DETERMINANTS OF MALNOURISHMENT AMONG AFGHAN REFUGEE CHILDREN RESIDING IN QUETTA: AN ANALYSIS

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ABSTRACT

Malnourishment is one of the leading causes of stunted growth among children that also impacts their immune system, thus leading to repeated infections and delayed recovery. Among developing countries, especially Pakistan, the health status of children presents a grim reality where nearly forty percent of children under the age of five are suffering from malnourishment. The country where the local population has this high percentage of malnourishment, their refugee population may be at higher risk of having children suffering from undernourishment. The present research project aims at identifying refugee children residing in the Quetta region having malnourishment and then classifying the nature of such malnourishment by also examining the underlying reasons. We selected 30 households and carried out our survey using a questionnaire, alongside measuring the weight and height of the children. Our results indicate that most of the children in our data are either suffering from stunting or wasting and the underlying reason lies in dietary choices such as inadequate use of dairy products. Alongside, the income of the head of the household remains one of the significant factors contributing to malnourishment.

***Key Words**: Malnourishment, Stunting, Wasting, Refugee, Children*

1. INTRODUCTION

Malnutrition remains one of the major factors leading to mortality among the children especially under the age of 5, which not only impacts the growth of children but makes children more susceptible to infections and delayed recovery, thus leading to morbidity (Govender, Rangiah, Kaswa, & Nzaumvila, 2004). Among the determinants of malnutrition, the pivotal role is played by poor dietary choices (Ntentie, et al., 2022), which not only result in stunted growth or wasting but also children suffer from repeated infections. Apart from this, poor sanitary environment, lack of access of healthcare facilities, diarrheal diseases and lack of government policies are also contributing factors (Ersado, 2023). In South Asian countries, the aspect of gender is also linked to stunted growth where female children are poorly fed as compared to a male child. Thus, health equity remains a challenging task, especially in the under-developed and developing countries.

Keeping in view this context where the people have less access to basic healthcare facilities in their respective countries, the case of refugee children presents a grimmer reality where children are more prone to acute malnutrition in refugee camps (Skinner, Tester-Jones, & Carrieri, 2023). Thus, the present study aims to study the nature of malnutrition among Afghan refugee children in Quetta region and find the determinants which are the leading cause of malnourishment among refugee children.

Malnourishment remains one of the most pressing issues among the developing and underdeveloped countries where it not only impacts children's physical and mental wellbeing but on bigger spectrum negatively correlates to socio-cultural developments of societies (Shahid, 2022). Some of the most susceptible individuals to the effects of malnutrition are those who are living in volatile circumstances, such as those who have been displaced from their homes. These refugees may also experience a tripartite burden of malnutrition, meaning that at the individual, household, or population levels, undernutrition, micronutrient deficiencies, and overnutrition may coexist (Skinner, Tester-Jones, & Carrieri, 2023).

According to World Health Organization, malnourishment is of four types: Stunting, Wasting, Underweight and Overweight. Stunting is defined as low height for age ratio, wasting as low weight for height, underweight as low weight for age. Overnutrition occurs when children take too many nutrients and suffer from obesity (high weight to height ratio) (Ankomah, et al, 2022).

The major contributing factors to malnourishment include lack of sufficient nutrients or over consumption, access to basic healthcare facilities, and sanitation habits. All these make a child not just vulnerable to diseases but can result in long-term physiological as well as psychological effects as well as in severe cases results in mortality (Govender, Rangiah, Kaswa, & Nzaumvila, 2004).

Malnutrition among children has direct linkage with maternal health especially for infants. Poor dietary choices of mother during pregnancy has long-term effect on infants ranging from low-birth rate to stunted growth (Waghmare, Chauhan, & Sharma, 2022).

Similarly, children who are poorly fed, have lack of access to healthcare facilities and have poor sanitation habits are more disposed to undernutrition (Shrestha, Six, Dahal, Marks, & Meierhofer, 2020). Malnutrition is not just tied to dietary choices but is more embedded in social, cultural and economic contexts (Degefa, et al., 2022). Children belonging to low income-countries and having parents who are illiterate suffer from undernourishment due to economic constraints as well as lack of literacy. In one of study conducted in Pakistan, it was found the children who suffered from acute malnourishment, mothers' illiteracy was the primary risk factor where 80 percent of the mothers of suffered children were illiterate. Similarly, the same study concluded that in more than 70 percent of the parents who earned less than Rs 5000 a month, their children were found to be malnourished (Jamro, Junejo, Lal, Bouk, & Jamro, 2012).

