

# بسم الله الرحمن الرحيم





# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم





# 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



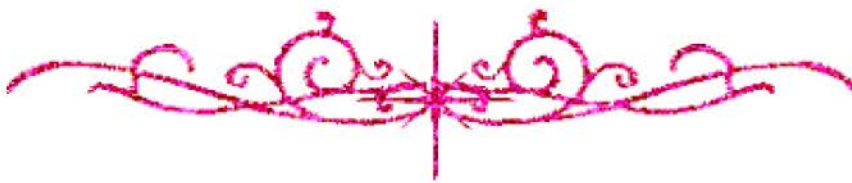
## يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار





# بعض الوثائق الأصلية تالفة







بالرسالة صفحات  
لم ترد بالأصل



17521

**THE RELATIONSHIP OF DIABETES MELLITUS AND  
EXPOSURE TO COTTON DUST WITH  
RESPIRATORY FUNCTIONS**

*Thesis*

Submitted to the High Institute of Public Health  
in Partial Fulfilment of the Requirements  
for the Degree of  
Master of Public Health  
(Occupational Health and Industrial Medicine)

*By*  
**Abdel El-Aziz Kamel Abdel El-Aziz**  
(M.B.C.H.B)

**Department of Occupational Health  
High Institute of Public Health  
Alexandria University**

**1996**

## SUPERVISORS

*Mohamed Moselhi*

**Prof. Dr. Mohamed Moselhi,**

*Professor of Occupational Health and  
Industrial Medicine*

*Head of Occupational Health Department,  
High Institute of Public Health  
Alexandria University*

*Ismail A. Moneim*

**Dr. Ismail Abdel Moneim Ahmed**

*Assistant Prof. of Occupational Health and  
Industrial Medicine*

*Occupational Health Department  
High Institute of Public Health  
Alexandria University*





*To My  
Family*





## ACKNOWLEDGEMENT

*It gives me great pleasure to express my deepest gratitude and thanks to Prof. Dr. Mohamed Moselhi, Head of Occupational Health Department, High Institute of Public Health, Alexandria, University, for his kind supervisions, guidance, follow up and wise advice to accomplish this work.*

*A special debt of gratitude and appreciation, is acknowledged to Dr. Ismail abdel elMoneim, Assistant Prof. of Occupational Medicine, High Institute of Public Health, for his valuable suggestions, continous direction and advice during the course of this study.*

*I would like to express my profoundgratitude to Mr. Farouk Abu Oloa Head of occupational saftey department- Arabia united company for his helpful cooperation.*

*I also owe special thanks to my sister Dr. Karolen Kamel for her helpful cooperation and sincere devotion to complete this research.*

*Great thanks to Mr. Mohamed El-Sayed and his colleagues for typing this manuscript.*

*Finaly a special word of thank is due to my colleagues and family who helped in the formulation and execution of this work.*

# TABLE OF CONTENTS

	Page
<b>1. INTRODUCTION</b>	
1.1. BYSSINOSIS	1
1.1.1. Industrial operations of cotton.	1
1.1.2. Magnitude of the problem of byssinosis.	3
1.1.3. Aetiology of byssinosis.	4
1.1.3.1. Microbiological and endotoxin hypothesis.	5
1.1.3.2. Histamine and/or muscle contractor release hypothesis (pharmacological hypothesis).	5
1.1.3.3. Physiologic hypothesis.	6
1.1.3.4. Hypothesis involving hyper sensitivity.	7
1.1.4. Clinical Aspects.	9
1.1.5. Diagnosis of byssinosis.	10
1.2. Diabetes Mellitus	17
1.2.1. Definition and historical background.	17
1.2.2. Classification of diabetes mellitus and allied categories of glucose intolerance.	19
1.2.3. Prevalence of diabetes mellitus.	22
1.2.4. Aetiology of diabetes mellitus.	24
1.2.5. Chemical pathology.	27
1.2.6. Complications of diabetes mellitus.	28
1.2.6.1. Acute complications (Diabetic comas).	28
1.2.6.1.1. Diabetic ketoacidosis.	29
1.2.6.1.2. Hyperglycemic, Hyperosmolar, non ketotic state (HHNS)	29
1.2.6.1.3. Lactic acidosis.	29
1.2.6.1.4. Hypoglycemic coma.	30
1.2.6.2. Chronic (Late complications).	30
1.2.6.2.1. Vascular disorders.	30
1.2.6.2.2. Renal complications.	31
1.2.6.2.3. Ocular complications.	32
1.2.6.2.4. Nervous complications.	33
1.2.6.2.5. Infection and diabetes.	34



