بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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MONA MAGHRABY

Hospital Acquired Depressive Symptoms in Frail Elderly Patients and Its Associations with Trace Elements

Thesis

Submitted for Partial Fulfillment of M.D

in **Geriatric Medicine and Gerontology**

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Nehal Magdi Abdul-mawla

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List of Abbreviations

Abb.	Full term
5-HT	*5-hydroxytryptophan*
ADL	*Activities of daily living*
ADMs	*Antidepressant medication*
ALB	*Albumin*
ASU	*Ain Shams University*
BA	*Bronchial asthma*
BDI-I	*Beck Depression Inventory*
BDNF	*Brain-derived neurotrophic factor*
BMI	*Body mass index*
CES-D	*Center for Epidemiologic Studies Depression Scale*
CKD	*Chronic kidney disease*
COPD	*Chronic obstructive pulmonary disease*
DM	*Diabetes mellitus*
EFS	*Edmonton Frail Scale*
GDS	*Geriatric Depression Scale*
GHQ	*General Health Questionnaire*
GIT	*Gastrointestinal tract*
HADS	*Hospital Anxiety and Depression Scale*
HB	*Hemoglobin*
HF	*Heart failure*
HPA	*Hypothalamic–pituitary–adrenal axis*
HRSD	*The Hamilton Depression Scale*
HTN	*Hypertension*
IADL	*Instrumental activities of daily living*
IGF-1	*Insulin-like growth factor 1*
IHD	*Ischemic heart disease*
IL-6	*Interleukin-6*
IRS	*Inflammatory response system*
MADRS	*Montgomery–Åsberg Depression Rating Scale*
MAOIs	*Monoamine oxidase inhibitors*
MDD	*Major depressive disorder*

List of Abbreviations cont...

Abb.	Full term
MMES	*Mini-mental state examination*
MNA	*Mini nutritional assessment*
NA	*Noradrenaline*
PHQ	*Patient Health Questionnaire*
PUFAs	*Polyunsaturated fatty acids*
SCL	*Symptom Check List*
SNRIs	*Serotonin / noradrenaline-reuptake inhibitors*
SSRIs	*Selective serotonin-reuptake inhibitors*
TCAs	*Tricyclic antidepressants*
TFI	*Tilburg Frailty Index*
TNF-α	*Tumor necrosis factor-alpha*
TUGT	*Timed up and go test*
WHO	*World Health Organization*
Zn	*Zinc*

ABSTRACT

Introduction: Frailty is obscure and under-estimated, starts subclinically in elderly who seem to be healthy. Minimal thesis in literature handled the relationship between frailty and depression. The elderly are more subjected to depression and trace elements insufficiency than others.

Objective: To assess newly developed depressive and anxiety symptoms in frail elderly admitted to ASU hospitals and the prevalence of zinc deficiency among them.

Methods: A cross-sectional study was conducted among 90 older frail inpatients. Hospital-acquired depressive and anxiety symptoms were confirmed using the hospital anxiety and depression scale (HADS). Serum zinc level, hemoglobin, and albumin were measured.

Results: There was a significant statistical association between depressive and anxiety symptoms and low serum level of zinc ($p < 0.001$).

Conclusion: There is a strong association between depressive and anxiety symptoms in hospitalized elderly and zinc deficiency.

Keywords: frailty, depression, zinc level

INTRODUCTION

Frailty is common in older adults, it is a biologic syndrome of decreased reserve and resistance to stressors, resulting from cumulative declines across multiple physiologic systems, and causing vulnerability to adverse outcomes including falls, hospitalization, disability, and death ***(Fried et al., 2004).***

Malnutrition of both macro and micronutrients has been identified as an important risk factor for the development and severity progression of frailty in older people. Malnutrition speeds lean body mass loss and decreases competence and therefore underlies declining grip strength, gait speed, and physical function in the frail older adult ***(Lesourd, 2004).***

Nutritional adequacy becomes a "chicken or egg" dilemma, as frailty imposes decrements in adequacy, and malnutrition contribute to frailty's development ***(Bortz, 2010).***

Zinc is one of the most important micronutrients in biological systems. It is involved in various aspects of cellular metabolism ***(Jung et al., 2016).*** It is estimated that 25% of the world's population is at risk of zinc deficiency **(Maret & Sandstead, 2006)**. In a randomized control trial, zinc was administered along with essential amino acids to frail older adults and was significantly associated with decreased bone resorption indices, increased IGF-1 responsivity and better overall physical functioning ***(Rodoni et al., 2009).***

Depression in elderly is prevalent in the community, and is more prevalent among hospitalized elderly patients, the prevalence of depression was about 10% in community, and about 40% in hospitals and long-term care facilities ***(Bryant et al., 2011)***.

Late-life depression and frailty share several pathophysiologic mechanisms. Recent interest in "overlapping syndromes" in general but more specifically the concept of overlap in frailty and depression has spawned reviews indicating a positive association between the two ***(Buigues et al., 2015).***

Recent research has shown an association between low dietary intake of zinc and depression ***(Vashum et al., 2014).*** Moreover, a small meta-analysis of studies with psychiatric inpatients revealed an impact of low plasma zinc levels on depressive disorders ***(Swardfager et al., 2013).*** However, there is a lack of data concerning zinc intake, plasma zinc levels, and depression.

Aim of the Work

To assess newly developed depressive and anxiety symptoms in frail elderly admitted to ASU hospitals and the prevalence of zinc deficiency among them.