# Assessment of Nutritional Status of Children Living in Orphanage Institutions at Minia and Samlout Cities

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**Abstract**

Childhood is a crucial period affecting physical and intellectual development. Although children living in orphanages consider the most vulnerable groups at risk of malnutrition, there is scarcity of data concerning their nutritional status in Egypt. **Aim of the study**: To assess the nutritional status of children living in orphanage institutions at Minia and samalout cities. **Research design**: Across –sectional descriptive study was utilized in this study. **Subjects**: comprised 109children in orphanage whose age ranged between 3 to 19 years. **Setting**: This study was carried out at orphanages at Minia city and Samalout city. **Data collection tools**: Two tools were utilized to measure the variables of the study included demographic part , clinical, anthropometric, dietary Intake Assessment, physical activity and sedentary behaviors .**Results**: the major resultes found that 49.5% of the participants were in primary school, Physical signs suggesting nutritional deficiencies were detected in about 25% of the sample, and it showed that56.9% were stunted,14.7%of them overweight and 9.7% of children aged between 3-7 years had small head circumferences. **Conclusion**: malnutrition is highly prevalent in the orphanage of Minia city in line with the national prevalence and significantly associated with children age, and gender. **Recommendation**: The coexistence of under- and over nutrition among institutionalized children calls for implementation of comprehensive intervention strategies committed to reducing under nutrition while simultaneously preventing over nutrition through improving diet quality and physical activity of these children.

**Keywords**: Anthropometric Measures, Malnutrition, Nutritional Status, Orphanage, Over Nutrition, Under Nutrition.

## Introduction

Good nutrition allows children to grow, develop, learn, play, participate and contribute while malnutrition robs children of their futures and leaves young lives hanging in the balance. Stunting is the devastating result of poor nutrition in early childhood. Children suffering from stunting may never grow to their full height and their brains may never develop to their full cognitive potential. Globally, approximately 155 million children under 5 suffer from stunting. These children begin their lives at a marked disadvantage: they face learning difficulties in school, earn less as adults, and face barriers to participation in their communities. Wasting in children is the life-threatening result of hunger and/or disease. Children suffering from wasting have weakened immunity, are susceptible to long term developmental delays, and face an increased risk of death **(United Nations Children's Fund; 2017).**

Children living in orphanages world-wide often present with nutritional decencies**(Orphan Nutrition; 2015)**. The importance of determining vulnerability to food insecurity and malnutrition among children growing up in poor urban settings is paramount **(Kimani et al., 2010)** It should be noteworthy that malnutrition, physical or mental abuse, food insecurity as well as lack of parental care and protection are predominantly common scenarios among the children living in orphanages **(Madumita et al., 2017).**

Childhood and adolescence are critical periods for promoting social and emotional development **(NIHCM, 2016)**, Development during the first two years of life is crucial and has a lasting impact on a child's health **(Yue et al., 2016),** and Parental death in childhood may affect child well-being in various ways. The loss of an economically active adult lessens the domestic income in a family and makes the child vulnerable immediately **(Duggal et al., 2012)**, Urban malnutrition is an increasing problem globally **(Kimani et al., 2010),** malnutrition being more severe among children living in orphanages. Children in orphanages suffer from malnutrition and infectious diseases, Nutritional reduction leads to immune compromise, resulting in recurrent and increasingly rigorous infections which further compromise nutritional intake and ultimately may threaten the child‟s survival **(Duggal et al., 2012)**.

## Significance of the Study

According to **Ahern, (2013)** number of infants and children lives in orphanages around the world estimated 8 million to 10 million**.** In Egypt were nearly 1,59 million orphaned children in 2015 **(Johnston, 2017).**Children living without permanent parental care are at heightened risk for under nutrition, optimum growth and development of children lays a sound foundation in the areas of health, nutrition, language development, personality building, and social-emotional adjustment. There is insufficient evidence that

Indicates the nutritional statues as well as the effect of orphan hood on nutritional status. Nutrition is an important factor in mental development and in supporting growth and maximizing learning potential.

## Aim of the Study

Assess the nutritional status of children living in orphanage institutions at Minia and Samolout cities.

## Research Question:

What are nutritional statuses of orphaned children at the orphanage institutions?

## Subjects and Methods

### Study design:-

Cross-sectional descriptive study was used to achieve the aim of the current study.

