ISSN- 2394-5125 VOL 10, ISSUE 01, 2023

Prevalence of severe of acute malnutrition in Mirwais Regional hospital pediatric department Kandahar Afghanistan

Zafari Nik Mohammad

Mehrabi Mir Ziaurahman

Barakat Mohammad Akmal

Zafari Nik Mohammad Clinical Assistant professor Mirwais Regional Hospital, pediatric department Kandahar Afghanistan Email: drzafari1350@gmail.com , https://orcid.org/0000-0002-6254-819XPhone: +93700318803

Mehrabi Mir Ziaurahman lecturer at Paktia University Medical Faculty Paraclinic Department Paktia Afghanistan Email: mirziaurahman@gmail.com https://orcid.org/0000-0003-0546-3154 Phone: +93700879636

Barakat Mohammad Akmal lecturer at Paktia University Medical Faculty Medicine Department Paktia Afghanistan Email: akmal-barakat@yahoo.com https://orcid.org/0000-0002-3343-4708 Phone: +93782119757

Abstract

Background: **Objectives:** To study the demographic profile prevalence of malnutrition , as well as the outcome of the malnutrition in children who were admitted to pediatric department of Mirwais regional Hospital, Kandahar Afghanistan from the 2021 to 2022. **Methodology:** This cross-sectional study was conducted in Mirwais Regional hospital pediatric ward Kandahar Afghanistan The diagnosis of malnutrition based on clinical features, The data of all the patients of malnutrition who were from 1month to 59 months, and were admitted from malnutrition in MRH in pediatric ward from 21 march 2021 to 20 March 2022, compiled and analyzed from the Medical Records of each case at Hospital. Information obtained from the medical record from each patient file and was coded and entered into computer software. After that, the data were analyzed with SPSS version 26. 0. **Results:** Total 16792 patients were admitted during the study period and among them 2420 were confirmed as malnutrition. Average Rate of malnutrition was found as 14.41% among hospitalized children. There were 1058 (43.7 %) male patients and 1363 (56.3%) female patients with a male female ratio of 1:1.77 among the malnutrition patients age of onset was <6 months in 427(17.64%), 6-24 months in 1698 (70.16%) and above 24 months up to 59 months in 295 (12.2%). The majority of the malnutrition children were in the age group between 6/- months up to 24months old. Prevalence of malnutrition during was 14.41 % in 2021 to 2022. Which has clearly high incidence in 2022 and with lower incidence of malnutrition cases in 2021. Mortality rate among admitted malnutrition children was 238(9.8%) in (2021 to 2022) which shows cleared increase in 2022. we also found in our study more cases were in spring , summer and fall seasons N= (591-709 and 647), from (2021 to 2022).

ISSN- 2394-5125 VOL 10, ISSUE 01, 2023

Conclusion: The prevalence of malnutrition was higher form 6 months to 2years of age. Although girls were more affected by malnutrition than boys, Majority of malnutrition cases developed in rural than urban areas in 2021.

Keywords: malnutrition, prevalence, mortality, nutrition

Introduction

Malnutrition is a state in which a deficiency, excess or imbalance of energy, protein and other nutrients causes adverse effects on body form or performance and clinical outcomes (1).Malnutrition affects all population groups, but is more common in infants and children due to their rapid linear growth (2). Under nutrition is one of the leading causes of morbidity and mortality in children under the age of 5 years in developing countries. Severe acute malnutrition (SAM) remains a major health threat to children, as the mortality rates among SAM children are nine times higher than those in well-nourished children (3) SAM is diagnosed when the child has any one of the following criteria: weight for height (WFH) Z score <−3 standard deviation (SD), mid-upper arm circumference (MUAC) <115 mm, malnutrition with bipedal edema or visible severe wasting (anyone).(4) It has been estimated that 45% of deaths of children under 5 years of age are related to malnutrition(5). Malnutrition also has long‐term consequences such as poor physical and mental function, increased vulnerability to infections, developing no communicable diseases in adulthood, and economic burden for healthcare system (6) Some of these effects can be persistent and irreversible (7) The first effect of malnutrition is on growth, including weight loss, arm circumference reduction, delays in completion of bone growth, reduction in weight to height ratio and reduction in natural skin-folds (8). In addition, in the first years of life, malnutrition is a cause of slow body growth, short stature and reduction of intellectual development of children that lead store current and treatment resistant infections(9). Marasmus and Kwashiorkor, as examples, both forms of severe malnutrition, end with high rates of mortality (10, 11).