Among developing countries, in Pakistan nearly forty percent of children under the age of five suffer from stunted growth (Ghezali & Wahwalh, 2023), where 2.14 million children under the suffer from acute malnutrition (Pakistan: IPC Acute Malnutrition Analysis - March 2023 - January 2024, 2024). Similarly, Afghanistan has one of the highest number of children under the age of five who suffer from stunted growth (Rahmat, et al. 2023). Keeping in view these statistics, the status of refugee children needs dire attention. According to one study, Afghan adolescent refugees in Pakistan suffer from stunting, obesity and low weight (Saeedullah, et al., 2021). Similarly, data on Afghan refugee women speak of similar pattern where they suffer from malnutrition due to socioeconomic constraints (Fatima, et al., 2023).

Thus, as there is lack of research on the health status of Afghan refugee children in Baluchistan, the present study aims to study the status of malnutrition among Afghan refugee children in Quetta region as well as to find the determinants of malnutrition among the selected sample.

1.1 Research Questions

1. What sort of malnourishment subsists among Afghan refugees residing in Quetta region i.e., stunting/wasting/obesity?
2. Why do refugee children in camps suffer from malnourishment, i.e., immediate, underlying causes and basic causes?
3. What can be done as a counterstrategy to overcome malnutrition among these children?

1.2 Objectives

The objectives of this study are multi-fold:

1. Identify the type of malnourishment among refugee kids i.e., stunting/wasting/obesity.
2. Identify the determinants of undernourishments among refugee children i.e., immediate, underlying and basic causes.
3. Postulate a policy to overcome malnutrition among refugee children.

1.3 Significance

Though the studies in the past have been conducted on health status of Pakistani children and results indicate high percentage of malnourished kids in Pakistan, the status of refugee kids might be more alarming as they have less access to education, healthcare and economic opportunities. No research in the past has been documented regarding the health status of refugee children in Quetta. So, the significance of this study lies in not only identifying the refugee households with malnourished children, but to identify the type of malnourishment and the determinants leading to unhealthy growth of children. The primary data from refugee families will aid in postulating strategies on the government level to pave way for healthy growth of refugee children in the host country.

2. LITERATURE REVIEW

A plethora of literature suggests that children who suffer from malnourishment in their early years suffer from magnitude of problems ranging from poor cognitive skills, low IQ, suffer from behavioral problems and have issues in their studies as well (De & Chatterjee, 2019). Severe forms of malnourishment may result in Marasmus or Kwashiorkor on physiological level, whereas on cognitive level, it may lead to reduced learning abilities, reduced language development and attention deficit disorder (Kulkarni, 2021).

Children are so called stunted if their height-for-age is greater from two times standard deviations below the World Health Organization (WHO) Child Growth Standards median. Furthermore, nutritional status is measured in children by its Z-score, which incorporates anthropometric measurements of height/length of height/weight, according to the child Growth Standards of WHO (height for http://www.who.int/childgrowth/software/en/ age > -2 Z-score) Childhood malnutrition is divided into two categories, acute and chronic malnutrition. Acute malnutrition (AM) known as wasting recorded as low weight for-height (WHZ) scores and is divided into moderate acute malnutrition (MAM) and severe acute malnutrition (SAM). MAM is WHZ score is in between 2-3 standard deviations (SD) below the median (>-2 to 3 SD), and SAM with WHZ scores >— 3 SD. Chronic malnutrition leads to

stunting measured as low height-for age z (HAZ) scores >−2 SD (Kane et al., 2015) The defect in height (stunting) when compared with child's age is termed as the cause of chronic malnutrition. In 1977, the WHO committee assumed the idea of defining weight for height as and an indicator of the present state of nutrition and of height for age as an indicator of past nutrition (Waterlow et al., 1977; Victora, 1992). Globally, 149 million (33%) are affected due to stunting while 40 million children are underweight (WHO, 2024) causing about half of all deaths in children under 5 are attributable to undernutrition; 10 million deaths per year below age of 5 year (UNICEF, 2024).

