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Al-Razi University  
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# **Prevalence of Malnutrition Among Under Five Years Old Children, Who are Attending Health Centers of Sanhan District, Sana'a -Yemen**

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*Thesis Submitted to the Department of Community health  
& Nutrition, College of Medical Sciences, AL-Razi University as Partial  
Fulfillment for MSc. Degree in Epidemiology*

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الجمهورية اليمنية  
وزارة التعليم العالي والبحث العلمي  
جامعة الرازي  
الدراسات العليا  
قسم صحة المجتمع والتغذية

## انتشار سوء التغذية بين منهم دون سن الخامسة من الاطفال المتكردين على المراكز الصحية في مديرية سنحان صنعاء- اليمن

رسالة مقدمة إلى قسم صحة المجتمع والتغذية ، كلية العلوم الطبية، جامعة الرازي لاستكمال  
متطلبات نيل درجة الماجستير في الوبائيات

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## CERTIFICATE

This is to certify that the thesis entitled *Prevalence of Malnutrition Among Under Five Years Old Children,Who are Attending Health Centers of Sanhan District, Sana'a -Yemen*; which was submitted to the Department of Community Health and Nutrition, College of Medical Sciences, Al-Razi University is for the award of MSc. degree in *Epidemiology*, It is a register of the original and bona fide thesis work carried out by *Nasser Ali Ahmed Haimed*, under our supervision. Such material as has been obtained from other sources has been duly acknowledged in the research. This thesis embodies the work of the candidate himself and no part thereof has been submitted for any other degree.

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## DEDICATION

*This thesis is dedicated to  
Soul my father, my great mother, who never stop giving of  
themselves in countless ways,  
My dearest wife, who leads me through the valley of  
darkness with the light of hope and support,  
My beloved brothers and sisters,  
My beloved kids: Aljalila & Ahmed whom I cannot force  
myself to stop loving. To all my family, the symbol of love  
and giving,  
My friends who encouraged and supported me,  
All the people in my life who touch my heart.*

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## TABLE OF CONTENTS

<b>CERTIFICATE</b> .....	<b>iii</b>
<b>DEDICATION</b> .....	<b>iv</b>
<b>ACKNOWLEDGMENT</b> .....	<b>v</b>
<b>TABLE OF CONTENTS</b> .....	<b>vi</b>
<b>LIST OF TABLES</b> .....	<b>viii</b>
<b>LIST OF FIGURES</b> .....	<b>ix</b>
<b>LIST OF ABBREVIATION</b> .....	<b>x</b>
<b>ENGLISH ABSTRACT</b> .....	<b>xi</b>
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 Background of the study .....	1
1.2 Problem statement .....	2
1.3 Justification of the study .....	3
<b>CHAPTER TWO: LITERATURE REVIEW</b> .....	<b>5</b>
2.1 Definitions of malnutrition .....	6
2.2 Classification of malnutrition .....	6
2.3 Impact of malnutrition in Childhood .....	9
2.4 Magnitude and prevalence of malnutrition .....	11
2.5 Current status of malnutrition and its indicators in Yemen .....	14
2.6 Causes and associated factors of malnutrition .....	15
2.7 Pathophysiology of malnutrition .....	17
2.8 Diagnosis and measurement .....	18
2.9 Complications of malnutrition .....	20
2.10 Malnutrition risks .....	21
2.11 Control of malnutrition .....	22
2.12 Management of malnutrition .....	24
<b>CHAPTER THREE: OBJECTIVES OF THE STUDY</b> .....	<b>30</b>
3.1 General objective .....	31
3.2 Specific objectives .....	31
3.3 Hypothesis .....	31
<b>CHAPTER FOUR: RESEARCH METHODOLOGY</b> .....	<b>33</b>
4.1 Study design .....	33
4.2 Study setting .....	33
4.3 Population and sample Size .....	33
4.4 Sampling technique .....	33
4.5 Inclusion and exclusion criteria .....	34
4.5.1 Inclusion criteria: .....	34
4.5.2 Exclusion criteria: .....	34
4.6 Data collection method and tools .....	34
4.6.1 Data collection method: .....	34
4.6.2 Data collection tools: .....	35
4.7 Validity and reliability of the tools .....	35
4.8 Pilot study .....	36
4.9 Data processing and statistical analysis .....	36
4.10 Ethical considerations .....	36
<b>CHAPTER FIVE: RESULTS</b> .....	<b>38</b>