Methods

This was a one year hospital based, retrospective, record based study which was done on 1month to 59 months children patients who was clinically diagnosed of malnutrition children in pediatric department Mirwais regional Hospital, Kandahar (Afghanistan). The study was included children irrespective of gender and race with a clinical diagnosis of malnutrition. The diagnosis of malnutrition was entirely clinical .This is a referral hospital for children, which is run by the Government. And ICRC the hospital serve to the people of Kandahar and the neighboring province as well referred from different provinces of Afghanistan. The consultation, the ward charges and the drugs are provided free of cost. A consent was obtained from the hospital chairman and ethical committee the data were collected and were entering to previous prepared questionnaire to the start of the study.

SAM was diagnosed when the child has any one of the following criteria (2)

ISSN- 2394-5125 VOL 10, ISSUE 01, 2023

- ✓ WFH Z score <−3SD
- ✓ MUAC <115 mm
- ✓ Malnutrition with bipedal edema or visible severe wasting.

Study Subjects: the study included all the children from 1month to 59months, who were clinically diagnosed to be suffering from severe acute malnutrition. Details of demographic data were obtained from the medical records and they were entered in a questionnaire before their analysis.

Statistical analysis: The statistical analysis was performed by using the SPSS version 26.0 the percentages were calculated for the various parameters which were under study.

Inclusion criteria: involved patients between one-month to 59months of age having features of malnutrition. The diagnosis of malnutrition was based on clinical

Sign	Criteria for inpatient treatment
Edema	**Bilateral pedal edema (+++)**
Appetite	**Poor appetite or unable to eat**
Vomiting	**Persistent vomiting (≥3 episodes per hour)**
Temperature	**Fever (>39ºC or 102.2ºF axillary) or hypothermia (<35ºC or 95ºF axillary)**
Respiratory rate	**Rapid breathing** **≥50 /min for children 2-12 months** **≥40 /min for children 12-59 months**
Anemia	**Severely pale (severe palmer pallor)**
Infection	**Extensive infection requiring treatment with injectable antibiotics**
Alertness	**Very weak, apathetic, unconscious, having convulsions, sick looking**
Hydration status	**Dehydration based primarily on a recent history of diarrhea and vomiting, and appearance of clinical signs of dehydration**
Skin lesions	**Skin ulcers or extensive hypo/hyper pigmentation**
Shock	**Low volume or absent radial pulse, lethargy, cold hands**
Other criteria	**Infants <6 months with SAM**
	Caregiver requests inpatient care
	Physician's impression, e.g. the caregiver unable to take care of the child at home

Table 1.1: Criteria for inpatient management of severe acute malnutrition. (17)

Exclusion criteria: Children below one-month of age and more than 59 months age.