**Setting:-**

This study was conducted in 5 orphanage centers at Mina city, includes three orphanages(Minia institution for boys, Minia institution for girls, and association of Genoud Al Masieh for Christian boys). Also two at Samalout city included one orphanage (association of Al-Mustafa, and association of Al- Nashat Al-Rohie for Christian boys).

**Subject:**

The sample included all orphaned children in orphanage centers according to inclusion and exclusion criteria for 3 months from March to May 2018. All children in institution from 3 years to 18 years.

| Setting | Number of children |
|---|---|
| El-Minia institution for boys | 25 |
| El-Minia institution for girls | 14 |
| Association of Genoud Al Masieh for Christian boys at Minia city | 20 |
| Al-Mustafa institution at Samalout city | 40 |
| Al-Nashat Al-Rohie for Christian boys at samalout city | 10 |
| Total number | 109 |

**Inclusion criteria:**

All children in institution from 3 years to 18 years.

**Exclusion criteria:**

- Babies from one day to less than 3 years.
- Children who have chronic disease(diabetes, renal failure, ect ).

**Data Collection Tools**

**Data collected through the utilization of two tools as follows:**

**First tool: Demographic data:** Covers the data related to general characteristics (age, gender, education level, duration of stay in the orphanage ,causes of enter orphanage, lost parents or parents alive, if hospitalized in last year ).

**Second tool: Assessment sheet: Included four parts: It was adapted from (johnston,2017)**

**Part I: clinical Assessment:** consists of 15 questions used to collect data about clinical characteristics and for detection of physical signs suggestive of nutritional deficiencies of the study subjects it Included items as follows: skin condition, Hair condition, head, neck, eyes, ears, mouth and throat, nose, chest, lung, heart, abdomen, back, extremities and bowel movement.

**Part II: Anthropometric Measurements:** consists of 4 questions measurements included items as follows**:** (Body mass index (BMI), height for age, weight for age and head circumference), anthropometric examination is considered an appropriate method to evaluate health and nutritional status of children.

**Part III: Dietary Intake Assessment:** consists of 9 items used to collect data about regulatory of meal consumption, and satisfaction of appetite with the food available in the orphanage were investigated. It included number of meals eaten regularly per day, meals satisfying appetite, number of snacks consumed regularly, daily breakfast intake, types of snacks usually consumed, daily intake of proteins/ fruits and vegetables.

**Part IV: Physical Activity and Sedentary behaviors:** consists of 4 items Included number of sleeping hours/day, hours spent in front of the TV, number of physical education hours/week, and spare time activities. which have been validated to evaluate the physical activity levels among children ,were used to investigate the physical activity status and sedentary behaviors of the study sample.

**Validity**

The content validity of the data collection tools was determined the tools were submitted to five experts in community health nursing to test tools validity. The tools were examined for content coverage, sequence of items, clarity, relevance, applicability, wording, length, format, and overall appearance. Based on experts` comments and recommendations; minor modifications had been made such as rephrasing and rearrangements of some sentences.

**Reliability**

Reliability of the tools was performed to confirm consistency of tool. The internal consistency measured to identify the extent to which the items of the tools measure the same concept and correlate with each other by Cronbach's alpha test

**Ethical Consideration**

A written approval obtained from the ethical and research committee of the faculty of Nursing, Minia University. Oral consent obtained from each participant after explaining the nature & objectives of the study to gain their cooperation. Each assessment sheet was coded and subjects' names were not appeared on the sheets for the purpose of anonymity and confidentiality. Subjects were free to withdraw from the study at any time.

**Study procedure**

Permission to conduct the study was obtained from the Dean of Faculty of Nursing at Minia University. An official letter was obtained from the undersecretary of the ministry of social solidarity asking for the permission to collect data. After approval of ethical committee at Faculty of Nursing, Minia University. This letter was included a brief explanation of the objectives of the study and permission was requested from each director to carry out the study. After extensive review of relevant national and international literature, tools of data collections were developed by the researchers in 2018. Prior to data collection, tools for data collection translated from English to Arabic version language and transverse translation again from Arabic to English, Study tools were revised by five experts in the field of nursing at the faculty of nursing; Cairo and Minia University, to test its content validity and feasibility, the necessary modifications were done as rephrasing and rearrangements of some sentences.

