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Editorial

Dr Abdul Abyad



This is the first issue of the journal for 2019 and we continue with our MENAR/MEAMA third project that deals with ageing in the Arab World. A well written review from Jordan looked at the situation of the Hashemite Kingdom of Jordan. It is a small, almost entirely landlocked country divided administratively into 12 governorates. Economically, it is an upper middle-income country with a gross domestic product (GDP) per capita of \$ 5,749 (PPP) in 2010, and with annual growth rate of 2.5% in the years 1990-2009 (Nations, 2013-2017 Jordan: United Nations Development Assistance Framework, 2011). Due to its location, in the heart of the Middle East, the country has witnessed many political conflicts including the wars in 1948, 1967 and the “Arab Spring” in 2011. These events have affected the demographics and structure of the country and as a result it has transformed from a sparsely populated country to one with nine million people. This rapid growth has led to doubling of the population in the last few decades, with another doubling expected to ensue again by 2050. Importantly, however, is the demographic transition the country is undergoing, as it moves from high fertility and mortality, to low fertility and mortality. As a result, Jordan’s demographics will further change dramatically— a change that has the potential to translate into dividend or disaster for the country. This altering of the population’s age structure might lead to fundamental changes in parents’ perceptions of what their children can and should achieve. Over the next 30 years, Jordan will see the relative size of its working age population more than double. It can also expect demand for quality education and health care to rise, and for people to save increasing proportions of their income, so that they can maintain a reasonable standard of living in their old age. Policies will be needed to continue to reduce fertility rates, anticipate future retirement needs, and address issues that might impede efficient use of the anticipated new labor, national savings, and human capital. (Bloom, et al., 2001).

Kasim Z et al reviewed Screening for Frailty and Sarcopenia in Primary Care. They stressed that the global population aging and its associated challenges result in increased burden on our health care system. The policy of many countries is therefore becoming more

focused on preventive programs for geriatric syndromes. Frailty and sarcopenia are two emerging syndromes that are usually overlooked and undertreated in clinical practice. Early identification of these conditions by primary care physicians, would postpone and even reverse the progression towards disability and other negative health outcomes. This narrative review aims to discuss and propose reliable and feasible screening tools for frailty and sarcopenia in primary care. The authors reviewed Pub Med. Three widely used frailty models and three screening methods of sarcopenia are summarized. The applicability of these models and screening methods in primary care is discussed. Recommendations regarding the screening are formulated and the benefits of building a structured model based on preventive medicine are highlighted. The authors concluded that screening for physical frailty and sarcopenia in primary care using the FRAIL and SARC-F questionnaires respectively.

Two papers from Egypt looked at mental health. The first paper investigated the effect of family intervention on the caregivers’ burden, depression, anxiety and stress among relatives of depressed patients. A quasi- experimental design was conducted at the inpatient and outpatient Psychiatric Department Mansoura University Hospital, Egypt. Ninety five families were participated in this study (n = 95). Pre-tests and post-tests (n = 95), and 3-months after intervention were eighty six (n = 86). The findings of the study indicate that caregivers’ burden, depression, anxiety and Stress level significantly reduced, and quality of life significantly improved after implementation of family intervention. There is a negative correlation between QOL and Caregivers’ burden, their feeling of depression, anxiety and stress. based on the current results, it can be concluded that caregivers’ burden, depression, anxiety and stress are highly prevalent among caregivers of patients with depression and significant improved after implementation of family intervention one month after, moreover slightly decreased three months after intervention. This conclusion leads to accept the hypothesis of the study that family interventions along with anti-depressant drugs improve the caregivers’ burden, QOL, feeling of depression, anxiety and stress. Further research is needed to follow the intervention 6 and 12 months after family intervention.

The second paper assessed the effect of Interpersonal Psychotherapy (IPT) on the depression and loneliness among the elderly residing in residential homes. The findings of the study indicate that depression; loneliness, social interaction, ADL and sleeping pattern were significantly improved after implementation of interpersonal psychotherapy one month and three months after. There was a statistically significant positive correlation between depression and sleeping hours, insomnia, ADL and loneliness. While social interaction and social support was a negative correlation with depression. Based on the results of this study we recommend use of IPT to improve the Bio-Psycho-Social condition of the elderly and should be integrate IPT as basic intervention as well physical intervention to improve mental condition and prevent mental disorders.