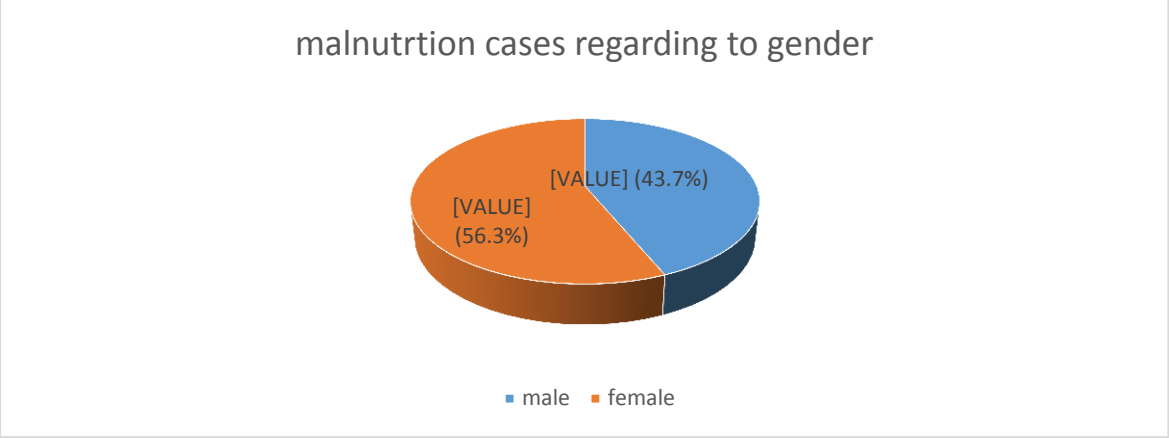
Results

Total 16792 patients were admitted during the study period and among them 2420 were confirmed as malnutrition. Average Rate of malnutrition was found as 14.41% among hospitalized children. There were 1058 (43.7 %) male patients and 1363 (56.3%) female patients with a male female ratio of 1:1.77. [Table/Fig-2] Among the malnutrition patients

ISSN- 2394-5125 VOL 10, ISSUE 01, 2023

age of onset was <6 months in 427(17.64%),6-24 months in 1698 (70.16%) and above 24 months up to 59 months in 295 (12.2%) cases which show as that majority of the malnutrition children were in the age group between 6 months up to 2years old. [Table/Fig-3]. Prevalence of malnutrition during first six months of mention year was less than remained 6 months. Which was cleared difference in incidence of malnutrition in (2021 to 2022). [Table/Fig-4] mortality rate among malnutrition diagnosed children was 238(9.38%) in 2021 to 2022. [Table/Fig-5]. Regarding to the residency more than half malnutrition suffered children (2021 to 2022N=1143(47.3%),were from districts of Kandahar that show malnutrition cases admission were high in both number and percentage, and the remaining cases (2021 to 2022 N= 866(35.8%)Were resident of Kandahar city which were less than district cases in both number and percentage. As we know Kandahar Mirwais hospital is Regional hospital patients with malnutrition were also admitted from neighbor provinces 411(16.97%) regarding to above mention year. [Table/Fig-6].we also found in our study more cases were in spring, winter and fall season N= (591,709 and 649) respectively, 2021 to 2022 [Table/Fig-7]. In this study we showed number of malnutrition cases and mortality in monthly base to know soon. [Table/Fig-8, 9]. In total dead children N=164(68.90%) were expired in first 72 hrs. (Especially in first 24hr, 48hrs and 72hrs (81, 54 and 29 lost their life respectively). after admission it mean they were in critical condition and had multiple complication and they did not stay there in hospital more than 72 hrs. and the remain N=74(31.09%) were lost their life in the 20days of staying in hospital or after admission. Also in this study from 2420 severe acute malnutrition children N=546(22.56%) were kwashiorkor and N=1769(73.09%) were marasmus and the remain N=105(4.33%) patient were mixed type marsmic kwashiorkor (< -3SD with + edema). Another finding of this study showed that mortality rate and cured rate in SAM, MAM patients regarding to Z-score which is cleared in(table: 10) Another finding of this study showed that mortality rate and cured rate in SAM, MAM patients regarding to edema showed that those who were < -3SD with + edema with severe wasting condition , the -2SD were with +2/+3edema and -1SD patient had +3 edema there for mortality was high in them for more detail you can see table: 11 . Regarding to patients weight, minimum weight is 1kg and maximum was 13kg with mean (5.22±SD 1.925) and their minimum height was 42cm and maximum 105cm with mean (65.10±SD 9.162) for more detail you can see in table :11