**Pilot study**

Pilot study of twenty multiparous was conducted prior to data collection, those excluded from the study. The researchers visited the orphanage two days per week (Saturdays and sundays) to recruit the study sample from March 2018 to May 2018. All children in the orphanage were selected according to inclusion criteria, about (10 children per week). The average number interviewed subjects was 5

children per day and average time taken for each was around 20-30 minutes depending on the response of each child. Data collection lasts for 3 months from beginning of March 2018 to end of May 2018, tabulated and analyzed

**Statistical analysis of data**

Statistical analysis was done by using Statistical Package for the Social Science (SPSS 25.0). Quality control was done at the stages of coding and data entry. Data were presented by using descriptive statistics in the form of frequencies and percentage for qualitative variables. Chi square ($x^2$) was used to test the association between two qualitative variables or to detect differences between two or more proportions and the sample size large. statistical significance was considered at $P \leq 0.05$. Graphs were done for data visualization using Microsoft Excel.

**Results**

**Table (1): Percentage distribution of demographic data among studied children(n = 109).**

| Demographic data | No. | % |
|---|---|---|
| Name of the orphanage | | |
| **Genoud Al Masieh for Christian boys** | 21 | 19.3 |
| **Minia institute for girls** | 14 | 12.8 |
| **Minia institute for boys** | 25 | 22.9 |
| **Al-Nashat Al-Rohie for Christian boys** | 10 | 9.2 |
| **Al-Mustafa** | 39 | 35.8 |
| Total | **109** | **100.0** |
| Age | | |
| **3 -≥ 7 years** | 31 | 28.4 |
| **8- ≥ 12 years** | 52 | 47.7 |
| **13 – ≥ 17 years** | 26 | 23.9 |
| Total | **109** | **100.0** |
| Gender | | |
| **Boy** | 76 | 69.7 |
| **Girls** | 33 | 30.3 |
| Total | **109** | **100.0** |
| Education level | | |
| **Illiterate** | 22 | 20.2 |
| **Primary** | 54 | 49.5 |
| **Preparatory** | 23 | 21.1 |
| **Secondary** | 10 | 9.2 |
| Total | **109** | **100.0** |
| Causes of entering the orphanage | | |
| **Lost parents** | 99 | 90.8 |
| **Parents alive** | 10 | 9.2 |
| Total | **109** | **100.0** |
| Duration of stay in the orphanage | | |
| **From the delivery** | 102 | 93.6 |
| **3 years** | 2 | 1.8 |
| **4 years** | 3 | 2.8 |
| **5 years** | 2 | 1.8 |
| Total | **109** | **100.0** |
| Hospitalized in last year | | |
| **No** | 109 | 100.0 |
| Total | **109** | **100.0** |

**Table 1** showed that, 35.8% of studied children from Al Mustafa orphanage,47.7% of them were in the age group 8- ≥ 12 years. Concerning gender 69.7% of studied sample were boys and 49.5% of them in the primary school. Regarding causes of attach the orphanage 90.8% of them due to lost their parents, 93.6% of them stay in the orphanage from the delivery.

