Sig. (2-tailed)		.000
	N	100	100
Parents Income	Pearson Correlation	.549[**]	1
	Sig. (2-tailed)	.000	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. 12 illustrates that there is a strong correlation between economical status and BMI of students with p value .549. It indicates that economical status and financial position of the family effects the child's growth. So there is a positive strong correlation between BMI of children and economical status of the family.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Statistical Analysis of data shows that prevalence of stunting among children in Tehsil Hazro is 30%, while 55% of the children were normal and 15% of the children fell in the category of overweight and obese. 50% of the mothers were uneducated, 18% were matric, and 22% were intermediate while only 10% were graduate. 67% mothers were house wives, 33% were working. 57% families are from the group 5000/capita while 22% are from 1000/capita and 18% were from 15000/ capita. Cereal intake of the 42% children were 7 days a week, 18% children intake cereals 6 days a week while 40% children intake cereals 5 days a week.   22% children intake fruits and vegetables 7 days a week, 33% children intake fruits and vegetables 6 days a week, 26% intake 5 days a week while 19% intake 4-1 day a week. 48 % children were taking milk and milk products 6 and 7 days a week while 34 % children were taking milk 4 to 1 day a week. 52 % children were taking meat, poultry and fish 7 -6 days a week while 48% were taking it 5-1 day a week, rate of pulses and grams is so high while mix trend is observed in oil and fats and others.

Correlation between mothers' education and BMI is positively significant with t vale .308 while correlation between economical status and BMI is also positively significant with t value .549.

Conclusion

The study revealed that prevalence of stunting among children in Tehsil Hazro is 30% and obesity trend is low. This result may be for the reason that most of the public schools children are from economically below average families, their mothers are not educated and   therefore, healthy diet may not be provided to them. As majority of the mothers were uneducated. Correlation between mothers' education and BMI is significant but not as high as t value is .308. Among children most of them were belong to the group 5000/capita and it indicates there were less resources available to take healthy diet.

When dietary intake was analyzed it was observed that intake of three groups including milk and milk products, meat, poultry and fish and fruits and vegetable was very low. As meat, milk and fruits are the key nutrients in healthy growth and development of children, its low intake can be a cause of stunting because correlation between economical status of family and BMI was positively significant with t value .548. It shows that economical growth effects child healthy growth. It indicates that economical status, mothers' education and malnutrition are the causes of stunting. So a significant number of the children were stunted and a high efforts are needed to increase nutrition education awareness among common population is recommended.

Recommendations

- Providing awareness regarding stunting and cause of stunting as lack of nutrition education is one of the major cause of stunting.

- Policy makers to implement and promote health education drive on national level.

- Provision of adequate health budget to minimize maternal mortality and morbidity ratio.

- Researchers for further study as this study provide basic causes of stunting.

- Parental education is very necessary for healthy growth and development of child.

- It is suggested that the trends of stunting should be verified again using large scale data.

- This can be achieved by upcoming national nutrition survey of Pakistan with the existing data.

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