The developing countries are highly affected as sub-Saharan Africa and South Asia face about 70% early childhood mortality and malnutrition. 39% of stunting has been observed in South Asia (Hasan et al., 2013) and similar child stunting rate is reported for sub-Saharan Africa (37%) which is 3 times more when compared with East Asia and the Pacific (12%) or Latin America (11%) (Aguayo & Menon, 2016). The Kenya face 30–37 % of stunting in children of age below 5 years (Wali et al., 2020). Moreover, the stunting rate and underweight reports reveal variable data when compared region-wise distribution i.e., urban and rural. The children of rural and underdeveloped areas of Kenya face 44 % stunting problems having 32% of children as underweight while this ratio drops to 17% in stunting while underweight children found to be 10% urban and developed regions (Gwatkin et al., 2007). In 2000 to 2006, 38% of stunting was reported from the Nigerian children of age under 5 (Senbanjo et al., 2011). Similarly, in Southeast Asia, India is on the peak of low birth weight, underweight, and wasting among children in BRIC (Brazil, Russia, India and China) and South Asian Association for Regional Cooperation (SAARC) countries. The underweight (stunted) percentage among children under age five are 43% (38%) for India, 6% (11%) for China, 23% (14%) for Sri Lanka, 39% (43%) for Nepal & 41% (36%) for Bangladesh as per data of 2000-2007 (Imai et al., 2014). Pakistan is also going through alarming situation having 30 % underweight children & even higher percentage of stunting i.e., 40.2%. (National Nutrition Survey, 2018). This translates to ~9.6 million children under age 5 are in stunting condition in early days of childhood (UNICEF, 2016) (Umar Farooq et al., 2019). In 2019, Batool et al., has shown that 33.03% of children under age 5 as underweight, 53.38% as stunted and 11.52% as wasting indicating the children's poor nutritional status in Pakistan (Batool et al., 2019). During the past twenty years, the South Asian countries have shown their potential in reducing stunting. Overall stunting has been reduced to 1.7% but the percentage varies from country to country. In Pakistan the average annual reduction rate is 1.1% whereas in Maldives it is 3%. (National Nutrition Survey, 2018)

Poor health of mothers, infections and poor feeding routine are the factors that result in stunted growth and development. Among these factors the status of health and nutrition of mother during and after giving birth to a child plays a major role in development and growth of an infant (Özaltin et al., 2010). The previous report suggested that about 20% of children's stunting is due to under nutrition of mothers that results in intrauterine growth reduction (Black et al., 2013). Similarly, other maternal factors that are involved in stunting because they interfere with ability of nutrients to fetus are short height, teenage pregnancy, short birth spacing, Suboptimal breastfeeding and complementary feeding are additional factors that are involved in stunting (WHO, 2014). There are multiple factors that interplay such as poverty, neglection, insufficient child encouragement, insecure food and 4 inadequate feeding routine results as obstacle in growth and development (WHO, 2014) Another main factor of stunting is the exposure of children to animal/chicken or animal/chicken fecal contaminated soil. In developing countries, the ownership of livestock plays very important role in generation of income, and it is an important source of providing nutrients rich food to household (Hoddinott et al., 2015). However, it has also been speculated that exposure of children to animal feces is a potential risk factor for infection (Zambrano et al., 2014). In this regard, a particular concern is the possibility that young children in the developing world frequently ingest animal feces or fecal contaminated soils or objects (Headey et al., 2017) had extremely high concentrations of bacteria, including pathogenic bacteria such as E. coli (George et al., 2015) that cause chronic damage to the gut and small intestine (Mbuya & Humphrey, 2016), which inhibits the absorption of nutrients, leading to diarrhea and stunting (Headey et al., 2017). Poor hygienic conditions and long-term exposure to contamination result in subclinical infections that result in malabsorption and also reduce the function of the gut to act as a barrier against pathogens pathogen derived products or other toxic agents (Prendergast et al., 2014). The interplay of insufficient nutrition and infection are capable of enhancing the impact of infection and worsening status of nutrition. Infection damages status of nutrition by reduction of appetite, intestinal impairment, increase of catabolism and direction of nutrients away from growth and towards immune response. Nutrients insufficiency has a negative effect on the function of skin barrier, and it also alters the immune response resulting in increasing the risk of disease (Wu et al., 2019), Stunted growth in children has an association with acute infections and chronic infections (Adrizain et al., 2024). Due to high occurrence of diseases, in particular gastrointestinal infections or diarrheal diseases, the growth in children during their early childhood is severely compromised (Kosek et al., 2003).

3. METHODOLOGY

3.1 Sampling

For the purpose of data collection, cross section-based study is carried out where 30 households (as sample of the study) of Afghan refugees residing in Quetta are selected on the basis of purposive cum convenient sampling. It is due to the fact that as the study was based on undocumented refuge population and culturally specific context, we could only base our study on those households where the head of the family gave his consent. First the pilot study was carried out on 5 households and later 25 more households were visited. As per household had more than 3 children, so more than 40 children became part of our study. Moreover, informed consent is necessary for this research, only those households are part of our study, where the head of the households agreed to participate in the study. Pakistan and Afghanistan remain among the top 10 countries where two-third of the population is malnourished (Asim & Nawaz, 2018; Aftab, 2023) and for this very reason Afghan refugee children residing in Quetta (Saraghurgai, Chashma Achozai and Hanna Urak) are the sample of our study. The reason for not using probability sampling lies

again in the fact as the questionnaire asks culturally sensitive information like breast feeding practices, people were not willing to participate, so the results obtained might not be generalized.

