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The association of mother's knowledge with Prevalence of Malnutrition Among Under Five Children of Age in Kosti Locality, White Nile State, Sudan

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Abstract

Malnutrition is one of the main health problems which develop due to insufficient food nutrients supplied to the body. Mothers are first responsible for baby's nutritional status, and they have sufficient nutrition information to protect their children from malnutrition. The objective of the study to assess the mothers nutritional knowledge and it association with prevalence of children malnutrition, A cross-sectional community based study was conducted from 15 December to 31 January 2021, multistage cluster sampling technique followed by simple random sampling was used to select 807 children from households/care takers. Data were collected by well-trained health workers and four qualified dietician workers under regular supervision. Data were entered to manage and analysis by use EPI-INFO version 10 software packages and SPSS version 24.0. Structured questionnaire and anthropometric measurement were collected using the procedure stipulated by the WHO (2006), Associations of variables were computed using the Chi-square, 95% CI with P value less than 0.05 was considered as statistically significant. Study findings that 51.4%, 60.7% and 61.1% of the under-five children were stunted, underweight and wasted respectively, The mean ± SD score of knowledge was 12 ± 2.2 , 46.4% , 31.0% and 22.6 % were poor , moderate and good knowledge respectively, Therefore the poor mothers knowledge were significant associated with stunting($p<0.05=0.000$),underweight ($p<0.05=0.016$) and wasting

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Vol. 8 Issue 11
November 2021

(p<0.05=0.000 , as conclusion, there was association of mothers knowledge with prevalence of malnutrition, There were several factors affected the knowledge of mothers, including age, educational level, exclusive breastfeeding and, source of knowledge.

.***Keyword:*** *Malnutrition, Children, Mothers knowledge, Underweight, Stunting*

Introduction

Malnutrition pervading everywhere around the world and both developed and developing countries are suffering from malnourishment (Khan Khattak, and Ali, 2010). Malnutrition is a public health problem and is associated with among other factors literacy of mother, household wealth index and morbidities. Therefore, improving socio-economic condition along with literacy of mothers and preventing infections through personal hygiene might help in improving the nutritional status of children (Farid-ul-Hasnsin, and Sophie, 2010).

Malnutrition is a condition which develops as a result of insufficient food nutrients supplied to the body, these nutrients include minerals, vitamins, proteins, fat, and carbohydrate which are necessary for maintaining healthy tissues and organ functions (Blake, 2004). The nutritional status of a child should be assessing through dietary, anthropometric measure and physical observation for signs of malnutrition. These methods of measurement are usually done in combination for more accurate results. When there is a deficiency in the amount and nutritional value of the food consumed, the growth pattern of a child becomes disrupted (Faber and Wenhold, 2007). The global number of child deaths under the age of five, recorded in 2006 by UNICEF, WHO, United Nations Population Division (UNPD) and United Nations Statistics Division (UNSD) was just below 10 million. Malnutrition was responsible for 60% of 10.9 million deaths annually, either directly or indirectly among children under 5 years of age (Gibson, 2005).

p-ISSN: 2348-6848
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Vol. 8 Issue 11
November 2021

The factors affecting nutrition status includes Gender factors, maternal factors such as nutritional knowledge, education levels and breast feeding, socioeconomically factors and environmental factors such as infection diseases, sanitation and hygiene (Yimer, 2000). UNICEF (2010) ,the optimal nutritional status results to when children have access to affordable, diverse, nutrient-rich food; appropriate maternal and child-care practices; adequate health services; and a healthy environment including safe water, sanitation and good hygiene practices (WHESW, 2011). Also There are several risk factors and they should be identified to avoid the bad consequence of malnutrition, and thus to promote health and prevent diseases (Bharmal, 2000) These factors include larger family size, maternal illiteracy, low monthly income, and paternal literacy (Nath, 2017), the main risk factors reported was low maternal education (Phengxay, 2007), Health and nutrition have both intrinsic value and economic returns. Therefore, many countries have taken actions to promote both child health and nutrition, with varying degrees of success. More specifically, many countries have implemented health programs and projects (vaccination campaigns, building of hospitals, construction of sanitation facilities, etc.) with mixed results. These mixed results are reflected in high rates of malnutrition in many developing countries. De Onis et al. (2000) estimated that the prevalence rate of stunting (low height-for-age) in developing countries' preschool children was 33% in 2000. This rate masks regional disparities. The same authors estimated that the prevalence rates of stunting for Africa, Asia, and Latin America and the Caribbean were 35%, 34%, and 13%, respectively. Prevalence rates between 30 and 39% are considered high.