Effect of family intervention on family caregivers' burden, depression, anxiety and stress among relatives of depressed patients

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ABSTRACT

Background: Depression is a major psychiatric disorder worldwide. It is a leading cause of individual disability and family burden worldwide.

The aim of the study: the aim of this study was to investigate the effect of family intervention on caregivers' burden, depression, anxiety and stress among relatives of depressed patients.

Subjects and method: A quasi-experimental design was conducted at the inpatient and outpatient Psychiatric Department Mansoura University Hospital, Egypt. Ninety five families participated in this study (n = 95). Pre-tests and post-tests (n = 95), and test 3 months after intervention were conducted on eighty six (n = 86). The caregivers were divided into ten groups, which ranged from 8 to 10 caregivers in each group; each group attended 12 sessions. A structured interview questionnaire for personal data for patients and their caregiver, Caregiver Burden scale, quality of life scale (QOL) and Depression, Anxiety and Stress Scale-21 items (DASS-21) were used to collect data.

Results: The findings of the study indicate that caregivers' burden, depression, anxiety and Stress level significantly reduced, and quality of life significantly improved after implementation of family intervention. There is a negative correlation between QOL and Caregivers' burden, and their feeling of depression, anxiety and stress, while there was a positive correlation between caregivers' burden and their feeling of depression, anxiety and stress.

Conclusions: Based on the current results, it can be concluded that caregivers' burden, depression, anxiety and stress are highly prevalent among caregivers of patients with depression and significantly improved after implementation of family intervention one month after, moreover it slightly decreased three months after intervention. This conclusion leads to accept the hypothesis of the study that family interventions improve the caregivers' burden, QOL, and feelings of depression, anxiety and stress. Further research is needed to follow the intervention 6 and 12 months after family intervention.

Key words: Depression, Caregivers' Burden, Depression, Anxiety, Stress Quality Of Life, Family intervention.

Introduction

The total number of people diagnosed with depression increased worldwide; it was approximately 322 million in 2017 (WHO, 2017). The number of individuals with depression has increased worldwide in the past several decades (Boughton, 2009). Depression affects all age groups; through childhood, adolescence, adulthood and in the elderly, (Swan and Hamilton, 2014). Depression is a major psychiatric disorder worldwide. It is considered a major public health problem with a persistent rise in prevalence. Depression adds to the global burden of disease, leading to increased Years Lost due to Disability (YLD) in middle and low-income countries and depression is considered one of the top six causes of burden of disease (WHO, 2004).

In Egypt, according to (Okasha, 2006), depression is a widely existing illness and accounts for the majority of inpatients in the mental hospitals. Burden means the negative consequence of caring for a patient with mental illness. Caregiver burden is a mental condition that results from the combination of physical, social and emotional pressure involved in caring (George and Voruganti, 2008).

Caregiving is at times overwhelming and drains a person's coping ability and is associated with multidimensional areas of economic, physical, psychological and social consequences. As a result, quality of life of depressed patients and their families is affected (Rouget and Aruby, 2007; Sanchez-Moreno et al., 2009). Moreover it affects negatively on the psychological condition of caregivers of mentally ill patients and they became more liable to many physical and psychological problems like sleep disturbance, fatigue, anxiety, stress, depression, and loneliness which contribute to poor cognitive function (Epstein-Lubow et al., 2012; Joling et al., 2012; Richardson et al., 2013).

The family members of individuals with mental illness experience many problems during the course of treatment, rehabilitation and recovery, such as anxiety and depression (Steele, Maruyama, Galynker, 2010). Family caregivers of depressed patients experience high levels of burden and are vulnerable to emotional and behavioral disturbance (Duffy et al., 2014 ; Maoz et al., 2014).

Several studies have reported that depression not only affects the patient but also the relatives, who suffer the consequences of the episodes and who usually, adopt the role of caregivers (Keitner et al., 2003; Reinales and Vieta, 2006). The caregiving role is very demanding, frequently distressing, highly burdensome and harmful to health and causes low quality of life (Struening et al., 2001; and Kamel 2014). A high burden level on relatives of depressed patients has been reported (Perlick et al., 1999; Dore and Romans, 2001). QOL is influenced by personal health, mental status independence level, social communication, and the environment, and each factor can effect on individuals' well-being and ability in conducting their daily activities (Mojarad Kahani et al., 2012).

