

سامية محمد مصطفى



شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم



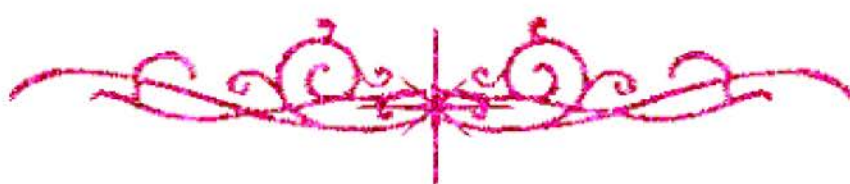
سامية محمد مصطفى



شبكة المعلومات الجامعية



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



سامية محمد مصطفى



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

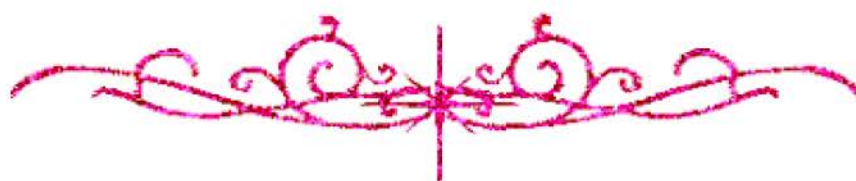
قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



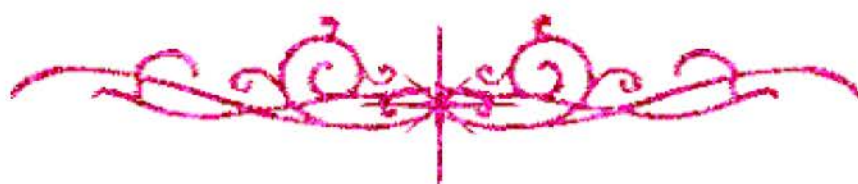
سامية محمد مصطفى



شبكة المعلومات الجامعية



بعض الوثائق الأصلية تالفة



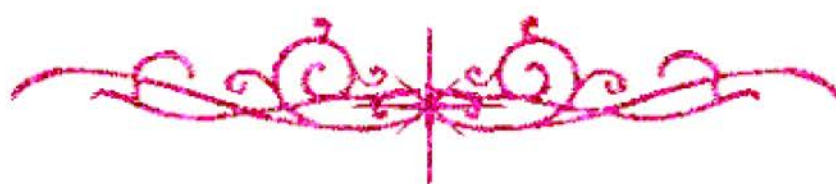
سامية محمد مصطفى



شبكة المعلومات الجامعية



بالرسالة صفحات
لم ترد بالأصل



A STUDY OF IODINE DEFICIENCY DISORDERS
AMONG PRIMARY SCHOOL CHILDREN IN
ALEXANDRIA

دراسة اضطرابات نقص اليود بين تلاميذ المدارس الابتدائية بالإسكندرية

THESIS

*Submitted To The High Institute Of Public Health
Alexandria University*

In Partial Fulfillment Of The Requirements Of The Degree Of

Ph.D. OF PUBLIC HEALTH
(MAJORING NUTRITION)

BY

DR. ALAA MAHMOUD HAMED ABDEL HAMID

Master Degree of Public Health (Nutrition) ALEX UNIVERSITY

MB.B.CH. FACULTY OF MEDICINE ALEX UNIVERSITY

ALEXANDRIA UNIVERSITY

1997

B

١٤٠٤٩

SUPERVISORS

DR. OLFAT ABDEL HAMID DARWISH
PROFESSOR OF NUTRITION
NUTRITION DEPARTMENT
HIGH INSTITUTE OF PUBLIC HEALTH
ALEXANDRIA UNIVERSITY

أ. د. الف د. ش
4.5



Ali K

DR. ALI KHAMIS AMINE
PROFESSOR OF NUTRITION
NUTRITION DEPARTMENT
HIGH INSTITUTE OF PUBLIC HEALTH
ALEXANDRIA UNIVERSITY

Acknowledgment

I wish to express my deepest gratitude and appreciation to Prof. Dr. Olfat Darwish. Her knowledge, long experience, and encouragement has paved for me the way to structure my work in this thesis. Her valuable professional guidance and continuous help to me throughout all the different phases of my work has helped me to overcome all the difficulties that I encountered including the administrative procedures.

I would like to express my sincere thanks to Dr. Ali K. Amine who offered many valuable suggestions in the course of development of this work.

I would like to thank Dr. Emad ElDin Eid for helping me in selecting the appropriate test to score the IQ for the sampled children in this study.

I would like to thank Dr. Hassan Abdel Fatah the General Director for General Association for Health Insurance and Dr. Mohammed El Sheikh from the General Association for Health Insurance for School Children for all the help they provided me to get the necessary approvals to do my field work.