The prevalence of children under five years with acute malnutrition in Sudan is one of the highest in the world approximately one out of every five children suffers

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Vol. 8 Issue 11
November 2021

from moderate to severe acute malnutrition (wasting). There is no doubt that Africa is the poorest continent in the world. The high poverty in Africa has aggravated the problems of poor health among children and women on the continent and has therefore often placed the continent at the centre of many health promoting programmes. Sudan is involved in this struggle to promote good health and has implemented programmes such as free health care for pregnant women and a national health insurance scheme. Depending on scientific survey undertaken in 2013 in Sudan, a total of 54 of 184 localities with an acute malnutrition prevalence above the emergency threshold of 15%. Meanwhile, the capacity to treat severe and moderate acute malnutrition remains relatively low, and focused only on states with complex emergencies. Only a quarter of the SAM bur-den (136,838 children) was reached through CMAM in 2014. This prompted the Ministry of Health and partners to look into ways of scal-ing up CMAM (Community Based Management of Acute Malnutrition Scale-Up) to obtain a sustained high coverage rate for treatment of severe acute malnutrition, both in high prevalence, as well as high bur-den, localities.

Unfortunately, there are few studies and international reports about maternal and children health and nutrition and the more recent one was conducted by UNECIF (2010), even so for political evens these few articles focusing only on south part of the country before it separation in 2011, moreover there are some important issues were missed in these reports Sudan federal ministry of health (2014) acknowledged that the percentage of malnutrition among child in Sudan has become higher than the global figures. in Sudan there were deterioration of health care in children under five years of age suffered from malnutrition, in study of household health survey (2006) revealed that, the under-five mortality rate in Sudan was increased and then slightly decreased in 2010 (UNICEF, 2007), which the prevalence rates between 30

p-ISSN: 2348-6848
e-ISSN: 2348-795X
Vol. 8 Issue 11
November 2021

and 39% are considered high. The prevalence of children under five years with acute malnutrition, Sudan is one of the highest in the world – approximately one out of every five children suffers from moderate to severe acute malnutrition (wasting). Depending on scientific survey undertaken in 2013. On 5th September. UNICEF (2007), revealed that report indicates to "Severe wasting" affects five per cent of the under-five population in Sudan as a whole.

Mother is the person responsible for taking care of child, so it is very important for mothers to have enough knowledge regarding nutrition of the child (Patali.2018). Also mothers should be protected against malnutrition; healthy mothers are needed for raising healthy children. Care includes breastfeeding, diagnosing illnesses, and stimulating language and other cognitive capabilities and emotional support. So mothers who have more knowledge about nutrition can bring up their children in healthy way (Khattak, 2007)

Materials and Methods:

Study design: This study is a cross-sectional community based study was conducted on 807 mothers in household with children aged 6-59 months, at a period between 15 December to 31 January 2021, to assess the mothers nutritional knowledge and it association with prevalence of children malnutrition, in Kosti, White Nile State, Sudan.

Study area: The study was conducted in Kosti locality, White Nile State which located nearly to 390 kilo meters from Khartoum which is the capital republic of Sudan .Kosti locality it is one of nine localities in White Nile state. It is divided in to four units administrative such as Kosti north unite consist of 44 area ,Ummahani unite consist of 35 village, Kosti west unite consist of 24 area and

p-ISSN: 2348-6848
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Vol. 8 Issue 11
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Kosti south unite consist of 17 area according of population data for Kosti locality in 2018 (Central bureau of statistic in WNS).

The total populations is 341311 HHs and 56214 of under five children (IMM, 2017).

Study population and sampling:

The study population included children aged 6–59 months. Children who were seriously ill during the study were excluded. Out of 85 areas and 35 villages. 24 areas and 10 villages were selected by lottery method. The total sample size (n = 807) was distributed to each selected unite by proportionate allocation based on the total number of households in each unite. using systematic simple random sampling technique which select the first household randomly and proceeded to the second participant based on the formula used to calculate sample size (ni) of each selected unite, ni=(n x Ni) /N

Data Management

The data was analyzed using the EPI-INFO version 10 software package and SPSS version 24.0 software .The descriptive analysis was used to describe the percentages and frequency of socio demographic characteristics and mean for independent and dependent variables , Both bivariate and multivariate logistic analysis was performed to determine the prevalence of stunting with association factors. The level of knowledge was calculated using the scoring system; high scored was correct answer coded number (4) and lower score was wrong coded number (1), the total score was calculated and the average was taken, the range of score was from 1 to 24.Associations of the variables were computed using the Chi-square, 95% CI and. Variables with P value less than 0.05 was considered as statistically significant,

p-ISSN: 2348-6848
e-ISSN: 2348-795X
Vol. 8 Issue 11
November 2021

Ethical Considerations: Ethically clearance was obtained from the University of Elgazira Faculty of Medicine, Primary Health Care Center to the general nutrition management of White Nile state and from general nutrition management to the nutrition management in Kosti locality. Informed consent obtained from each mother/care giver after explain the purpose of the study. Confidentiality was done by using code numbers rather than names.