5.1 Demographic characteristics of children .....	39
5.2 Distribution of results according to medical history .....	41
5.3 Demographic characteristics of children according to the health center name	41
5.4 Demographic characteristics of children families .....	42
5.5 Demographic characteristics of children families according to education level.	43
5.6 Factors related to lactation and child feeding .....	44
5.7 Other factors related to lactation and child feeding .....	45
5.8 Factors related to pregnancy, childbirth, and mother nutrition status .....	46
5.9 Prevalence of malnutrition among children using Z-Score scal .....	47
5.10 Prevalence of malnutrition among children using MUAC scale .....	48
5.11 Prevalence of stunting among children based on height for age measure .....	49
5.12 Prevalence of underweight among children based on weight for age measur	50
5.13 Prevalence of malnutrition, using Z-Score scale, among children in.....	
association with some demographic factors.....	51
5.14 Prevalence of malnutrition, using Z-Score scale, among children in.....	
association with some family demographic factor.....	53
5.15 Prevalence of malnutrition, using Z-Score scale, among children in.....	
association with some related factors.....	54
5.16 Prevalence of malnutrition, using Z-Score scale, among children in.....	
association with some mother-related factors. ....	57
<b>CHAPTER SIX: DISCUSSION</b> .....	<b>59</b>
6.1 Discussion .....	60
6.2 Limitations of the study .....	65
<b>CHAPTER SEVEN: CONCLUSION &amp; RECOMMENDATION</b> .....	<b>66</b>
7.1 Conclusion .....	67
7.2 Recommendation .....	68
<b>REFERENCES</b> .....	<b>70</b>
<b>APPENDIX</b> .....	<b>78</b>

## LIST OF TABLES

Table 1: Criteria for classifying the degree of acute malnutrition.....	7
Table 2: Sample size from each health center.....	34
Table 3: Demographic characteristics of children .....	39
Table 4: Distribution of results according to medical history.....	40
Table 5: Demographic characteristics of childr families.....	42
Table 6: Factors related to lactation and child feeding. ....	44
Table 7: Factors related to pregnancy, childbirth, and mother nutrition status .....	46
Table 8: Prevalence of malnutrition, using Z-Score scale, among children in..... association with some demographic factors .....	51
Table 9: Prevalence of malnutrition, using Z-Score scale, among children in..... association with some other demographic factor .....	52
Table 10: Prevalence of malnutrition, using Z-Score scale, among children in..... association with some family demographic factors.....	53
Table 11: Prevalence of malnutrition, using Z-Score scale, among children in..... association with some other family demographic factors.....	54
Table 12: Prevalence of malnutrition, using Z-Score scale, among children in..... association with some related factors.....	55
Table 13: Prevalence of malnutrition, using Z-Score scale, among children in..... association with some other related factors .....	56
Table 14: Prevalence of malnutrition, using Z-Score scale, among children in..... association with some mother-related factors.....	57
Table 15: Prevalence of malnutrition, using Z-Score scale, among children in association with some mother-related factors.....	58



## LIST OF FIGURES

Figure 1: Children distribution in percentage bases in Sanhan health centers.....	41
Figure 2: Demographic characteristics of children families according to education level .....	43
Figure 3: Other factors related to lactation and child feeding .....	45
Figure 4: Prevalence of malnutrition among children using Z-Score scale.....	47
Figure 5: Prevalence of malnutrition among children using MUAC scale.....	48
Figure 6: Prevalence of stunting among children based on height for age measure....	49
Figure7: Prevalence of underweight among children based on weight for age measure .....	50

