بسم الله الرحمن الرحيم

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بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

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Relationship between Frailty and Geriatric syndromes among elderly attending two Primary health care centers in Cairo

Thesis

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By:

Ghada Saad Mohamed

(M.B.B., CH.)

Under Supervision of:

Prof. Dr. / Iman Mohammed Ahmed Bakr

Professor of public health

At Department of Community, Environmental and Occupational medicine

Ain Shams University

Prof. Dr. / Sarah Ahmed Hamza

Professor of Geriatrics and Gerontology

At Department of Geriatrics and Gerontology- Ain Shams University

Dr. / Mohamed Abdel Maguid Tolba Momen

Assistant professor

At Department of Community, Environmental and Occupational medicine

Ain Shams University

Dr. / Ayat Farouk Manzour

Assistant professor

At Department of Community, Environmental and Occupational medicine

Ain Shams University

Faculty of medicine

Ain Shams University

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قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم

صدق الله العظيم

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Ghada Saad Mohamed

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List of Abbreviations

Abbr.	Full term
AD	**:** Alzheimer′s Disease
ADL	**:** Activities of Daily Living
ADRs	**:** Adverse Drug Reactions
ARMOR	**:** Assess Review Minimize Optimize Reassess
BMD	**:** Bone Mineral Density
BMI	**:** Body Mass Index
CAPMAS	**:** Central Agency for Public Mobilization and Statistics
CDP	**:** Computerized Dynamic Posturography
CGA	**:** Comprehensive Geriatric Assessment
CHESS	**:** Changes in Health, End-stage disease and Symptoms and Signs
CHS	**:** Cardiovascular Health Study
CLA	**:** Cognitive leisure Activities
CMV	**:** Cytomegalovirus
COPD	**:** Chronic Obstructive Pulmonary Disease
CRP	**:** C - reactive protein
CSHA	**:** Canadian Study of Health and Ageing
CVD	**:** Chronic Kidney Disease
DHEAS	**:** DeHydro Epi Androsterone Sulfate

DVT : Deep Venous Thrombosis

EH : Estimated Height

FGA : Functional Gait Assessment

GDS : Geriatric Depression Scale

GFI : Groningen Frailty Indicator

GS : Geriatric Syndromes

GWAS : Genome Wide Association Studies

HF : Heart Failure

HIV : Human immunodeficiency virus

MCI : Mild Cognitive Impaired

MCPS : Marigliano-Cacciafesta Polypathological Scale

MEP : Multicomponent Exercise Program

MI : Myocardial Infarction

MMSE : Mini Mental State Examination Test

MNA : Mini Nutritional Assessment

MUFAs : Mono Unsaturated Fatty Acids

MUI : Mixed Urinary Incontinence

OAB : Overactive Bladder

OT : Occupational Therapy

PHCs : Primary Health Care Centers

PP : Polypharmacy

PSI : Pounds per square inch

QOL : Quality Of Life

SD : Standard Deviation

SHARE : Survey of Health, Ageing and Retirement in Europe

SOF : Study of Osteoporotic Fractures

SPSS : Statistical Package for Social Sciences

START : Screening Tool used to Alert doctors to the Right Treatment

STOPP : Screening Tool to Older Person's potentially inappropriate Prescriptions

SUI : Stress Urinary Incontinence

TAC : Total Antioxidant Capacity

TFI : Tilburg Frailty Indicator

UI : Urinary Incontinence

UUI : Urgency Urinary Incontinence

VR : Vestibular Rehabilitation

Vo2 : Maximal Aerobic Power

VTE : Venous Thromboembolism

WBC : White blood Cell

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Introduction

People is in continues aging worldwide. In 2012, 8% (or 562 million) of people were aged 65 and over. In 2015, 3 years later, the proportion of the older population reached 8.5 % of the total population. The next 10 years will witness an increase of about 236 million people aged 65 years and older all over the world **(He et al., 2015).**

United Nations reported that by 2050, one-fifth of the world's population will be over 60 years of age **(Safarpour et al., 2018).**

In Egypt, the percent of population above the age of 60 years was 6.7 percent of Egypt population in 2017. This percent represents around six million citizens, according to Central Agency for Public Mobilization and Statistics (CAPMAS) **(CAPMAS, 2017)**.