Results:

The study participate included 807 mothers, their age in ranged between >20 and >50 years, most of those in age range 21–30 years they are dominant group among other , representing 355 (44.0%), there were 544 (67. 4%) of mothers who had primary education , Just 42 (5.2%) were employee , but the large majority of mothers 652 (80.8%) were housewives. 53.4% reported had poor income and just 4.5% were high income, More than half of mothers 504 (62.5%) have more than five family members, in addition to three quarters 683 (84.6 %) were reported breastfeeding, but little than half 418 (51.8%) were not exclusive breast feeding show Table 1. Most mothers 622 (77,0%) were Knowing about malnutrition , but 185 (23,0%) were not Knowing show (Figure 1)., and the most common source of their knowledge was medical workers about 475(58.8%) show (Figure 2). The mean ± SD score of knowledge of mothers was 12 ± 2.2. The details of mother's knowledge about children nutrition are shown in (Table 2). There were 6 questions asked, all answered in analysis was coded and prescribed that, there were 375 (46.4%) mothers were poor knowledge, 250 (31%) were moderate and 182 (22.6%) were good knowledge present in (Figure 3). After investigate the mother's knowledge, found that. Higher incidence of underweight were seen in poor knowledge about 37,5 % , stunting 36.1% and Wasting 42.5 %, there were

significant associated p value = 0.016), p-value = 0.000) and p-value = 0.000) receptively , as shown in Table 3.

Table (1): Demographic and socioeconomic characteristics of mothers in Kosti district, White Nile State, (n=807)

Items	Answer	Frequency	Present
Age	>20year	139	17.2%
	21-30year	355	44.0. %
	31 - 40year	282	34.9%
	41 - 50year	31	3.9%
Education level	No educated	116	14. 4%
	Primary	544	67. 4%
	Secondary	123	15.2%
	High educated(University)	24	3.0 %
Income level	Poor	431	53.4%
	Middle	340	42.1%
	high	36	4,5
Occupation	House wife	652	80.8%
	Government employee	42	5.2%
	workers	113	14.0%
Number of the family	More than five members	504	62.5%
	Less than five members	303	37.5%
Lactation	Breast feeding	683	84.6%
	Artificial feeding	124	15.4%
Complementary feeding (exclusive breast feeding)	Less than six month	418	51.8%
	On six month	284	35.2%
	More than six month	105	13.0%

p-ISSN: 2348-6848
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Vol. 8 Issue 11
November 2021

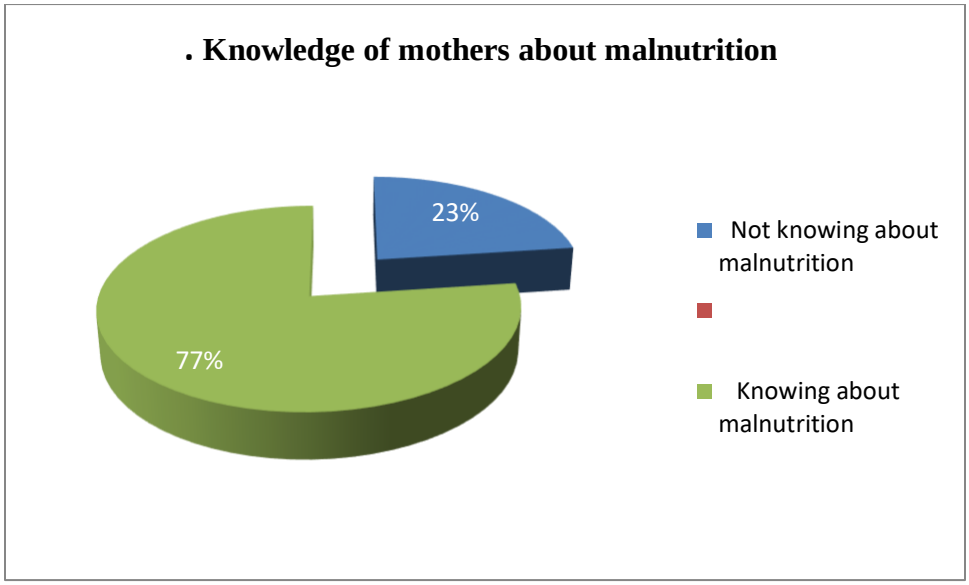

Figure 1. Knowledge of mothers about malnutrition.