## LIST OF ABBREVIATION

<b>BMI</b>	Body Mass Index
<b>BSc</b>	Bachelor of Science
<b>CE</b>	Common Era
<b>CL</b>	Confidence Level
<b>Cm</b>	Centimeter
<b>CMAM</b>	Community-Based Management of Acute Malnutrition
<b>CTC</b>	Community-Based Therapeutic Care
<b>Dr</b>	Doctor
<b>F100</b>	Therapeutic Milk for Children with Severe Acute Malnutrition
<b>H0</b>	Null Hypothesis
<b>H1</b>	Alternative Hypothesis
<b>HFA</b>	Height for Age
<b>MAM</b>	Moderate Acute Malnutrition
<b>MSc</b>	Master of Science
<b>MPHP</b>	Ministry Public Health Population
<b>MUAC</b>	Mid-Upper Arm Circumference
<b>N</b>	Sample Size
<b>WFP</b>	World Food Program
<b>SAM</b>	Severe Acute Malnutrition
<b>SD</b>	Standard Deviation
<b>SPSS</b>	Statistical Package for The Social Science
<b>TSFP</b>	Targeted Supplementary Feeding Program
<b>UN</b>	United National
<b>UNICEF</b>	United Nations International Children Emergency Fund
<b>USAID</b>	United States Agency for International Development
<b>WFA</b>	Weight for Age
<b>WFH</b>	Weight-For-Height
<b>WFL/H</b>	Weight-For-Length /Height
<b>WHO</b>	World Health Organization
<b><math>\chi^2</math></b>	Chi-Square Test
<b>YFHS</b>	Yemen Family Health Survey

## ENGLISH ABSTRACT

### **Background:**

Malnutrition among children is one of the most important causes of morbidity and mortality in the world, particularly in developing countries including Yemen. Therefore, this study aimed to assess the prevalence of malnutrition among under five years old children, who are attending health centers of Sanhan district, Sana'a -Yemen.

### **Methods:**

A descriptive cross-sectional study was conducted among under five years old children, who are attending health centers of Sanhan district, Sana'a -Yemen. The sample size was determined using EpiCalc 2000 program. A convenience sampling method was applied to estimate the sample size (751 children), for two months, from 13 October 2020 to 13 December 2020, after official approvals were obtained from the previously selected settings with researcher consideration for inclusion and exclusion criteria. A structured modified questionnaire and checklist were designed to collect data. SPSS version 21.0, descriptive and inferential statistics was used for data analysis.

### **Results:**

The results showed that (49.2%) of children suffer from malnutrition, using Z-Score, (27.4%) of them of mild malnutrition, (17.3%) moderate malnutrition, and (4.5%) severe malnutrition. Based on the MUAC measure (56.2%) of the children of malnutrition (39.8%) of children were of mild malnutrition, (13.2%) of moderate malnutrition, and (3.2%) severe malnutrition. (78.1%) of children were of stunting using the height according to the child age scale, they are distributed, (29.4%) of children were mild stunting, (29%) moderate stunting, (20.1%) severe stunting. (38.9%) of children were underweight.

A significant association between the prevalence of malnutrition using Z-Score and the child age, childbirth order, the educational level of the mother and father, monthly income, does the family have an integrated dietary diversity in the daily meals, current residence place, and current housing type at ( $P\text{-Value} \leq 0.05$ ).

A significant association between prevalence of malnutrition using Z-Score and when start the breastfeeding, eat a varied and regular diet, vaccinated according to schedule, supplementary meals next to breastfeeding, when stopped breastfeeding, type of children at the birth, the mother eats a varied special diet during the pregnancy and lactation period, more than the usual family nutrition and the mother takes supplementary food (vitamins and minerals) during the pregnancy or breastfeeding, at ( $P\text{-Value} \leq 0.05$ ).

### **Conclusion and Recommendations:**

Prevalence of malnutrition among under five years old children was high, using Z-Score, MUAC, stunting, and underweight. Current education programs, quality of health services, and nutritional interventions carried out for the benefits of mothers and children are recommended to be improved, hence it would effectively contribute in reducing the prevalence of malnutrition in Yemen.

## ملخص الدراسة باللغة العربية

### ● خلفية الدراسة:

يعد سوء التغذية من أهم أسباب المراضة والوفيات بين الأطفال في العالم، وخاصة في البلدان النامية ومنها اليمن. هدفت هذه الدراسة إلى تقييم انتشار سوء التغذية بين من هم دون سن الخامسة من الأطفال، المترددين على المراكز الصحية في مديرية سنحان، صنعاء - اليمن.