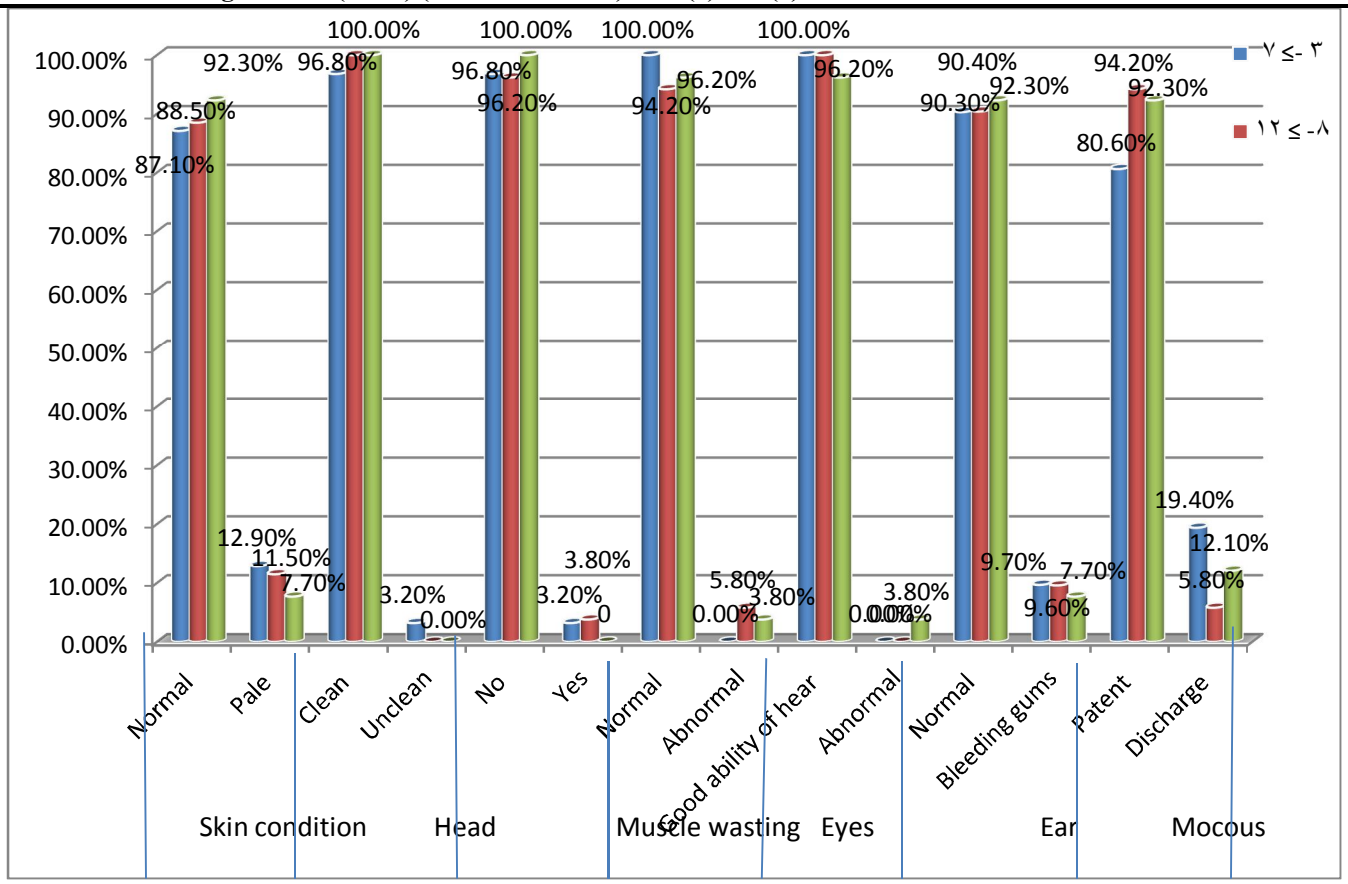


**Figure (1): percentage distribution between children age and their clinical assessment (n = 109).**

**Figure (1):** illustrated that children aged between 13- 17 years had normal skin conditions, clean head, normal muscle, and normal mucus membrane than other ages. While children aged between 3- 7 years, 19.4% of them had nasal discharge, 12.9% of them pale skin color, 9.7% of them had bleeding gums and3.2% of them had muscle wasting and unclean head.