Caregivers' negative experience may affect their ability to care for the patients. Caregivers of mentally ill patients are at risk of having poor Quality Of Life (QOL) due to mental health problems and higher caregiver burden (Velligan et al., 2009; Awadalla et al., 2005). Relatives of patients with psychiatric disorders feel burdened, as these disorders are unpredictable and chronic. Previous studies have found that burden is experienced in the

form of disturbance of family life, family interactions, health, well-being, and financial burden affecting their QOL (Talwar and Matheiken, 2010).

However, families are heavily stressed with patient's symptoms, frequent hospitalizations, illness duration, which is why it has been linked to increased stress on families of persons with depression (Keitner et al., 2003). Demands on families are immense including paying for treatment, supervision of ill family member, and emotional distress that may result from the patient's symptoms. Depression is a chronic disease and has negative consequences on patients, their families and the community as a whole in the form of disability, committing suicide, caregivers burden, and serious economic, social, occupational and health consequences. The area of assessing the effect of family intervention on the caregivers' burden, their psychological condition in the form of depression, anxiety stress and QOL among caregivers of depressed patients is under examination, therefore conducting this research is deemed necessary. Meanwhile there was not much reference to the use of family intervention in the Egyptian context, therefore the current research aimed to investigate the effect of family intervention in reducing caregivers' burden, depression, anxiety, and stress levels symptoms in patients with depression.

Aim of the study:

The aim of the current study was to investigate the effect of family intervention on the Caregivers' Burden, Depression, Anxiety and Stress and Quality Of Life among caregivers of depressed patients.

Research hypothesis:

Family intervention will decrease caregivers' burden, Depression, Anxiety and stress level and enhance the quality of life among caregivers of patients with depression.

Population and Method

Research Design:

A quasi-experimental design was used.

Setting:

The study was carried out at Mansoura University Psychiatric Hospital. The hospital is to be found in Dakahlia Governorate, Egypt. The hospital serves three governorates: Dakahlia, Demiat and Kafer Elsheikh for psychotic and drug dependent patients. The outpatient clinics and the inpatient ward of the hospital were included. The capacity of inpatient wards was eighty beds and they are divided into male and female units. The maximum stay at the inpatient hospital is one month.

Sample:

Convenience samples of ninety five depressed patients and their caregivers were selected and assessed to fulfill the inclusion criteria.

Inclusion criteria

- 1- Patients with diagnosis of depression either unipolar or bipolar according to patients' records.
- 2- Age 18-60 years old.
- 3- Families of patients with depression.
- 4- Sex: both males and females.

- 5- Giving informed consent before enrolment in the study.
- 6- Have at least one available caregiver willing to join in the study.

Exclusion Criteria

- 1- Presence of psychiatric co-morbidity (alcohol or other substance abuse or personality disorder).
- 2- Presence of mental retardation, developmental disability and neurological disorder.
- 3- Living alone.
- 4- Inability to understand the educational material presented in the program due to a clinically evident handicap, cognitive impairment or acute psychiatric pathology.

Tools of data collection:

Tool (1): based on the related review of literature, a structured interview questionnaire sheet was developed and the following tools were used:

1-Socio-demographic characteristics and clinical data:

- a- Socio-demographic characteristics of the patient which included: patient's age, gender, educational level, and occupation.
- b- Clinical data of the patients with depression: duration of illness, support system, mode of admission and family history.
- c- Socio-demographic characteristics of caregivers: such as age, gender, marital status, degree of relation with the patient, social support, health problem and level of education.

2- Depression, Anxiety and Stress Scale-21 items (DASS-21)

The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) developed by Lovibond and Lovibond (1995), is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. It is a Likert scale: 0 means did not apply to myself, 1= Applied to me to some degree, 2= Applied to me to a considerable degree, 3= Applied to me very much. Scoring system: normal, mild, moderate, severe and extremely severe. DASS-21 needs to be multiplied by 2 to calculate the final score.

Items	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

3- Caregiver burden scale: This scale was originally designed by Deborah (2006). It consists of four subscales with a total item of 35 items, which assesses patient problem behavior represented by statements 1 to 15, disruption of household routine represented by statements 16 to 26, impairment in activities of daily living which are represented by statements 27 to 32 and Perceived patient helpfulness represented by statements 33 to 35. Scoring items were scored 0, 1, 2, 3, and 4 for the responses never, rarely, usually, and always, respectively. The scores of the items were summed up. These scores were converted into a percentage. The family caregiver has positive burden above the arbitrary cut off point of 50%. This scale was translated into

Arabic; the validity and reliability for the caregivers' burden scale was 0.85 by using Cronbach's alpha test.