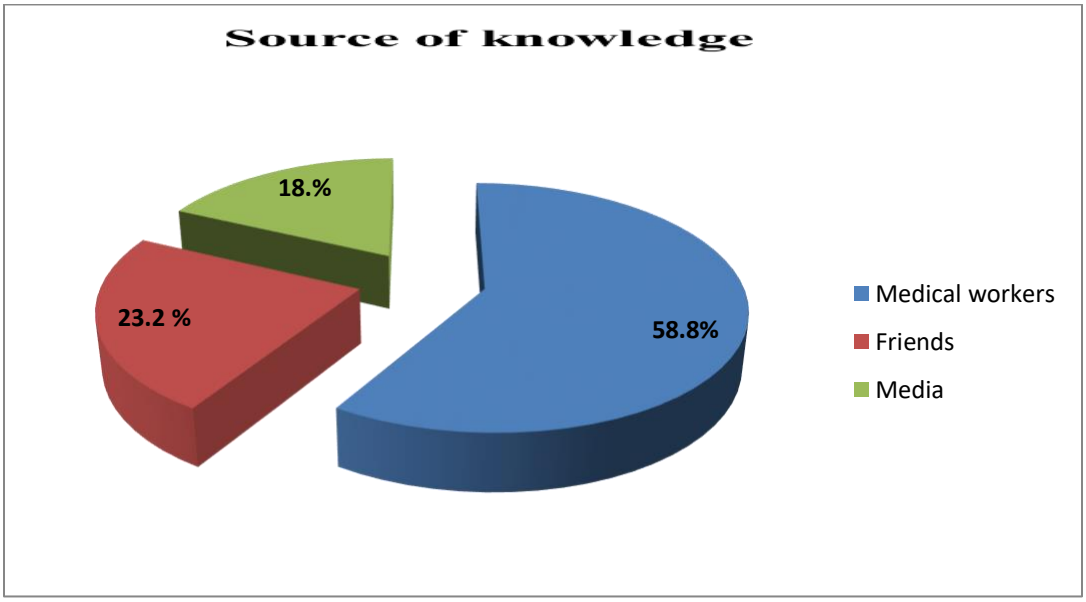

Figure 2. Source of mothers.knowledge

Table (2) Mothers knowledge about children nutritional status (n=807)

Question	Answer	Frequency	Percent
1-Does your child's food contain all nutritional requirements or a complete meal (vegetables + fruits + juices)	No	262	33.5
	Rarely	396	49.1
	Sometimes	106	13.1

p-ISSN: 2348-6848
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Vol. 8 Issue 11
November 2021

	Always	43	5.3
2- Do you depend only on the main meal for your child?	No	283	34.1
	Rarely	179	22.1
	Sometimes	209	26.9
	Always	136	16.9
3- Do you rely on one type of food?	No	153	19.0
	Rarely	189	23.4
	Sometimes	317	39.3
	Always	148	18.3
4-Would you like your child to eat food that contains high calories (porridge - gorasa –madida)	No	44	5.5
	Rarely	62	7.7
	Sometimes	424	52.5
	Always	277	34.3
5-Supplementary feeding should be initiated at 6 months of age	No	462	56.3
	Sometimes	209	25.8
	Always	136	17.9
6-Are you keen to feed your child with milk and dairy products (yogurt + cheese + milk)	No	78	9.7
	Rarely	138	17.1
	Sometimes	270	33.5
	Always	321	39.8