3.2 Data Collection

3.2.1 Phase 1

In the first phase, 30 households are selected to identify malnutrition of infants and kids. Our team visited the stated sites and as these sites had undocumented refugees, the team encountered various challenges to obtain the data. First time when we visited these areas, the undocumented refugees thought that we are form government agency and considered us as a threat that we are there to deport them. In order to solve this matter, we added locals in team who could speak Dari and Pushto. The other challenge that we encountered was the availability of children at the time of our visit. They had been roaming around the area, and it became challenge to document their height and weight. We also noticed that some girl children were afraid to talk to male team member. So, we then added a local female as our team member.

For the purpose of identifying households having malnourished children, the UNICEF malnutrition scale was used. The z-score was used to identify children suffering from severe, moderate and mild malnourishment where anthropometric measurements pertaining to height/weight and height/length according to child Growth Standards set by WHO are considered (Permatasari & Chadirin, 2022). The adoption of WHO's malnutrition criterion using z-score is considered to be much helpful in early detecting of acute malnourishment (Isanaka, Villamor, Shepherd, & Grais, 2009). To calculate z-score WHO Anthro software was used (The WHO Anthro Survey Analyser). Anthro Software provides the most reliable results and is recommended by WHO for identifying malnourishment as compared with traditional methods. During this survey, age, gender, height, weight, birth weight, abnormality if any etc., (Hayani, et al., 2023) is documented. In the next phase, for the identified children, medical doctor is consulted.

3.2.2 Phase II

In the second phase, children are identified, who are suffering from malnourishment on the basis of data obtained in phase 1. Once the children are identified, to confirm if they are suffering from malnourishment, a medical doctor was consulted to confirm these cases, and dietary plan was shared with the parents.

3.3 Data Collection Tools

Researchers were sent to collect data via questionnaire. The researchers were trained about cultural values of the target community so as to avoid any conflicting situation. Moreover, those researchers are sent for data collection who are multilingual and can communicate in Pushto, Dari and Urdu. The questionnaire is comprised of close ended questions based upon Conceptual framework of determinants of undernutrition (UNICEF 2013).

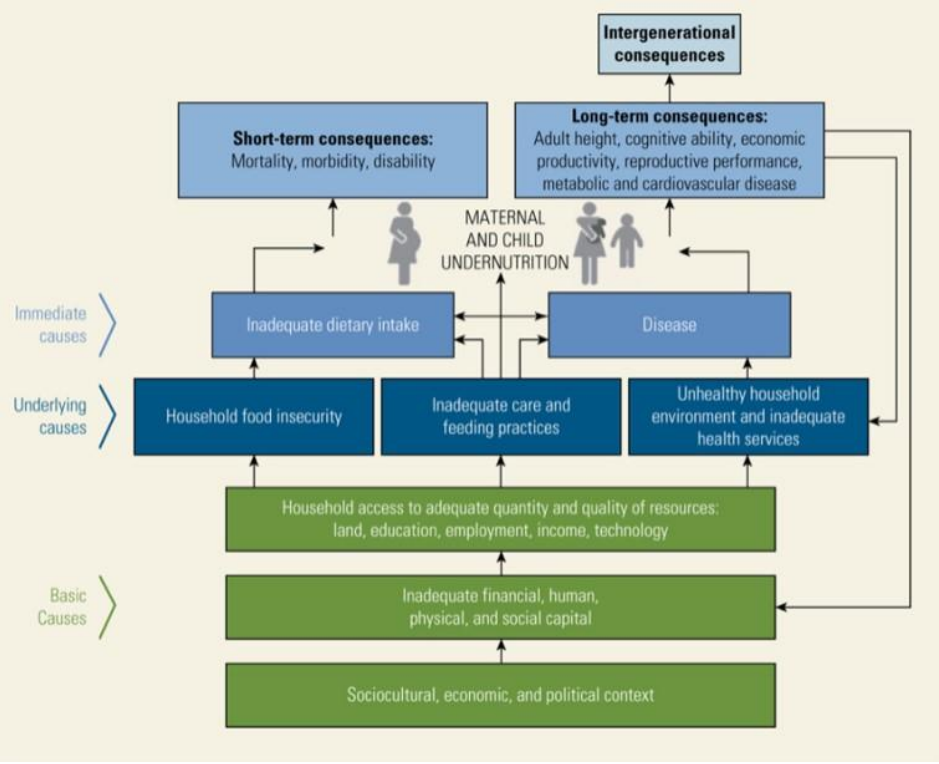

Figure 2.1 Conceptual framework of determinants of undernutrition (UNICEF, 2013)

Keeping in view this framework, the questionnaire comprised of six categories. In the first category socio-demographic aspects like number of household members, income, source of income etc., are recorded. In the second one source of household water and in the third one questions related to sanitation are asked. In the fourth category, dietary intake of household members is recorded.