This aging of the population will increase the prevalence of chronic diseases and functional impairment. This expected increase will also lead to increase utilization of the health care system **(Senn et al., 2015).**

Frailty is a common ageing problem that increases the risk of getting adverse health outcomes in elderly **(Setiati et al., 2017).** It is a condition of vulnerability to poor resolution of homoeostasis after a stressor event. It is an outcome of cumulative decrease in many physiological systems during a lifetime. This cumulative decline depletes homoeostatic reserves until minor stressor causes disproportionate changes in health status **(Clegg et al., 2013).** It can be considered as state of diminished physiological reserve over multiple organ systems **(Partridge et al., 2012).**

Physical frailty can be defined as a medical syndrome with many causes and contributors and it is characterized by diminished strength, endurance, and reduced physiologic function which increases an individual's vulnerability to develop increased dependency and/or death" **(Morley et al., 2013).**

Pre-frailty defined as a multi-factorial and multi-dimensional syndrome which is associated with social isolation, functional, sensory and physiological impairment. Pre-frailty was also characterized by weakness, fatigue, tiredness, being slowed up or tired all the time. It could be considered as the first stage towards developing frailty or as a reversible stage before frailty **(Sezgin et al., 2020).**

The term geriatric syndromes (GS) has been used to describe common conditions in the elderly, although not characterized as diseases, but they can lead to disability and death. GS were announced by Bernard Isaacs (1969), who called them 'Giants of Geriatric Medicine' and included cognitive incapacity, postural instability, immobility, urinary incontinence and iatrogenesis (poly-pharmacy) **(Closs et al., 2016).**

These "chronic" geriatric syndromes differ from "chronic disease" in the sense that they have multiple underlying factors and involve multiple organ systems and their impact on quality of life and disability is considerable. However, if recognized early, preventative measures can be initiated to reduce part of the burden notably by decreasing the risk of hospitalization and institutionalization and improving the quality of life (QOL) of elderly patients **(Senn et al., 2015).**

Geriatric syndromes can't be treated by medication, but well-planned care can prevent their progression **(Kozaki et al., 2013).**

There is a greater chance of the elderly becoming frail as the number of geriatric syndromes accumulates. Frail elders also have an increased risk of developing other geriatric syndromes. Knowing this dynamic can assist in interventions to prevent the development of geriatric syndromes that may lead elderly persons to an increased risk of frailty **(Closs et al., 2016).**

Mild Cognitive Impaired (MCI) is defined as a transitional stage from normal to dementia. Patients affected with this condition have a higher possibility to develop Alzheimer′s disease (AD) with the average rate of 10–15% annually over 5 year **(Da Silva. 2015).** A number of studies have reported that frailty increases the risk of future cognitive decline and this cognitive impairment increases the risk of frailty which suggests that cognition and frailty interact within a cycle of decline associated with ageing **(Robertson et al., 2013).**

Polypharmacy was defined as the use of multiple drugs more than are medically necessary **(Maher et al., 2014**), or the administration of more medications than are clinically indicated, representing unnecessary/unwanted drug use **(Dagli et al., 2014).** Other studies used Numerical definitions. The most used numerical definition is ≥ 5 drugs **(Masnoon et al., 2017).** It was reported that older frail people are significantly more likely to be exposed to high-risk prescribing than robust older people, and that exposure to high-risk medications was significantly associated with the development of frailty **(Gnjidic, et al., 2012).**

Postural instability (falls) was considered the third frequent syndrome among the elderly and alterations in balance were more frequent among the frail elderly **(Closs et al., 2016).** It can lead to changes in gait (which is a frailty criteria) and increases the risk of falls **(Coimbra et al., 2010).** Falls