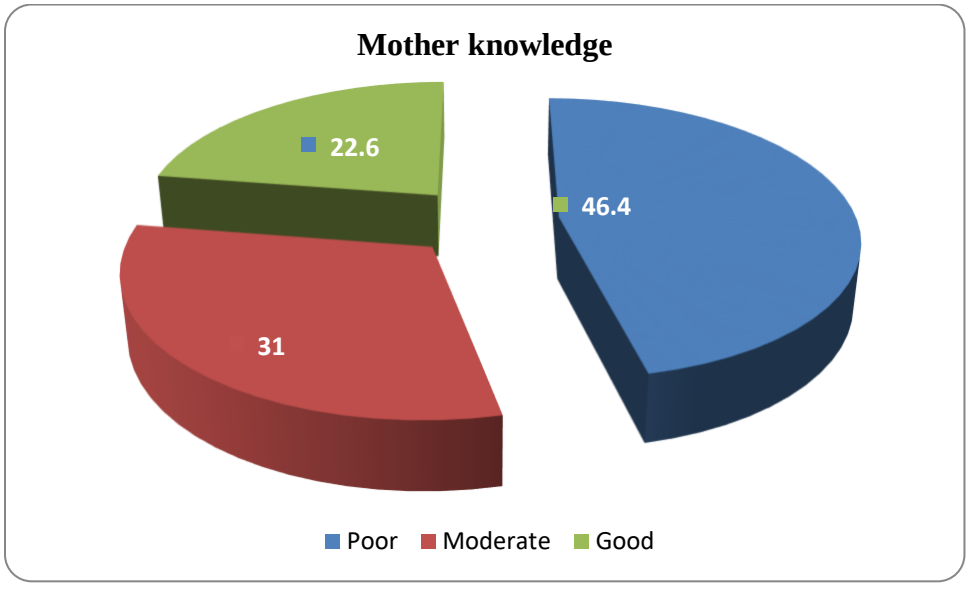

Figure (3) Knowledge of the mothers

Table (3) Association between mothers knowledge and prevalence of malnutrition (n=807)

	Mother knowledge		Association

Measurement item	Good	Moderate	Poor	P.value <0.05	
Underweight	**6.3%**	**17.2 %**	**37.5%**	**= 0.016**	Significant
Normal	**16.2%**	**13.9%**	**8,9%**		
Stunting	**3.9%**	**11.5%**	**36,1%**	**= 0.000**	Significant
Normal	**18.7%**	**19,5%**	**10.3%**		
Wasting	**4.7%**	**13.9%**	**42.5%**	**= 0.000**	Significant
Normal	**17.8%**	**17.1%**	**4.0%**		

Discussion:

The present study included 807 mothers, which the mean score Knowledge was12, there were 46.4% reported have poor knowledge and main source of knowledge 58.8% were reported that were medical workers. These finding was better than reported in study done in India 2018(Nayak , 2018) which revealed that the mean score of knowledge of mothers was 10.54 and the score range was 3–19, also their results showed that highest per cent of mothers (65%) had average knowledge, Another pervious study 2015 (Kavitha, 2015) reported that mean score of 11.4 and 50% of participants had average knowledge. there were 77 % of mothers reported that they knew about malnutrition, these finding was in line with study from Cameron by Cumber et. al. (2016) showed that 73% of mothers had knew of malnutrition the current study, there were several factors that may affect knowledge of mothers, in our study one of these factors exclusive breast feed, which there were 51.8% of mothers not knew more about exclusive breast feeding or correct time of comelementary feeding, this might due to local culture nutritional status of the mother or poor dietary practice, and poor nutritional quality of complementary feeding, this was agreement with study reported that 50% of mothers had no knowledge about time breastfeed and complementary feed initiation (Cumber et. al., 2016), other factors were, education level and number of children in our study

most of mother 67. 4% were receive just primary education , when the mother was high educated , she was more knowledgeable in childcare as well as optimal child feeding recommendations and knew about children's nutritional requirements, so there were more relation between education and mothers knowledge , as same In previous studies, (Sarika, 2016), reported; that mothers knowledge was associated with the educational status of mothers. Then the low educational status of mother was strong predictor for poor knowledge, which approximately half of mothers interviewed (46.4%) had poor knowledge, and there were highest prevalence of malnourishes was seen, and lowest prevalence seen in good mother knowledge (22.6) than the moderate mother knowledge (31%). that mean there was significant association between mothers knowledge and malnourishes children, these results are in accordance of study conducted by Sarika (2016) found that the mother's knowledge was associated with the educational status and child malnourishes. The average knowledge of mothers was dominant in another study from India reported that the knowledge of mothers was insufficient and needed to be improved (Hoque, et al. 2015), Then Mothers who have more knowledge about nutrition can bring up their children in healthy way as reported (Khattak, 2007).

In this study there were strengths and limitations; the strengths included the large sample size to reach all mothers in the society, whereas the limitations included the few comparisons in results because there were few studies on this subject and there was no previous Sudan study and other studies present were in different designs.

Conclusions and Recommendations:

There was association with knowledge of mothers and malnutrition of children ,However, this knowledge should be increased, as there were increase

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Vol. 8 Issue 11
November 2021

Age at first birth and educational level of mothers, Moreover, the independent predicted significant associated with increasing underweight and wasting were being in low mother educate and knowledge, and we recommendations for the relevant decision makers and further studies to establish the reasons why malnutrition more higher prevalent in low education or poor mothers knowledge, so to decrease the occurrence of malnutrition that may present in study area, then we need to educate women in order to involve all mothers who never access health facilities. To excess patter information about nutrition and creation the awareness to all mothers about the routine services offered at the health facilities.

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Vol. 8 Issue 11
November 2021

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