1.2.6.2.6. Pulmonary complications.	35
1.2.6.2.6.1. Pulmonary diseases.	35
1.2.6.2.6.2. Abnormalities of pulmonary function.	41
1.2.7. Employment and diabetes.	44
<b>2. AIM OF THE WORK</b>	46
<b>3. SUBJECTS AND METHODS</b>	47
3.1. Examination sheet and respiratory questionnaire.	48
3.2. Medical Examination.	51
3.3. Investigations.	52
3.3.1. Measurement of blood glucose level.	52
3.3.2. Pulmonary function tests (PFT).	52
3.3.2.1. Forced Expiratory volume (one second) FEV <sub>1</sub> .	54
3.3.2.2. Forced vital Capacity (FVC).	54
3.3.2.3. Maximum-mid expiratory flow rate 25-75 second (MMFR <sub>25-75</sub> ).	55
3.3.2.4. Maximum. Voluntary ventilation (MVV).	55
3.4. Statistical analysis.	55
<b>4. RESULTS</b>	
4.1. Personal and socioeconomic characteristics.	57
4.1.1. Age.	57
4.1.2. Educational level.	57
4.1.3. Income per capita per month.	57
4.1.4. Smoking habit.	59
4.1.5. Duration of exposure to cotton dust.	59
4.2. Present and past history of some systemic diseases.	59
4.2.1. Hypertension.	59
4.2.2. Bilharziasis.	61
4.2.3. Viral hepatitis.	61
4.3. Diabetes mellitus among studied groups.	61
4.4. Respiratory problems among studied groups.	65
4.5. Pulmonary function profile among studied groups.	67
4.5.1. Acute effects.	67
4.5.2. Chronic effects.	69
4.5.2.1. Chronic effects among exposed workers.	72
4.5.2.2. Chronic effects among non exposed workers.	75



## **5. DISCUSSION.**

5.1. Personal and socioeconomic characteristics of the studied groups.	78
5.2. Present and past history of some systemic diseases among studied groups.	79
5.2.1. Hypertension.	79
5.2.2. Bilharziasis.	80
5.2.3. Viral hepatitis.	81
5.3. Diabetes mellitus among studied groups.	81
5.4. Respiratory problems among studied groups.	83
5.5. Pulmonary function profile among studied groups.	86
5.5.1. Acute effects.	86
5.5.2. Chronic effects.	87
5.5.2.1. Chronic effects among exposed workers.	90
5.5.2.2. Chronic effects among non exposed workers.	91

## **6. CONCLUSIONS AND RECOMMENDATIONS**

93

## **7. SUMMARY**

95

## **8. REFERENCES**

100

### **APPENDIX**

### **ARABIC SUMMARY.**

## LIST OF TABLES

	Page
Table (I): Functional grading of byssinosis.	12
Table (II): WHO classification of diabetes mellitus and allied categories of glucose intolerance.	20
Table(III): Diagnostic values for the oral glucose tolerance test.	22
Table (IV): Pulmonary complications in patients with diabetes mellitus.	36
Table (V): Classification of the diabetics and exposed workers.	48
Table (VI): Classification of the smokers and diabetic workers.	51
Table (VII): Some Personal and Socioeconomic Characteristics among Studied Groups.	58
Table (VIII): Present and Past history of Some Systemic Diseases among Studied Groups.	60
Table (IX): Mean and Standard Deviation of Blood Glucose Level among Studied Groups.	62
Table (X): General Characteristics among Diabetic Subjects.	63

Table (XI): Respiratory Problems among Studied Groups.	66
Table (XII): Pulmonary Functions Among Exposed Studied Groups (Percent Reduction Before and After Work Shift).	68
Table (XIII): Pulmonary Functions among Studied Groups (% predicted).	70
Table (XIV):Correlation between Pulmonary Functions, Duration of Diabetes and Duration of Exposure.	71
Table (XV): Pulmonary Functions among Exposed Workers (Diabetics (D) and Nondiabetics (ND), Smokers (S) and Nonsmokers (NS)).	74
Table (XVI): Pulmonary Functions among Non-exposed Workers (Diabetics (D) and Nondiabetics (ND), Smokers (S) and Nonsmokers (NS)) .	76



## LIST OF GRAPHS

	<b>Page</b>
Fig. (1): Portable vitalograph. R-Model Spirometer.	53
Fig. (2): Frequency of diabetic complications among exposed and non exposed workers.	64
Fig. (3): Distribution of smokers and diabetics among exposed and non exposed workers.	73