



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



MONA MAGHRABY



شبكة المعلومات الجامعية
التوثيق الإلكتروني 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



MONA MAGHRABY



Prevalence of Frailty in Elderly Patients with Renal Diseases

Thesis

*Submitted for Partial Fulfillment of Master Degree
in Geriatrics and Gerontology*

By

Eman Mahmoud Abdelhamid

M.B.B.CH

Under supervision of

Prof. Dr. Mohamed Shawky khater

*Professor of Geriatrics and Gerontology
Faculty of Medicine, Ain Shams University*

Dr. Salma Mohamed Samir El said.

*Associate Professor of Geriatrics and Gerontology
Faculty of medicine, Ain Shams University*

Dr. Suzan Mounir Ali Hassan

*Lecturer of Geriatrics and Gerontology Department
Faculty of medicine, Ain Shams University*

Faculty of medicine
Ain Shams University

2021

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سُبْحَانَكَ لَا يُلْمُ لَنَا
إِلَّا مَا عَلِمْنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدق الله العظيم

سورة البقرة الآية: ٢٢

Acknowledgment

*First and foremost, I feel always indebted to **AUAH**, the
Most Kind and Most Merciful.*

*I'd like to express my respectful thanks and
profound gratitude to **Prof. Dr. Mohamed
Shawky khater**, Professor of Geriatrics and
Gerontology, Faculty of Medicine, Ain Shams University
for his keen guidance, kind supervision, valuable advice
and continuous encouragement, which made possible the
completion of this work.*

*I am also delighted to express my deepest
gratitude and thanks to **Dr. Salma Mohamed
Samir El said**, Associate Professor of Geriatrics and
gerontology, Faculty of Medicine, Ain Shams University,
for her kind care, continuous supervision, valuable
instructions, constant help and great assistance
throughout this work.*

*I am deeply thankful to **Dr. Suzan Mounir
Ali Hassan**, Lecturer of Geriatrics and Gerontology
Department, for her great help, active participation and
guidance. She gave me a kind hand and pushed me
forward to complete this work.*

*I would like to express my hearty thanks to all my
family for their support till this work was completed.*

*Last but not least my sincere thanks and
appreciation to all patients participated in this study.*

Eman Mahmoud Abdelhamid

Dedication

*I would like to thank **Prof. Dr. Mutasim Salah Amer**, Professor of Geriatrics and Gerontology Department, who was the author of the idea of this research and who passed away before completing the work.*

List of Contents

Title	Page No.
<i>List of Tables</i>	i
<i>List of Figures</i>	iii
<i>List of Abbreviations</i>	iv
Introduction.....	1
Aim of the Work.....	3
Review of Literature	
Frailty.....	4
Chronic Kidney Disease	23
The Relation between Chronic Kidney Disease and Frailty.....	34
Patients and Methods	43
Results.....	54
Discussion.....	81
Summary.....	98
Conclusion	101
Recommendations.....	102
References.....	103
Appendix I	134
Arabic Summary	----

List of Tables

Table No.	Title	Page No.
Table (1):	MMSE adjusted for age and education level.....	45
Table (2):	Comparison between CKD without dialysis & CKD with dialysis group regarding Demographic data	54
Table (3):	Comparison between CKD without dialysis and CKD with dialysis group regarding co morbidities	55
Table (4):	Comparison between CKD without dialysis and CKD with dialysis group regarding MMSE	56
Table (5):	Comparison between CKD without dialysis and CKD with dialysis group regarding depression.....	57
Table (6):	Comparison between CKD with out dialysis and CKD with dialysis group regarding ADL & IADL.....	58
Table (7):	Comparison between CKD without dialysis group and CKD with dialysis group regarding frailty criteria	59
Table (8):	Comparison between CKD without dialysis and CKD with dialysis group regarding Time up and Go test, balance, BMI	61
Table (9):	Comparison between CKD without dialysis group and CKD with dialysis group regarding lab findings	62
Table (10):	Comparison between CKD without dialysis and CKD with dialysis regarding multi-dimensional assessment of fatigue.....	63
Table (11):	Comparison between frail CKD and Frail Hemodialysis regarding demographic data	64
Table (12):	Shows comparison between CKD frail & hemodialysis frail regarding comorbidities	65
Table (13):	Shows comparison between frail CKD & frail hemodialysis regarding MMSE	66

List of Tables (cont...)