In the fifth and crucial one, children's height, age, weight and immunization status are catered. This particular category helped us in answering our Research question and objective no 1 i.e., to identify the type of malnourishment subsiding in refugee children such as stunting, obesity or wasting using the WHO recommended WHO Anthro software. In the last one, questions related to diseases such as diarrhea, strep throat, and skin infections are inquired. The first four and the last category aided in understanding our research question and objective no 2 i.e., to understand the immediate, underlying and basic causes. Category 1 had 8 closed-ended 8 questions to get the basic household info such as number of members, gender and source of income. In the second category, to identify the underlying causes of malnourishment, 6 closed-end questions were asked regarding the source of water such as for drinking and washing. In category 3, 10 closed-ended questions were asked regarding hygiene practices again to see the underlying causes of malnourishment. To understand the immediate causes of malnourishment pertaining to inadequate diet, category 4 had 12 close ended questions with set responses to select from them to see what sort of food is being consumed by each household and in what frequency. To study the nature of malnourishment, category 5 recorded the age, height, weight and sex of children in each household and then determined if the child is suffering from malnourishment and of what nature. The last category, studied the immediate cause by getting the medical history of children relating to suffered diseases such as strep throat and diarrhea etc. So, in total 55 questions were asked from the head of the household.

The responses were then recorded, crosstab analysis was carried out, and results are computed via Sankey diagram.

3.4 Cultural and Ethical Approval

Keeping in view the cultural values, permission was sought from the head of the household and majority of the questions were asked. In cases where the questions related to the primary caregiver of the infant are related, again the permission was sought from the head of the household. Local female researcher from our team was sent to convince people where the head was not allowing male members to conduct the survey.

Once the data is collected, cross tab analysis is done to extract the results. On the basis of reasons identified, we then moved onto the stage of postulating strategies, so the children suffering from stunting, wasting, or obesity could live a healthy life.

4 RESULTS AND DISCUSSION

4.1 Training of our Team

Before sending the survey team to the research sites, we conducted a thorough workshop in August 2024 for them to sensitize them about cultural norms and values and to deal with possible backlash. For this, the team was thoroughly guided about the questionnaire and how to fill the data. As our research involved handling kids for recording their height and weight, a mock workshop was also conducted in NUST daycare center to calculate kids BMI. The informed consent was taken from the kids' parents for research purposes. Not only was the team guided in these workshops to handle the data but also how to communicate efficiently and build rapport with the refugees so that they feel confident during the interviews and avoid giving false statements.

4.2 Field Visits

Our team comprised of three members: 2 male and 1 female researchers. The field sites were Afghan refugees residing in Saraghurgai, Chashma Achozai and Hanna Urak. The male researchers interviewed the head of the household and filled the questionnaires.
They used specialized infant weight measuring scale and the regular scale for toddlers. It is interesting to mention that out of 14 not a single household was in possession of children immunization card, so no data is available regarding vaccination status of Afghan refugee children.

4.3 Keys Findings and Discussion

Our team recorded the age, height and weight of the children to calculate z score for identification of malnourishment among kids. We had the data of 46 children, and we identified that majority of the children (58.7%) in our sample under the age of 10 are suffering from some sort of malnourishment (see figure 4.3).

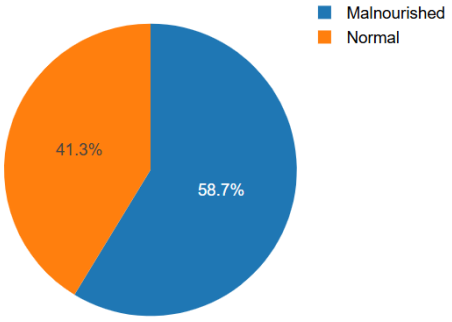

Figure no. 4.3 Percentage of Malnourished Children

When we analyzed the type of malnourishment, we found that the majority of children who are malnourished are either suffering from stunting or severe wasting (see figure 4.4). We later consulted medical doctor who authenticated our findings.