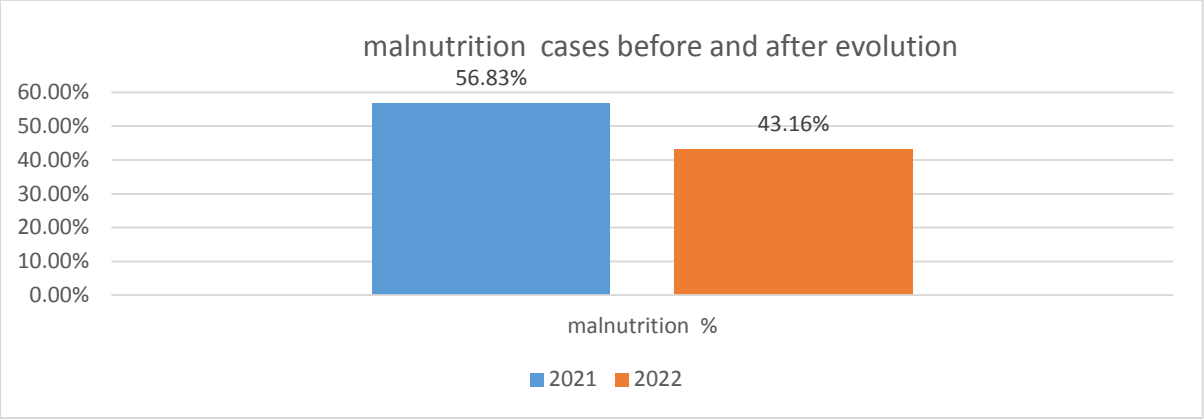
ISSN- 2394-5125 VOL 10, ISSUE 01, 2023



[Table/ Fig-2]: Pie diagram of respondents according to gender (n=2420)

cases regarding to age	2021 to 2022
less than 6months	427(17.64%)
6months -24months	1698 (70.16%)
More than 24 months	295 (12.2%)
Total	2420(100%)

[Table/Fig-3]: table represents the respondents according to age of onset of malnutrition



[Table/Fig-4]: Bar diagram represents the respondents according to year wise onset of malnutrition cases

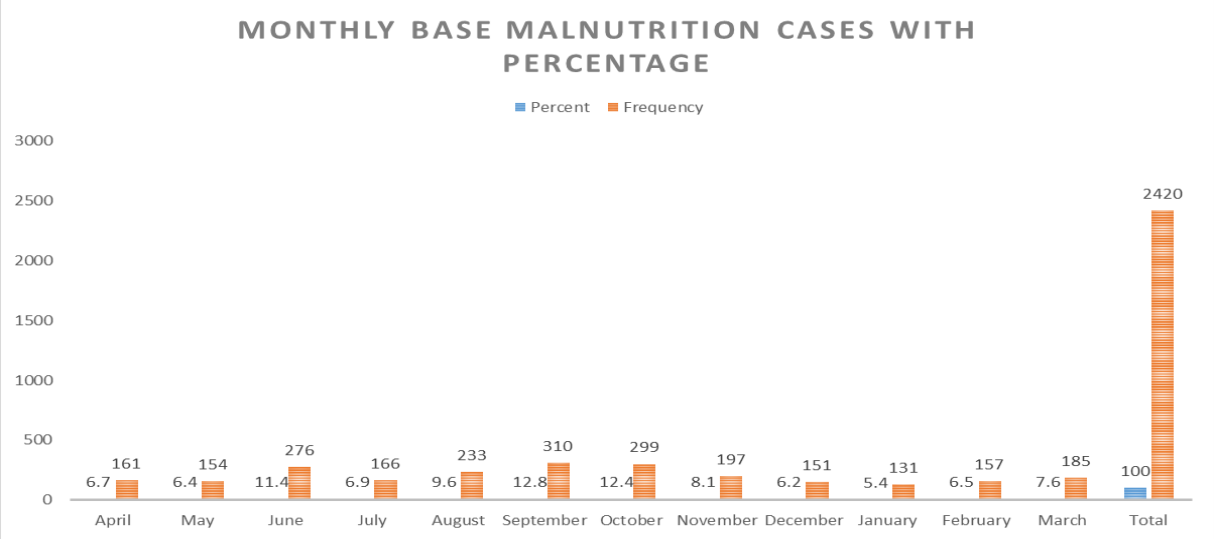
Residency	2021 to 2022
Kandahar city	866(35.8%)
Kandahar districts	1143(47.3%)
neighbor provinces	411(16.97%)
Total	2420(100%)