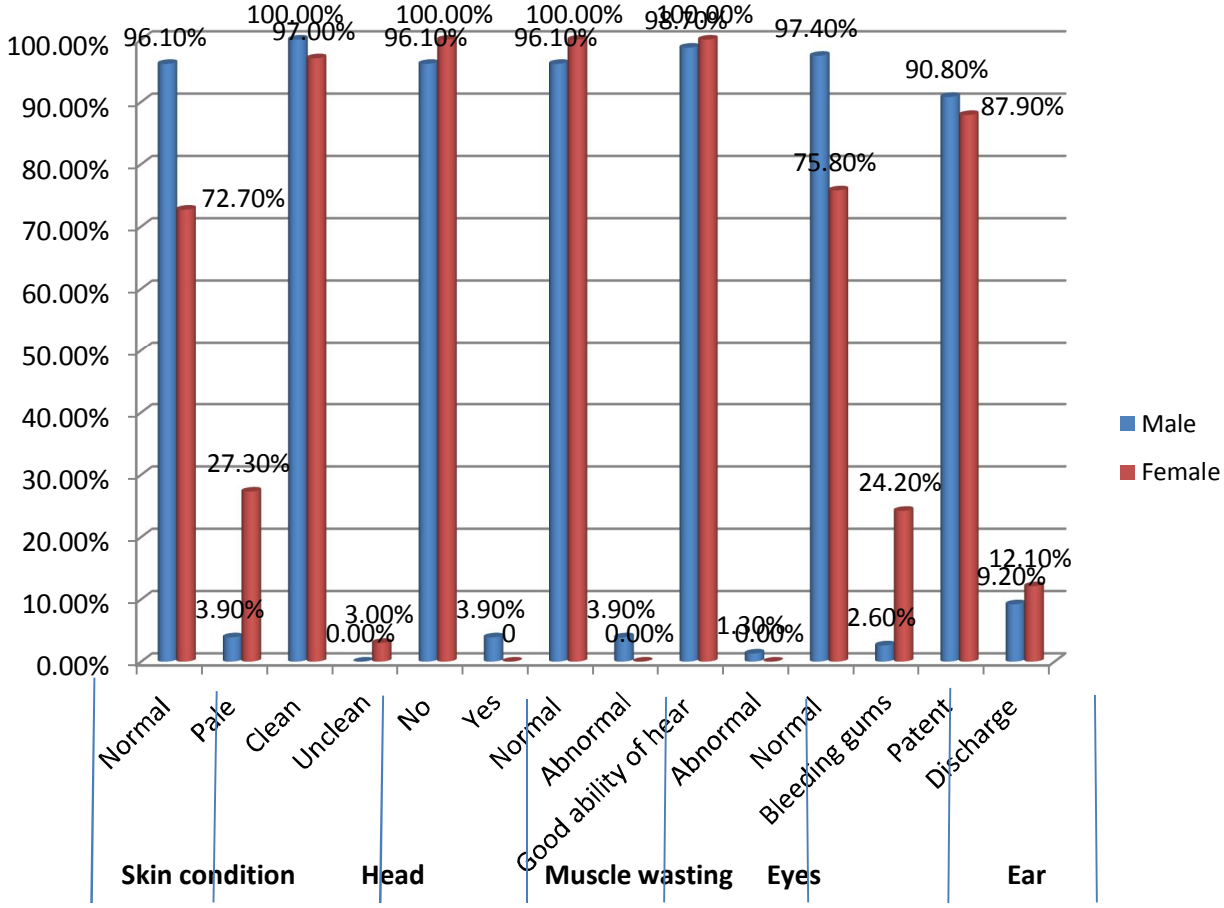


**Figure (2): Percentage distribution between children gender and their clinical assessment (n = 109).**

**Figure (2)**: illustrated that boy children had normal skin conditions, clean head, normal mucus membrane and patent nose than girl child. While girl children, 100.0% of them had normal muscles, normal eyes, and normal ear nose than boy child.

**Table (2): Relation between children age and their anthropometric assessment (n = 109).**

| Anthropometric Assessment | Total (n= 109) | | Age group | | | | | | $X^2$ | P |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3 - 7 n=31 | | 8- 12 n=52 | | 13 –17 n=26 | | | |
| | No. | % | No. | % | No. | % | No. | % | | |
| **Height for age** | | | | | | | | | | |
| Stunted | 62 | 56.9 | 12 | 38.7 | 34 | 65.4 | 16 | 61.5 | 5.937 | .05* |
| Normal | 47 | 43.1 | 19 | 61.3 | 18 | 34.6 | 10 | 38.5 | | |
| **Total** | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |
| **Weight for age** | | | | | | | | | | |
| Normal | 90 | 82.5 | 27 | 87.1 | 39 | 75.0 | 24 | 92.3 | 4.581 | .333 |
| Overweight | 16 | 14.7 | 3 | 9.7 | 11 | 21.2 | 2 | 7.7 | | |
| Underweight | 3 | 2.8 | 1 | 3.2 | 2 | 3.8 | 0 | .0 | | |
| **Total** | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |
| **Head circumferences** | | | | | | | | | | |
| Small | 3 | 2.8 | 3 | 9.7 | 0 | .0 | 0 | .0 | 7.762 | .02* |
| Appropriate | 106 | 97.2 | 28 | 90.3 | 52 | 100.0 | 26 | 100.0 | | |
| **Total** | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |

**Table (2)** showed that 56.9% of studied children suffered from stunting, 14.7% of the overweight and 9.7% of children aged between 3- 7 years had small head circumferences compared with other age with statistical significance differences which P– value ≤ .05and.02 respectively. Statistically significance difference

**Table (3): Relation between children age and their dietary assessment (n = 109).**

| Dietary assessment | Total (n= 109) | | Age group | | | | | | $X^2$ | P- value |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3 - 7 | | 8- 12 | | 13 –17 | | | |
| | No. | % | No. | % | No. | % | No. | % | | |
| Number of meals eaten regularly per day | | | | | | | | | | |
| **One** | 2 | 1.8 | 1 | 3.2 | 0 | .0 | 1 | 3.8 | 1.916 | .751 |
| **Two** | 31 | 28.4 | 9 | 29.0 | 15 | 28.8 | 7 | 26.9 | | |
| **Three** | 76 | 69.8 | 21 | 67.7 | 37 | 71.2 | 18 | 69.2 | | |
| Total | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |
| Meals satisfying appetite | | | | | | | | | | |
| **Yes** | 107 | 98.2 | 30 | 96.8 | 52 | 100.0 | 25 | 96.2 | 5.743 | .219 |
| **No** | 2 | 1.8 | 1 | 3.2 | 0 | .0 | 1 | 3.8 | | |
| Total | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |
| Number of snacks consumed regularly | | | | | | | | | | |
| **One** | 63 | 57.8 | 17 | 54.8 | 30 | 57.7 | 16 | 61.5 | 1.471 | .832 |
| **Two** | 32 | 29.4 | 9 | 29.0 | 17 | 32.7 | 6 | 23.1 | | |
| **Three** | 14 | 12.8 | 5 | 16.1 | 5 | 9.6 | 4 | 15.4 | | |
| Total | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |
| Daily breakfast intake | | | | | | | | | | |
| **Yes** | 109 | 100.0 | 31 | 100.0 | 52 | 100.0 | 26 | 100.0 | …. | 1.000 |
| **No** | 0 | .0 | 0 | .0 | 0 | .0 | 0 | .0 | | |
| **If yes** | | | | | | | | | | |
| **Milk** | 3 | 2.8 | 1 | 3.2 | 2 | 3.8 | 0 | .0 | 7.715 | .103 |
| **Cheese** | 77 | 70.6 | 27 | 87.1 | 34 | 65.4 | 16 | 61.5 | | |
| **Tomatoes** | 29 | 26.6 | 3 | 9.7 | 16 | 30.8 | 10 | 38.5 | | |
| Total | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |
| Types of snacks usually consumed | | | | | | | | | | |
| **Sweets** | 38 | 34.9 | 9 | 29.0 | 18 | 34.6 | 11 | 42.3 | 1.749 | .782 |
| **Salty snacks** | 69 | 63.3 | 21 | 67.7 | 33 | 63.5 | 15 | 57.7 | | |
| **Milk** | 2 | 1.8 | 1 | 3.2 | 1 | 1.9 | 0 | .0 | | |
| Total | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |

**Table (3)** presented that 69.8% of studied children eaten regular three meals / day, 57.8% of them take one snacks, 63.3% of them consumed salty snacks (potato chips) and take beans daily. Concerning daily breakfast intake 70.6% of them eat cheese, and all items of dietary assessment with no statistical significance differences between different age groups.

**Table (4): Relation between children age and their physical activity and sedentary behaviors (n = 109).**

| Physical activity and sedentary behaviors | Total (n= 109) | | Age group | | | | | | $X^2$ | P |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3 - 7 | | 8- 12 | | 13 –17 | | | |
| | No. | % | No. | % | No. | % | No. | % | | |
| Number of sleeping hours/day | | | | | | | | | | |
| **< 8 hours** | 45 | 41.3 | 15 | 48.4 | 19 | 36.5 | 11 | 42.3 | 1.140 | .566 |
| **≥ 8 hours** | 64 | 58.7 | 16 | 51.6 | 33 | 63.5 | 15 | 57.7 | | |
| Hours spent in front of the TV or any other screen | | | | | | | | | | |
| **1- 2** | 94 | 86.2 | 26 | 83.9 | 48 | 92.3 | 20 | 76.9 | 3.662 | .160 |