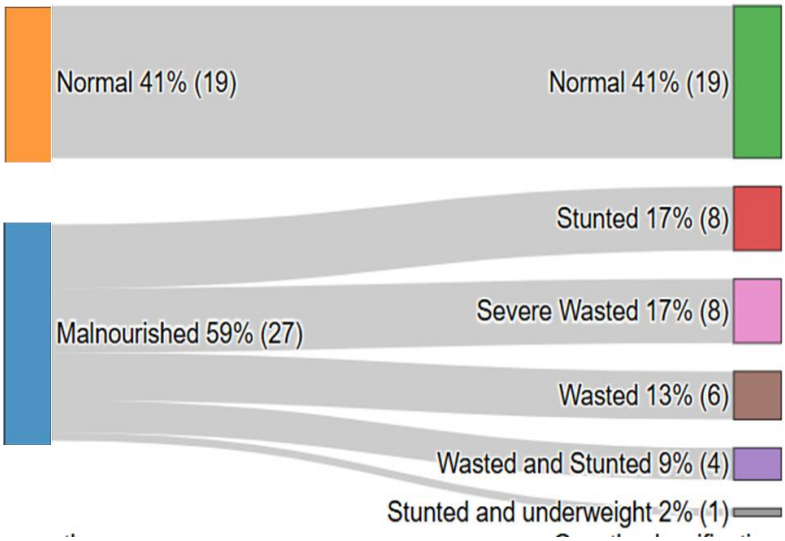

Figure no 4.4 Types of Malnourishment

Then we moved onto the stage of identifying the factors which are contributing to malnourishment among refugee children in Quetta. Using cross tab analysis, we found that milk consumption is related with malnourishment. Children who were consuming milk on daily basis were less malnourished and majority of them were healthy.

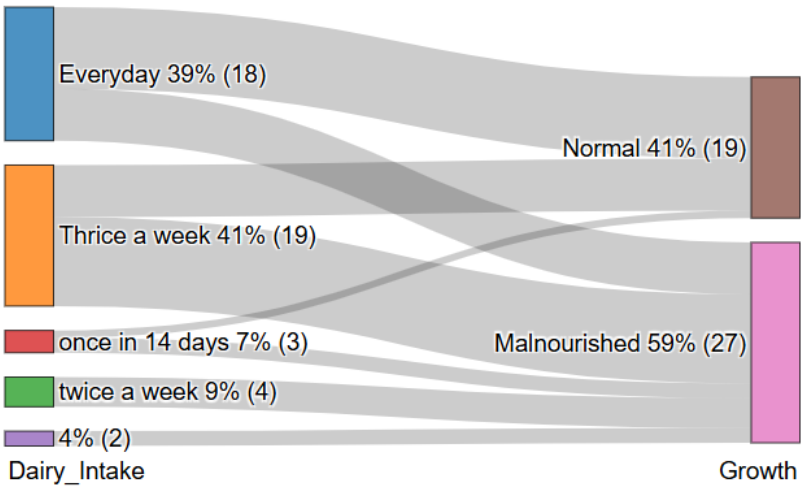

Figure no 4.5 Dairy Intake and Growth

When we analyzed the type of malnourisment the kids are suffering from (the ones taking less dairy products in their diet), we identified that children who are taking dairy products twice a week or thrice a week are suffering from either stunting ot severe wasting (see figure no 4.6).

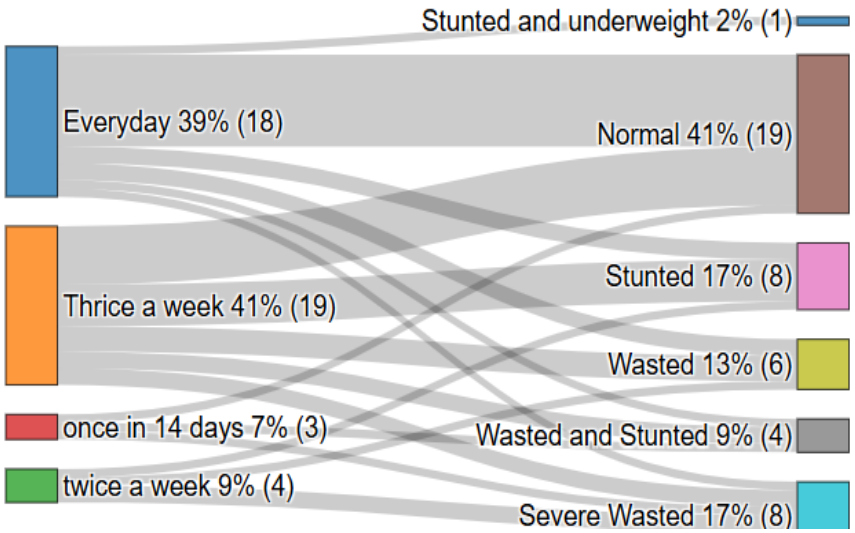

Figure 4.6 Dairy Intake and Type of Malnourishment

So, it implies that children consuming dairy products thrice or day or less were more affected by malnourishment (P=0.04). We also found that malnourishment was associated with low family income (P=0.014). Majority of the children who belonged to these families earning less than 50,000 PKR per month had malnourished children (see figure no 4.7).