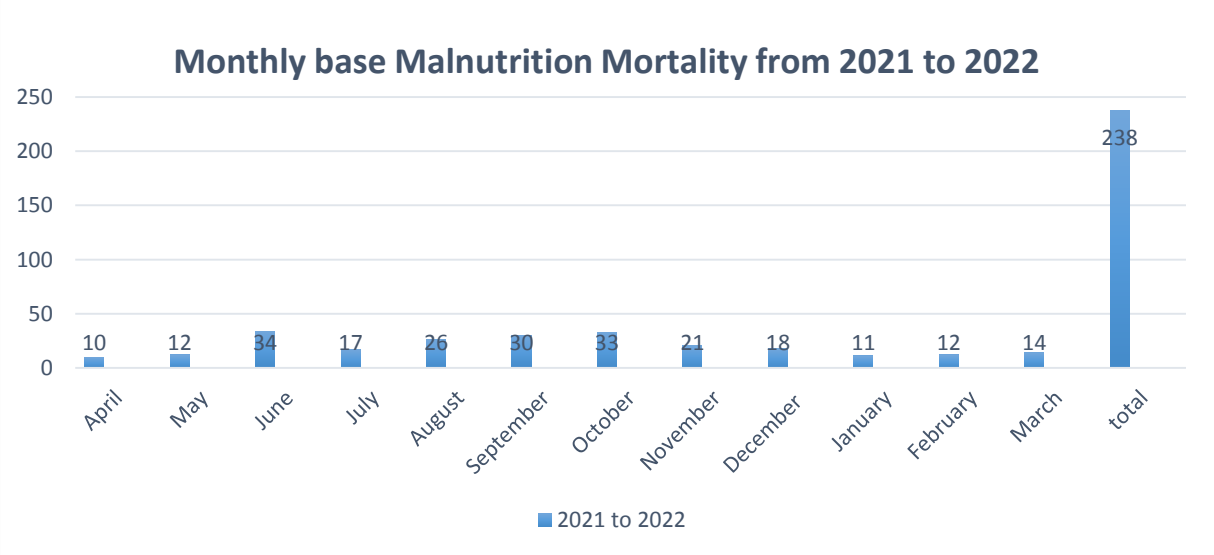
ISSN- 2394-5125 VOL 10, ISSUE 01, 2023

[Table/Fig-5]: table represents the respondents according residency.

season of the year	2021 to 2022 cases	cured	dead	LAMA
spring	591(24.5%)	520(9.47%)	56	15(2.23%)
Summer	709(29.3%)	609(85.89%)	73	27(3.8%)
Fall	647(26.7%)	554(85.62%)	72	21(3.24%)
Winter	473(19.5%)	423(89.42%)	37	13(2.74%)
Total	2420(100%)	2106(87.02%)	238(9.38%)	76(3.14%)

[Table/Fig-6]: table represents the respondents according season and their mortality and LAMA patients' number.