4- Quality of Life scale:-

This scale was developed by Bech, (1996). It is a quality of life questionnaire which is used to assess P (physical problems), C (cognitive problems), A (affective problems), S (social problems), E (economic problems), E (ego personality problems). It consists of 6 subscales; each one contains 5 items. Each item has 5 responses graded from 0-5, in which (0) means bad and (5) means well or good, and the family caregiver must choose the most descriptive one. The PCASEE questionnaire is scored individually for each column from (P to E). The sum of each column is multiplied by 4 to give a percentage score, in which 100 % means the best possible quality of life. All six columns can be added up into a total PCASEE score. Higher scores denote higher QOL. PCASEE scale was translated into Arabic by El-Bilsha (2005). The reliability for the quality of life scale was 0.90 by using Cronbach's alpha.

Method

Pilot study: A Pilot study was conducted on 10 family caregivers attending with their patients to the Psychiatric Department at Mansoura University Hospital for three months to evaluate the clarity, applicability, and reliability of the research tools and estimate the approximate time required for data collection. According to the results obtained, essential modifications were done. Some questions were read in slang to simplify their meanings to the patients. Tools of Caregiver burden and QOL were tested for their reliability which was carried out on 40 caregivers. The results were as follows: Cronbach's alpha was 0.85 for Caregiver burden and 0.90 for QOL.

Ethical consideration: Ethical approval was obtained from the Research Ethics Committee of School of Nursing, Mansoura University and therefore the official permission to hold out the study was obtained from the General Director of Mansoura University Hospitals and the head of Psychiatric Department after clarifying the purpose of the study. Verbal consent of the patients and their caregiver to participate in the study was obtained after explanation of the purpose of the study. The patients and their family caregivers' privacy were considered. Before the interview, participants were informed regarding the aim of the study and were assured regarding confidentiality of data. Every participant was free to withdraw at any time throughout the study.

Patients' records were surveyed to determine the patients who met the study criteria when choosing patients and their caregivers. The number of the sessions for each group was 12. The caregivers were divided into ten groups; the number of participants for each group varied from 8-10 caregivers.

The program was applied through four phases:

The overall objective of the intervention was to improve psychological condition of the caregivers of patients with depression through: decreased caregiver burden, enhancing their QOL, and decreasing feelings of depression, anxiety and stress in order to deal with their patients in an effective and efficient way.

Assessment phase: Assess DASS, Caregiver Burden and QOL. Each participant was interviewed individually by the researcher to initiate and develop a trusting relation with patients and their caregivers.

Designing and implementation phase: family intervention was designed and implemented for 12 weeks for two – three sessions a week. Firstly, it started at the individual level, then in small groups and then in a large group.

Evaluation phase: evaluated the effect of the implementation of family intervention on caregiver burden, depression, anxiety and stress and quality of life by use of DASS, care giver burden scale and QOL scale one month after, and three months after, implementation of family intervention.

Intervention: Family intervention was conducted two to three times a week for 12 weeks. The intervention components included the following:

1- Engagement of family and building connection with caregivers.

2- Education about illness which was designed to enhance generalization to the real world and promote a supportive family environment, it included the following:

- a- Understanding the nature of the illness
- b- Main symptoms and early identification of symptoms
- c- Identification of triggering factors
- d- Treatment: mood stabilizers, antipsychotics and anti-depressants
- e- Family treatment: enhancing compliance planning of coping strategies
- f- Other main issues: suicidal thoughts, hospitalization, and counseling on genetic factors.
- g- Preventive methods to prevent relapse and importance of medication adherence.

3- Problem solving and communication skills including prevention and management of family stress.

4- Social skills training.

5- Stress management such as relaxation techniques and simple exercises.

Termination phase: Summary and feedback about the intervention, discussion of termination feelings, stressing about the importance of follow up

Statistical Analysis:

Data entry and analyses were performed using SPSS statistical package version 20. Qualitative data were presented as a number and percent. Comparison between groups was done by Chi-Square test. $P \leq 0.05$ was considered to be statistically significant.

Limitations of the study: The rapid discharge of the patients made it difficult to achieve follow up after 6 months. Hence follow up was made after only one month and three months after

intervention. Some patients and their caregivers were illiterate so we depended on the caregivers' recall instead of writing. Some patients (7 patients) dropped out of the study during follow up three months after, so the numbers of caregivers were 88 three months after intervention.