| Physical activity and sedentary behaviors | Total (n= 109) | | Age group | | | | | | $X^2$ | P |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3 - 7 | | 8- 12 | | 13 –17 | | | |
| | No. | % | No. | % | No. | % | No. | % | | |
| **3-4** | 15 | 13.8 | 5 | 16.1 | 4 | 7.7 | 6 | 23.1 | | |
| Number of practicing exercise hours/week | | | | | | | | | | |
| **≤ 2** | 20 | 18.3 | 5 | 16.1 | 8 | 15.4 | 7 | 26.9 | 1.683 | .431 |
| **>3** | 89 | 81.7 | 26 | 83.9 | 44 | 84.6 | 19 | 73.1 | | |
| Spare time activities | | | | | | | | | | |
| **Active playing** | 106 | 97.2 | 29 | 93.5 | 51 | 98.1 | 26 | 100.0 | Fisher exact test 2.454 | .293 |
| **Not activated found** | 3 | 2.8 | 2 | 6.5 | 1 | 1.9 | 0 | .0 | | |
| Total | **109** | **100.0** | **31** | **100.0** | **52** | **100.0** | **26** | **100.0** | | |

**Table 5** showed that 58.7% of studied children sleep 8 hours or more/ day, 86.2% of them spent ≤ 2 hours in front of the T.V or any other screen, 81.7% of them practiced 3 hours exercise / week and 97.2% of them were active playing withno statistical significance differences between different age groups and all items of physical activity &sedentary behaviors.

## Discussion

The foundations of sound physical and mental health are established during the school age (5–14 years) **(C.Best,N.Neufingerl;2010)**. According to the United Nations Guidelines for Alternative Care for Children, "it is the role of the state, through its competent authorities, to ensure the supervision of the safety, wellbeing and development of any child placed in alternative care and the regular review of the appropriateness of the care arrangement provided" **(United Nations;2010)**.Therefore, the present study investigated the nutritional status and associated correlates of school age children living in orphanages, in an attempt to pave the way for an understanding of the environmental influences on health and impact on growth parameters of these children.

Present study aimed to assess nutritional status of children living at the orphanage in minia city and samlout city . A total sample of 109 males and females and more than two thirds of them were males participants was selected by a-cross sectional descriptive design as subject for the present study and their age ranged from 3 to 18 years. Most of the participants entered into orphanage due to lost their parents. About half of them were in the primary school. It was found that the Majority of participants were stay in the orphanage from the delivery.

Current study found that more than two thirds of the sample were boys and in terms of education about half of them in the primary school this was in agreement with**( Chowdhury,2017)** who found that more than half the sample were boys and, more than two fifth had completed primary education. And it agree with **( kamis,2017)** who found that more than half of the sample were boys and more than two fifth of them in primary school.

Study was reported that orphans having no parents alive experienced significantly higher malnutrition compared to those who had parents alive and this was consistent with the study done in Gondar City, Ethiopia **(Teklemariam et al., 2014)**. This study also found that orphans who had no parents were particularly deprived and loss of a mother was even more detrimental.

The study found that 56.9% of the orphans suffered from malnutrition, and this result indicates that the majority of the children living in the orphanage suffered food insecurity. Similar findings were reported in India **(Shukla;2011)**, where more than half of the children living in orphanages were malnourished, irrespective of their age and gender. However, the results of the present study are in contrast with the findings of other studies **( Christopher et al., 2014; Vaida, 2013; Braitstein et al., 2013; Sadik, 2010)** who found that the majority of the participants had normal nutritional status and that there was no clear relationship between orphan hood and the nutritional status of children. It was found that children aged between 3-7 years , more the one tenth of them pale skin color, These percentages slightly lower to what found in the study by **( Johnston,2017)** was reported that nearly one quarter children of had pale skin. Which might suggest the presence of nutrients deficiencies.

The study was found that pallor was higher among girls more than one quarter than boys, this was in the light of**(Haleemath et al.,2017)** who agree that Pallor was higher among girls more than one third than boys3.9% is the result of chronic malnutrition.

The present study found that more than half of the studied children were stunting and 2.8% were underweight is the result of chronic or recurrent malnutrition, and its effects often last a lifetime. This finding was agree with**(Teklemariam et al.,2014)** that was found more than two fifth stunting and more than one fifth underweight that result from chronic malnutrition.