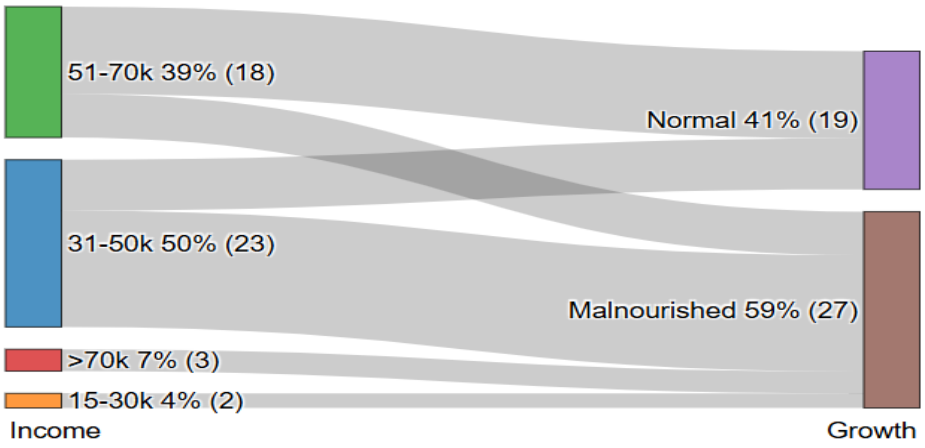

Figure no 4.7 Income and Growth

Among these children again we found majority of them to be either suffering from stunting or severe wasting (see figure 4.8).

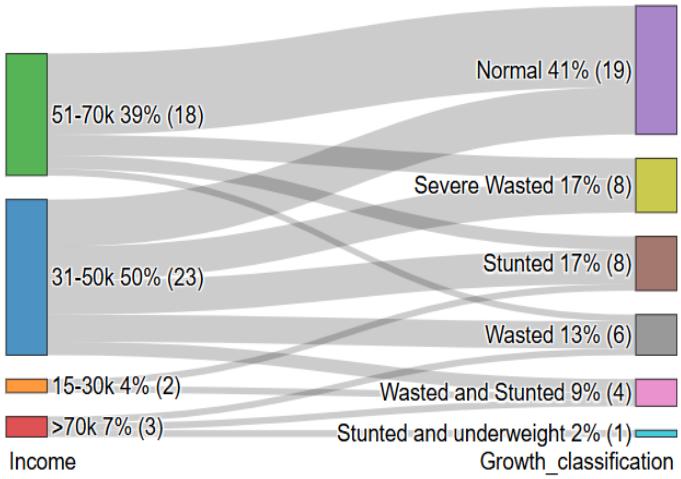

Figure no 4.8 Income and Type of Malnourishment

When analyzing the aspect of gender in relation with malnourishment, we found that the majority of the malnourished kids were male (p=0.02).

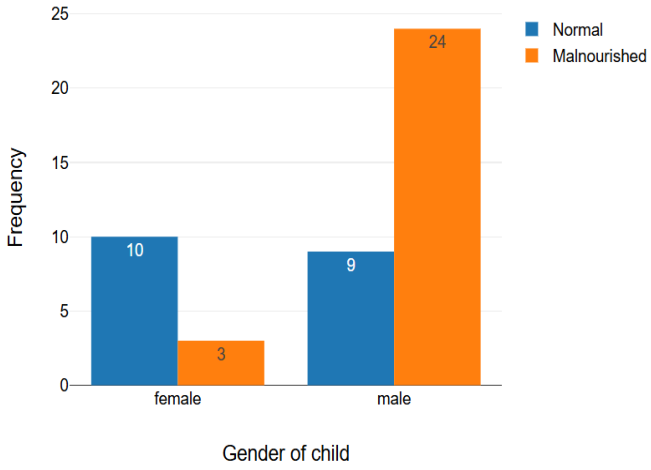

Figure 4.9 Gender and Malnourishment

When we analyzed the nature of malnourishment with respect to gender, we found that the majority of boys were suffering from stunting or severe wasting (see figure no.4.10).