[Table/Fig-7]: Bar diagram represents the respondents according monthly base cases

[Table/Fig-8]: Bar diagram represents the respondents according monthly base mortality number

ISSN- 2394-5125 VOL 10, ISSUE 01, 2023

No	H/W	Frequency	Percent	Cured N/%	Death N/%	LAMA
1	< -3SD No Edema without 105 patients	1785	73.76%	1605(89.91%)	145(8.12%)	35(1.96%)
2	-3SD with + or ++ Edema	265	10.95%	230(86.79%)	23(8.67%)	12(4.52%)
3	-2SD with ++ or +++ Edema	230	9.50%	177(76.95%)	39(17%)	14(6.08%)
4	-1SD with +++ Edema	140	5.78%	94(67.14%)	31(22.14%)	15(10.71%)
5	Total	2420	100.0	2106(87.02%)	238(9.83%)	76(3.14%)

[Table/Fig-9]: table represents the respondents according Z-score and their outcome

No	Edema	Frequency	Percent	Cured	Death	LAMA
1	+1	158	6.5%	141(89.24%)	11(7.48%)	6(3.89%)
2	+2	268	11.1%	232(86.56%)	25(9.32%)	12(4.47%)
3	+3	225	9.3%	146(64.88%)	64(28.44%)	16(7.11%)
4	Nil	1769	73.1%	1587(89.71%)	138(7.91%)	42(2.37%)
5	Total	2420	100.0%	2106(87.02%)	238(9.83%)	76(3.14%)

[Table/Fig-10]: table represents the respondents according edema and their outcome

characteristics	N	minimum	maximum	Mean	Std. Deviation
Weight	2420	1	13	5.22	1.925
Height	2420	42	105	65.10	9.162

[Table/Fig-11]: table represents the respondents according weight and height

Discussion

In our study, Among the malnutrition patients age of onset was <7months in 585(24.2%) and most cases of malnutrition i.e., 1540 (63.6%) were reported in the age group of 7 months-24 months. Which has same result with Occurrence of malnutrition among Children Admitted in neighbor district Quetta of Pakistan children were more affected in 6-24months age group (14) In this study female preponderance is observed. There were 1058 (43.7 %) male patients and 1363 (56.3%) female patients with a male female ratio of 1:1.77 same results have been reported in among children aged 6 to 59months in the two districts of Nepal. And with the study which was conducted in QUETTA district of Pakistan in the neighborhood of Kandahar Afghanistan in same year in SAM patients (13,14) This might be due to preferential treatment given to male and less care of nutrition of female children family in our society. More cases were admitted during the first, second and third seasons of the year N=591(24.5%), 709(29.3%), and 647(26.7%) respectively and also less patients were in

ISSN- 2394-5125 VOL 10, ISSUE 01, 2023

quarter 4(winter season) (January, February and March) N= 473(19.5%), 2022 respectively. Overall mortality in our study was 238 (9.38%) due to malnutrition.

There was also another finding more than half malnutrition suffered children (2021 to 2022N=1143(47.3%),were from districts of Kandahar that show malnutrition cases admission were high in both number and percentage, and the remaining cases (2021 to 2022 N= 866(35.8%)Were resident of Kandahar city which were less than district cases in both number and percentage. And the reason was changing of regime in Afghanistan and many people were able to come to hospital from rural area to the city of Kandahar during 2021. This study finding also shows increasing cases of malnutrition during 2022 both form rural area the main cause was, in changing of regime in the country and the people had more access to city and war finished in both rural and urban area of Kandahar at the end of 2021 and starting 2022. Over all prevalence of Severe acute malnutrition in our study is 14.41% among hospitalized children but in India National prevalence of 6.4 %(15) regarding to residency more patients were from district not city which was same to the study conducted in children aged under 5 years in Multan district of Punjab province, Pakistan (16)

Conclusions

The prevalence of malnutrition was high in 6 to 24 months of age**.** Malnutrition still constitute some significant burden to children there in Afghanistan especially in Kandahar. Attention should be paid to nutrition in children to reduce the morbidity in the population. A broad study in the community on the epidemiological factors and socioeconomic factor regard history linked with morbidity and mortality should be undertaken in order to determine the and plan interventions on management of the malnutrition. In overcoming the malnutrition issue, there is need to promote awareness about education and trainings specifically in rural areas about food nutritional value, diseases of nutritional deficiency and so on.