Prevalence of stunting, based on WHO reference standards, in the present study was 56.9%. Stunting is the failure to grow, both physically and cognitively, and is the result of chronic or recurrent malnutrition, and its effects often last a lifetime **(Prendergast et al.,2014)**. Throughout the world, many children fail to thrive, with remarkably vast differences in the height/age between different regions**(United Nations Children's Fund, 2012)**.The current findings on prevalence of stunting were higher compared to the prevalence of stunting (10%) among orphanage children from Ghana **(Sadik2010)**. Much higher prevalence rates of stunting compared to the present findings were reported from Kenya and Bangladesh (47.2% and 38%, resp.) **(Mwaniki et al.,2013).**

Conversely, lower rates of stunting compared to our findings were found in Indian (9.25%) school age children **(Fazili et al., 2012)**. These discrepancies in the prevalence of stunting among school age children are likely to stem from different nutritional intakes and socioeconomic and cultural differences rather than differences in the genetic potential to achieve maximum height. The difference in prevalence of stunting among children institutionalized at school age, compared to those living with their own families, may be attributed to the suggested limited effect of mid or later childhood on stunting, whereas children stunted at school age are likely to have been exposed to poor nutrition since early childhood **(Prendergast, 2014.Victora, 2010)**.

In this study was found that more than half of the studied children suffered from stunting, (2.8%)of the underweight, less than one fifth of them had overweight. This finding in line with **(khamis,2017)**that he was found more than one third of the studied children suffered from stunting, (0.8%) of the underweight and less than one fifth had overweight. It is due to low socioeconomic standard. And it accept with that was found the prevalence of stunting was significantly higher ($p<0.05$) among the studied children that was the prevalence of long term under nutrition was significantly increased with advancing age.

The present study found that more than two third of studied children eat regular three meals/day This finding was in line with**( Sudha,2013)** that was found that One study of institutionalized children and orphans living in orphanages found that only more than half of children had at least three meals a day

The current results indicated that the majority of participants consumed 3 meals daily. This was inconsistent with previously published data among children residing in orphanages **(Sadik,2010)**. Moreover, despite the fact that majority of participants confirmed that meals satisfy their appetite, the dietary intake of proteins, fruits, and vegetables of more than half the children was inadequate, and suggesting that the dietary quantity may be sufficient but the quality is not. Consistently, children aged 6–18 years from 3 orphanages in Zimbabwe **(Serere,2013)**.

It was found that more than half of studied children take one snack, and more over half of studied children eat breakfast, this finding was in line with **( Chaturvedi,2013)** that was found that more than two fifth of the studied sample revealed consumption of 1 snack per day. and nearly all of the studied sample of both age groups regular intake of breakfast.

The present study found that the majority of studied children take more than half consumed salty snacks and beans daily and more than one third consumed sweet this was in consistent with **(Sudha, 2013)** who found in their study that there is the majority reported an unhealthy pattern of snacking; half of sample consumed sweet and more than one fifth consumed salty snacks on a regular basis.

In the current study (2.8%)of inadequate daily intakes of milk, which concurs with previously published data from Zimbabwe **(Serere,,2013)** poor intake of daily servings could possibly affect children's protein, calcium, and riboflavin intake, which are essential for growth, tissue and muscle and bone development .**(Gallagher,2012)**.

It was found that more than half of studied children slept 8 hours or more/ day, nearly all of the studied sample of them spent ≤ 2 hours in front of the T.V or any other screen, practiced 3 hours exercise / week and active playing with no statistical significance differences between different age groups this was in consistent with **(Sudha, 2013)** who found in their study that there is nearly all of the studied sample slept 8 hours or more and overall high prevalence of low physical activity and sedentary behavior among the studied sample and about half of them spent<2 in front of the TV or any other screen.

## Conclusion

Findings of the present study indicate the coexistence of under- and over nutrition, manifested as simultaneous moderate/high prevalence rates of stunting and overweight/ obesity culminating into double burden of malnutrition. In addition, inadequate dietary intake habits and increased sedentary behaviors were highly prevalent among majority of the studied sample.

## Recommendation

- Make nutrition education programs for children living in orphanages as well as their caregivers for improve of culture based.
- This could allow for accurate formulation of strategies and policies for combating both under- and over nutrition among these population groups.
- Training programs for caregivers in orphanages includes children's needs, food preparation and service.
- Make recommendations for correcting children's nutritional status as needed.

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