Also I would like to especially thank UNICEF, Dr. Ibrahim ElKerdany Chief Health & Nutrition Section in UNICEF and Dr. Tarek Abdel Rahman Assistant Nutrition Officer in UNICEF for all the support they gave me to allow this thesis to be accomplished.

Finally, I would like to thank my wife for all the help, encouragement and support she gave me through the whole course of doing this thesis.

Table of Contents

	Description	Page No
A)	LITERATURE REVIEW	1
1.	Iodine Deficiency Disorders	1
2.	History Of Goiter	2
3.	Nomenclature And Terminology	8
4.	Metabolism Of Iodine in Man	12
5.	Dietary Sources of Iodine	20
6.	Recommended Dietary Allowance	22
7.	Iodine Life Cycle in the World	24
8.	Geographical Distribution of Endemic Goiter	25
9.	Etiology Of Iodine Deficiency Disorder	26
10.	The Consequences of Iodine Deficiency	37
11.	Goiter in Egypt	40
12.	Control of Iodine Deficiency Disorders	50
B)	Aim of the Work	62
C)	Material & Methods	63
D)	Results	78
E)	Discussion	133
F)	Conclusion	163
G)	Summary	164
H)	Recommendations	168
I)	References	171
J)	Annex 1	

Description

Page No

School Health Education to Prevent Manutrtrtion
and Iodine Deficiency Disorders

- K) Annex 2
Sample Educational Program Prepared for
Children Attending a Lesson in a Classroom
- L) Annex 3
The Principles of Establishment of an IDD
Surveillance System
- M) Annex 4
Nutrition Education for Salt Iodization
Program
- N) Annex 5
Questionnaire for a Study of Iodine Deficiency
Disorders Among Primary School Children in
Alexandria
- O) Annex 6
Photos of Selected Cases of Iodine Deficiency
Disorders
- P) Annex 7
Samples of Drawings of Draw A Man Test For
Selected Cases of High & Low IQ.
- Q) Arabic Summary

List of Tables

DESCRIPTION	PAGE NO
1. IODINE CONTENT OF SELECTED FOODS	20
2. RECOMMENDED DIETARY ALLOWANCES FOR IODINE	23
3. THE SPECTRUM OF IODINE-DEFICIENCY DISORDERS IN APPROXIMATE ORDER OF INCREASING SEVERITY	38
4. PREVALENCE OF GOITER IN KHARGA AND DAKHLA OASIES	42
5. DISTRIBUTION OF ENDEMIC GOITER IN EGYPT	43
6. DISTRIBUTION OF PREVALENCE OF GOITER AND ITS GRADES IN EGYPT ACCORDING TO THE NUTRITION INSTITUTE	45
7. IDD PREVALENCE IN CAIRO	46
8. PREVALENCE OF IDD IN NEW VALLEY, 1993	46
9. PREVALENCE OF IDD IN ASWAN, 1995	47
10. PREVALENCE OF IDD IN KAFR ELSHEIKH	47
11. IODINE CONTENT OF WATERS IN EGYPT	49
12. AVERAGE IODINE CONTENT OF DRINKING WATER AND FROM WELLS IN NEW VALLEY IN MICROGRAM/ML	50
13. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO GRADE AND DISTRICT	64
14. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO TYPE OF SCHOOL ADMINISTRATION AND DISTRICT.	65
15. PERCENTAGE DISTRIBUTION OF PRIMARY SCHOOL CHILDREN ACCORDING TO DISTRICT	65
16. DISTRIBUTION OF NUMBER OF SELECTED SCHOOLS BY DISTRICT	66
17. DISTRIBUTION OF SELECTED SCHOOLS ACCORDING TO TYPE	66

DESCRIPTION	PAGE NO
OF SCHOOL ADMINISTRATION	
18. A DETAILED LIST OF THE SAMPLED SCHOOLS	67
19. WHO CLASSIFICATION OF IQ GRADES	73
20. WHO CLASSIFICATION OF CLASSICAL GRADING OF GOITER	75
21. WHO CLASSIFICATION OF NEW GRADING OF GOITER	76
22. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO SCHOOL, ADMINISTRATIVE ZONE, TYPE OF SCHOOL ADMINISTRATIVE AND LOCATION.	80
23. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO AGE AND SEX.	81
24. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FATHER'S EDUCATION AND OCCUPATION.	82
25. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO INCIDENCE OF CHRONIC DISEASE.	83
26. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO EXPENDITURE OF POCKET MONEY.	84
27. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FOOD HABITS.	86
28. PERCENTAGE DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FREQUENCY OF FOOD CONSUMPTION.	87
29. PERCENTAGE DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FREQUENCY OF CONSUMPTION OF SELECTED GOITROGENIC FOODS.	88
30. PERCENTAGE DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FREQUENCY OF CONSUMPTION OF SPECIAL FAVORITES.	89
31. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO RANGE, MEAN AND STANDARD DEVIATION OF HEIGHT AND WEIGHT FOR BOTH SEXES.	90
32. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO CLINICAL ASSESSMENT OF GOITER.	91