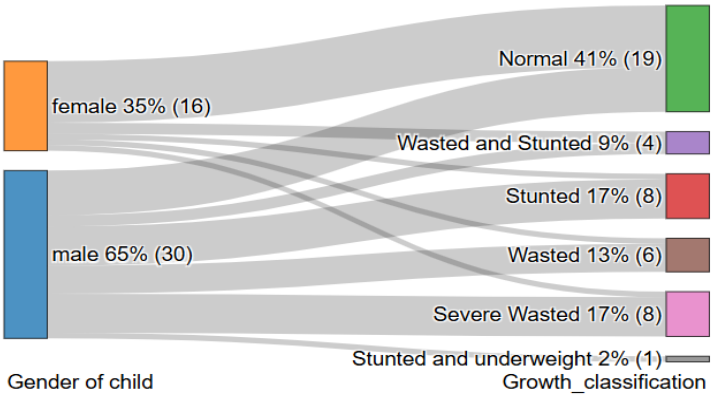

Figure no. 4.10 Gender and Type of Malnourishment

Lastly, malnourished children showed significant association with throat infection (p=0.016), implying that malnourished kids were more prone to repeated infections of strep throat.

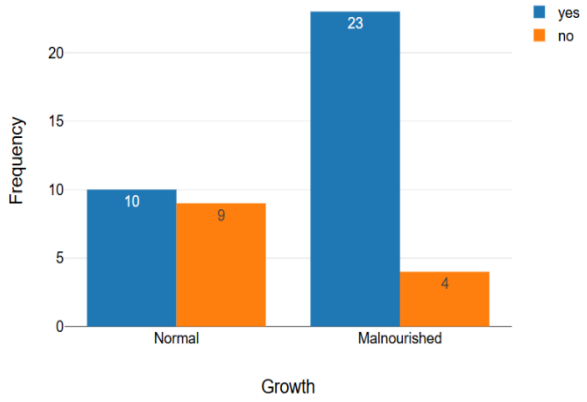

Figure no. 4.12 Strep Throat and Malnourishment

We found that stunted and severe wasted children suffered with strep throat (see figure no 4.12) more than other groups (p=0.04).

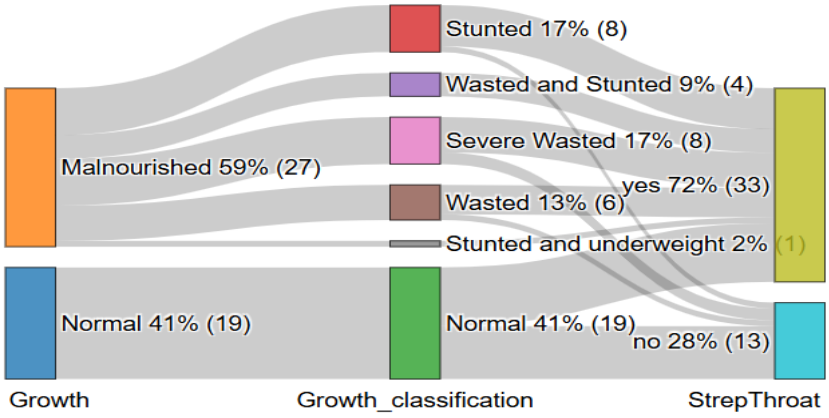

Figure no. 4.13 Strep Throat and Type of Malnourishment

Majority of the households in our study had malnourished children ranging from stunting to obesity. When it comes to causes, we have found recurrent diseases such as strep throat and insufficient dairy intake as the primal reason of malnourishment among refugee children. Apart from this, the basic cause of malnourishment remains low income and gender of the child. As the results are specific to cultural cum spatial setting, so for generalization many other indicators may be taken by other researchers to compare these finding with their futuristic study.

5. POLICY IMPLICATIONS

Keeping in view the above results obtained from our research, we have following policy recommendations:

1. The government should make more rigorous efforts to document the refugees in Pakistan and issue vaccination cards to keep in check the health status of refugee children residing in Quetta. Many of the refugees in our sample were undocumented and for this reason, none had vaccination cards.
2. A thorough campaign should be carried out in refugee camps to educate them about the significance of vaccination among kids. For this, interactive sessions should be arranged, and tabooed aspects can be curtailed.
3. Similarly, a thorough campaign should be carried out by Pakistani government and local Non-Governmental Organizations (NGOs) to educate refugee families about the significance of balanced diet, malnourishment and its consequences for children.

4. The data pertaining to health status of refugee families can be digitalized to keep a check on their health status. For this reason, health management apps can be designed by local government or NGOs.

5. Once malnourished children are identified, either local government or NGOs should issue food stamps to such families where they can be given those items free of cost which are the causative agent behind malnourishment and such families due to low income cannot afford them.

6. In order to raise the income of such families, the local government or NGOs should impart skill-based knowledge to improve their financial status which will ultimately lead to improvement in health status of the malnourished refugee children.

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