Fig. No.	Title	Page No.
Table (14):	Comparison between frail CKD & frail hemodialysis regarding depression.....	67
Table (15):	Comparison between frail CKD & frail hemodialysis regarding ADL & IADL	68
Table (16):	Comparison between frail CKD & frail hemodialysis regarding frailty criteria.....	69
Table (17):	Comparison between frail CKD & frail hemodialysis regarding Time up and Go test, balance & BMI	70
Table (18):	Comparison between CKD frail and hemodialysis frail regarding lab findings and multi-dimensional assessment of fatigue	71
Table (19):	Illustrates the correlation of the frailty	72
Table (20):	Comparison between demographic data, comorbidities and frail score	73
Table (21):	Comparison between depression, reading, writing drawing and frail score	75
Table (22):	Comparison between frail score and both ADL& IADL.....	76
Table (23):	Comparison between TUGO, balance, BMI and frail score	78
Table (24):	Comparison between GFR, MAF and frail score	79
Table (25):	Logistic regression analysis for the predictors of frail cases in all CKD cases	80

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Shows the percentage of pre frail and frail in CKD and Hemodialysis.	60

List of Abbreviations

Abb.	Full term
<i>ADL</i>	<i>Activities of daily living</i>
<i>BDNF</i>	<i>Brain-Derived Neurotrophic Factor</i>
<i>BMI</i>	<i>Body mass index</i>
<i>BTRC</i>	<i>Beta-transducin repeat containing</i>
<i>CASP8</i>	<i>Caspase 8</i>
<i>CFS</i>	<i>Clinical Frailty Scale</i>
<i>CKD</i>	<i>Chronic kidney disease</i>
<i>CREBBP</i>	<i>CREB-binding protein</i>
<i>CVD</i>	<i>Cardiovascular disease</i>
<i>DM</i>	<i>Diabetes mellitus</i>
<i>EFS</i>	<i>Edmonton Frail Scale</i>
<i>ESKD</i>	<i>End-stage kidney disease</i>
<i>ESRD</i>	<i>End stage renal disease</i>
<i>FI</i>	<i>Frailty index</i>
<i>GDS</i>	<i>Geriatric Depression Scale</i>
<i>GDS-15</i>	<i>Geriatric depression scale 15 items</i>
<i>GFI</i>	<i>Groningen Frailty Indicator</i>
<i>GFR</i>	<i>Glomerular filtration rate</i>
<i>HD</i>	<i>Hemodialysis</i>
<i>HF</i>	<i>Heart failure</i>
<i>HIF-1alpha</i>	<i>Hypoxia-inducible factor-1 alpha</i>
<i>IADL</i>	<i>Instrumental activities of daily living</i>
<i>IGF-1</i>	<i>Insulin-like growth factor-1</i>
<i>IL-10</i>	<i>Interleukin 10</i>
<i>KAT2B</i>	<i>k-lysine acetyltransferase 2B</i>
<i>KDIGO</i>	<i>Kidney disease improving global outcome</i>

List of Abbreviations (Cont...)

Abb.	Full term
<i>MAF</i>	<i>Multidimensional Assessment of Fatigue</i>
<i>MMSE</i>	<i>Mini Mental state examination</i>
<i>MPS</i>	<i>Muscle protein synthesis</i>
<i>MTR</i>	<i>Methyltransferase</i>
<i>OA</i>	<i>Osteoarthritis</i>
<i>P53</i>	<i>Protein 53</i>
<i>PA</i>	<i>Physical activity</i>
<i>SPPB</i>	<i>Short physical performance battery</i>
<i>TFI</i>	<i>Tilburg Frailty Indicator</i>
<i>TNF-α</i>	<i>Tumor necrosis factor-alpha</i>
<i>TUG</i>	<i>Timed Up and Go test</i>

INTRODUCTION

The population aged 65 years old and older is expected to be more than double between 2012 and 2060, from 43.1 million to 92 million (*Aguirre and Villareal, 2015*).

The continuing increase in the older population has generated interest toward many age-related comorbidities e.g. cardiovascular diseases, osteoarthritis, osteoporosis, cancers, falls, Alzheimer's dementia and frailty (*Aguirre and Villareal, 2015*).

Frailty can be defined as a clinical syndrome in which there is a state of dysregulation of energetics and multiple physiological systems when reaching a critical threshold, increase in an individual's vulnerability to developing negative health-related events (including disability, hospitalizations, institutionalizations, and death) (*Fried et al., 2001; Clegg et al., 2013*).

Frailty is common in those with chronic kidney disease (CKD). The prevalence of frailty in the community-dwelling older adult population is reported to be 11%, whereas studies have reported a frailty prevalence of > 60% in dialysis-dependent CKD patients (*Bao et al., 2012; Collard et al., 2012*).

The prevalence of chronic kidney disease (CKD) is increasing world-wide and more so in the elderly persons. Among individuals 70 years of age or older, the prevalence of CKD increased from 38% in 1988 to 1994 to 47% in 1999 to

2004. This noted increase in the number of elderly patients with CKD has been associated with new challenges where CKD has become increasingly recognized as an important comorbid condition in elderly individuals leading to death, cardiovascular events, and hospitalizations (*Johansen et al., 2013*).

Frailty is independently linked with adverse clinical outcomes in all stages of CKD and has been repeatedly shown to be associated with an increased risk of mortality and hospitalization (*Bao et al., 2012; Johansen et al., 2007; McAdams-DeMarco et al., 2013*).

CKD is associated with a greater prevalence of both frailty and disability in the elderly population, with the prevalence of frailty and disability being 15 and 12%, respectively, in elderly with CKD, versus only 6 and 7% in the elderly with normal kidney function, respectively. Similarly, frailty was highly prevalent in patients with end-stage kidney disease (ESKD) on hemodialysis (HD) (*Johanson et al., 2013*).