	DESCRIPTION	PAGE NO
33.	DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO SCHOLASTIC ACHIEVEMENT.	92
34.	DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO IQ.	93
35.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN TAKING SD (Z) SCORE WEIGHT FOR AGE AS AN INDICATOR.	95
36.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO AGE TAKING SD (Z) SCORE WEIGHT FOR AGE AS AN INDICATOR.	96
37.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO SEX, LOCATION OF SCHOOL AND TYPE OF SCHOOL ADMINISTRATION TAKING SD (Z) SCORE WEIGHT FOR AGE AS AN INDICATOR.	98
38.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO DISTRICT TAKING SD (Z) SCORE WEIGHT FOR AGE AS AN INDICATOR.	99
39.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN TAKING SD (Z) SCORE HEIGHT FOR AGE AS AN INDICATOR.	100
40.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO AGE TAKING SD (Z) SCORE HEIGHT FOR AGE AS AN INDICATOR.	101
41.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO SEX, SCHOOL LOCATION AND TYPE OF SCHOOL ADMINISTRATION TAKING SD (Z) SCORE HEIGHT FOR AGE AS AN INDICATOR.	103
42.	NUTRITIONAL STATUS OF ALEXADRIA PRIMARY SCHOOL CHILDREN ACCORDING TO DISTRICT TAKING SD (Z) SCORE HEIGHT FOR AGE AS AN INDICATOR.	104
43.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO AGE TAKING WEIGHT FOR HEIGHT AS AN INDICATOR.	105
44.	NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL	106

DESCRIPTION	PAGE NO
CHILDREN ACCORDING TO SEX, SCHOOL LOCATION AND ADMINISTRATION TAKING WEIGHT FOR HEIGHT AS AN INDICATOR.	
45. NUTRITIONAL STATUS OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO DISTRICT TAKING WEIGHT FOR HEIGHT AS AN INDICATOR.	107
46. IDDS CLINICAL ASSESSMENT OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO AGE.	108
47. IDDS CLINICAL ASSESSMENT OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO SEX, SCHOOL LOCATION AND TYPE OF SCHOOL.	109
48. IDDS CLINICAL ASSESSMENT OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO DISTRICT.	110
49. IDDS CLINICAL ASSESSMENT OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FATHER'S EDUCATION.	111
50. IDDS CLINICAL ASSESSMENT OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FATHER'S OCCUPATION.	112
51. IDDS CLINICAL ASSESSMENT OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO NUTRITIONAL STATUS TAKING SD (Z) SCORE WEIGHT FOR AGE AS AN INDICATOR.	113
52. IDDS CLINICAL ASSESSMENT OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO NUTRITIONAL STATUS TAKING SD (Z) SCORE HEIGHT FOR AGE AS AN INDICATOR.	114
53. IDDS CLINICAL ASSESSMENT OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO NUTRITIONAL STATUS TAKING WEIGHT FOR HEIGHT AS AN INDICATOR.	115
54. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO IDDS CLINICAL ASSESSMENT AND SCHOLASTIC ACHIEVEMENT.	116
55. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO SCHOLASTIC ACHIEVEMENT AND NUTRITIONAL STATUS TAKING SD (Z) SCORE WEIGHT FOR AGE AS AN INDICATOR.	117
56. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN	118

DESCRIPTION	PAGE NO
ACCORDING TO SCHOLASTIC ACHIEVEMENT AND NUTRITIONAL STATUS TAKING SD (Z) SCORE HEIGHT FOR AGE AS AN INDICATOR.	
57. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO IDDS CLINICAL ASSESSMENT AND INTELLIGENT QUOTIENT.	119
58. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO IQ AND NUTRITIONAL STATUS TAKING SD (Z) SCORE WEIGHT FOR AGE AS AN INDICATOR.	120
59. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO IQ AND NUTRITIONAL STATUS TAKING SD (Z) SCORE HEIGHT FOR AGE AS AN INDICATOR.	121
60. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO IQ AND NUTRITIONAL STATUS WEIGHT FOR HEIGHT AS AN INDICATOR.	122
61. DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO IQ AND DISTRICT	123
62. PERCENTAGE DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FREQUENCY OF CONSUMPTION OF FOOD GROUPS	126
63. PERCENTAGE DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FREQUENCY OF CONSUMPTION OF SELECTED GOITROGENIC FOODS	128
64. PERCENTAGE DISTRIBUTION OF ALEXANDRIA PRIMARY SCHOOL CHILDREN ACCORDING TO FREQUENCY OF CONSUMPTION OF SPECIAL FAVORITES.	130
65. CORRELATION COEFFICIENT MATRIX	132