Limitation

This was a hospital based study and does not represent the true prevalence of malnutrition and its different aspect of malnutrition in the entire population.

Acknowledgements

We are thankful to associate clinical professor M.A. Shifa and Dr. M Sadiq chief of pediatric department (MD, DCH) for his valuable inputs. We also like to thank the staff of the Medical Records Department of pediatric Mirwais Regional Hospital, Kandahar.

References

1-StrattonRJ, Green CJ, Elia M. Disease-related malnutrition: an evidence based approach to treatment. Cabi; 2003.

2- Ramazanpour M, Akaberi A, Khoshnoud Ostad E, Shoraka H. Investigation into malnutrition Prevalence rate and eff ective factors on under-five-year-old children in Maneh-Semelghancity(2012-2013)[In Persian].JNorthKhorasanUniMedSci.2013;5(4):374.

3-Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, et al. Maternal and child under nutrition: Global and regional exposures and health consequences. Lancet 2008; 371:243‐60.

4- WHO Child Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children. A Joint Statement by the World Health Organization and the United Nations Children's Fund; 2009. Available from: http://www.who.int/nutrition/publications/ severe malnutrition /9789241598163/en/index.html. [Last accessed on 2016 Sep 15].

5- Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, et al. Maternal and child undernutrition and overweight in low‐income and middle‐income countries. Lancet 2013; 382:427‐51.

6- Martins VJ, Toledo Florêncio TM, Grillo LP, do Carmo P, Franco M, Martins PA, et al. Long‐lasting effects of undernutrition. Int J Environ Res Public Health 2011; 8:1817‐46.

7- Mahan LK, Raymond JL, Escott‐Stump S. Krause's Food & the Nutrition Care Process – E‐Book: Elsevier Health Sciences; 2013.

8- Kashfi S, Khani Jeihooni A. The prevalence of protein-energy malnutrition (pem) in children under 5 years in Abadeh city [In Persian]. J FasaUniMedSci.2014;3(4):363–70.

9-Kliegman RM, Stanton B, Geme JS, Schor NF, Behrman RE. Nelson Textbook of Pediatrics. Elsevier Health Sciences; 2015.

10- Briend A.K kwashiorkor: stillanenigma-these archmustgoon. CMAMF orum Technical Brief;2014.

11- Talbert A, Thuo N, Karisa J, Chesaro C, Ohuma E, Ignas J, et al. Diarrhoea complicating severe acute malnutrition in Kenyan children: a prospective descriptive study of risk factors and outcome. PLoS One. 2012;7(6). e38321. doi: 10.1371/journal.pone.0038321. [PubMed: 22675542].

12- World Health Organization. hysical status: The use of and interpretation of anthropometry, Report of a WHO Expert Committee. World Health Organization; 1995

13- Ahmad,D.,Afzal,M.and Imtaz,A.Effect of scocioeconomic factors on malnutrition among children in Pakistan .FuturBusJ6,30(2020).

14- Ghimire,U.,Aryal,B>K.,Gupta,A.K.et al. severe acute malnutrition and its associated factors among children under –five years: afacility –based cross sectional study.BMC Pediatr 20,249(2020)

15- Bhadoria AS, Kapil U, Bansal R, Pandey RM, Pant B, Mohan A. Prevalence of severe acute malnutrition and associated sociodemographic factors among children aged 6 months–5 years in rural population of Northern India: A population-based survey. J Family Med Prim Care 2017;6:380-5.

ISSN- 2394-5125 VOL 10, ISSUE 01, 2023

16- Fazila Razzaq,Farhar Abbas Bukhari, Sumbila Razzaq,Aniq ur Rehman,Babar Hilal ,and Irfan Shazad Sheikh.(2021) prevelance of possible risk factors that lead to severe acute malnutrition in children of district Quetta.Pak-Eur journal of medical and life sciences,4(1),29-38.

17- http://rajswasthya.nic.in/MTC%20Guideline-%20MOHFW.PDF