### ● المنهجية:

أجريت دراسة وصفية مقطعية عرضية على الأطفال دون سن الخامسة المترددين على جميع المراكز الصحية في مديرية سنحان، صنعاء - اليمن، تم تحديد العينة بواسطة استخدام برنامج EpiCalc 2000. شملت عينة الدراسة على ٧٥١ طفل من جميع لمراكز الصحية، تم اخذ العينة بأسلوب المعاينة المريحة خلال شهرين ابتداء من ١٣ أكتوبر وحتى ١٣ ديسمبر ٢٠٢٠م، بعد اخذ الموافقة الأخلاقية من مكان الدراسة مع مراعاة احتياطات الباحث لمعايير الادراج والاستبعاد من الدراسة، جمعت البيانات من خلال الاستبيانات المكتوبة وقائمة الملاحظة، تم ترميز وادخال البيانات إلى برنامج الحزم الإحصائية للعلوم الاجتماعية النسخة ٢١ (SPSS 21.0) من أجل تحليل ومعالجة البيانات.

### ● النتائج:

أظهرت النتائج أن (٢، ٤٩٪) من الأطفال يعانون من سوء التغذية، من خلال قياس الوزن مقابل الطول (Z-Score). (٤، ٢٧٪) منهم سوء تغذية خفيف، (٣، ١٧٪) سوء تغذية متوسط، (٥، ٤٪) سوء التغذية حاد. (٢، ٥٦٪) من الأطفال يعانون من سوء التغذية، باستخدام محيط منتصف أعلى الذراع (MUAC)، (٨، ٣٩٪) من الأطفال يعانون من سوء تغذية خفيف، (٢، ١٣٪) سوء تغذية متوسط، (٢، ٣٪) سوء تغذية حاد. أظهرت النتائج أيضاً أن نسبة (١، ٧٨٪) من الأطفال يعانون من التقزم، من خلال استخدام مقياس الطول نسبة لعمر الطفل، (٤، ٢٩٪) من الأطفال يعانون من التقزم الخفيف، (٩، ٢٩٪) تقزم متوسط، (١، ٢٠٪) التقزم حاد. زد على هذا، أظهرت النتائج ان نسبة (٩، ٣٨٪) من الأطفال يعانون من نقص الوزن. وجد ارتباطاً معنوي بين انتشار سوء التغذية وفق قياس الوزن مقابل الطول ( Z-Score ) وعمر الطفل، وترتيب الولادة، والمستوى التعليمي للأم والأب، والدخل الشهري، لدى الأسرة تنوع غذائي متكامل في الوجبات اليومية، مكان الإقامة ونوع المسكن ، عند مستوى الدلالة الإحصائية أقل أو يساوي (P-Value ≤ 0.05) .

وجد ارتباط كبير بين انتشار سوء التغذية من خلال قياس الوزن مقابل الطول ( Z-Score ) وعند بدء الرضاعة الطبيعية، تناول نظاماً غذائياً متنوعاً ومنتظماً، تحصين الطفل وفقاً للجدول الزمني، ووجبات تكميلية بجانب الرضاعة الطبيعية، وعند التوقف عن الرضاعة الطبيعية، ونوع الأطفال عند الولادة، وتناول الأم نظام غذائي متنوع خاص أثناء فترة الحمل والرضاعة أكثر من تغذية الأسرة المعتادة وتتناول الأم أغذية تكميلية (فيتامينات ومعادن) أثناء الحمل أو الرضاعة، عند مستوى الدلالة الإحصائية أقل أو يساوي (P-Value ≤ 0.05) .

### ● الاستنتاجات والتوصيات:

معدل انتشار سوء التغذية بين من هم دون سن الخامسة من الأطفال كان مرتفعاً باستخدام مقياس MUAC، Z-Score، والتقزم ونقص الوزن. لذلك يوصي بالتنقيف الصحي حول أهمية الرضاعة الطبيعية والتغذية التكميلية، والتدخلات التغذوية للأمهات والأطفال، وجودة الخدمات الصحية، لتحسين نوعية الحياة لأجل الحد وتقليل معدل انتشار سوء التغذية في اليمن.

**CHAPTER ONE**

**INTRODUCTION**