Results

- Socio demographic and clinical characteristics of the studied depressed patients and their caregivers.

-Caregivers burden, depression, Anxiety and stress and Quality of live pre and post family intervention.

Part I: Socio demographic and clinical characteristics of the studied depressed patients and their caregivers.

Table (1) shows that around half of the study sample (49.5%) had age less than 35 years and more than half (51.6%) were female, around one third (32.6%) of them were illiterate, more than one third (35.8) were single and more than half (52.6) of the patients were unemployed.

Table (2) illustrates that around two thirds (63%) of the depressed patients were admitted to the psychiatric hospital involuntarily; also more than half of depressed patients (56.8%) have family history of mental illness. Also, for about the same percentage of the studied sample (52.7%) the date of beginning of illness was 10 years or more prior. Around one quarter of the patients (24.2%) were smokers, (58.9%) had suicidal thoughts and more than two thirds (76.8%) had sufficient support system.

Table (3) reveals that, more than half of the caregivers of the depressed patients (52.6%) had their ages either late adulthood or elderly; the majority of them (93.7%) were females; about three quarters of the caregivers were either parents or partner, which represents (44.2%) and (29.5%) respectively.

Table 4 illustrates the frequency distribution of caregivers' burden and Quality of life among caregivers of depressed patients. Concerning the caregiver burden, two thirds of the caregivers (65%) experienced a high level of burden while one month after intervention around one fifth (8.4%) experienced a high level of burden and around one quarter (23.9%) three months after intervention. The difference was statistically significant pre and post implementation of family intervention ($P \leq 0.000$). As regards quality of life among patients' caregivers, all of the caregivers had low quality of life. One month after implementation of the intervention, family caregivers with low quality of life constituted (15.8%). Three months after implementation of the family intervention, caregivers with low quality of life were around one quarter (23.9%) of the studied sample. The difference was statistically significant pre and post implementation of family intervention ($P \leq 0.000$).

Table 5 shows that all caregivers experienced depression either in the moderate or severe level; they constituted 38.9% and 61.1% respectively. One month after implementation of the intervention more than half of the studied sample (53.7%) represented moderate and severe levels of depression, 47.4% and 6.3% respectively. Moreover three months after intervention, the moderate level of depression decreased to (31.8%). In relation to anxiety among the caregivers, all caregivers experienced anxiety in moderate and severe levels which represented

Table 1: Socio-demographic characteristics of the studied patients

Socio-demographic characteristics	No	%
Age		
From 18 to less than 35	47	49.5
From 35 to less than 55	33	34.7
55 years and more	15	15.8
Gender		
Male	46	48.4
Female	49	51.6
Educational level		
Illiterate	31	32.6
Read and write	22	23.2
Technical diploma	25	26.3
Higher education	17	17.9
Marital status		
Single	34	35.8
Married	48	50.5
Divorced	7	7.4
Widow	6	6.3
Occupation		
Not working	13	13.7
House wife	37	38.9
Employee	26	27.4
Technical work	19	20
Total	95	100

Table 2: Clinical characteristics of the studied depressed patients

Clinical data	No	%
Mode of admission		
Voluntary	35	36.8
Involuntary	60	63.2
Family history		
No	41	43.2
Yes	54	56.8
Duration of illness		
One year to less than 4 years	27	28.4
From 4 to less than 10 years	15	15.8
From 10 years to less than 15 years	22	23.2
15 years and more	28	29.5
Smoking habits:		
No	72	75.8
Yes	23	24.2
Presence of suicidal thoughts		
No	39	41.1
Yes	56	58.9
Support system		
Not adequate	22	23.2
Adequate	73	76.8
Total	95	100

Table 3: Socio-demographic characteristics of the studied caregivers

Items	No	%
	95	100
Age		
Adolescent/early adulthood	22	23.2
Middle adulthood	23	24.2
Late adulthood	29	30.5
Elderly	21	22.1
Gender		
Male	5	5.3
Female	89	93.7
Degree of relative		
Parents	42	44.2
Partner	28	29.5
Sister/brother	7	7.4
Daughter/son	11	11.6
Daughter/son in law	7	7.4
Total	95	100

Table 4: Caregivers' burden and quality of life pre, and after implementation of family intervention at one month and three months

Variables	Baseline %	No	One month No	One month %	Three months No	Three months %	Test of significant P Friedman Test
Caregiver burden							Chi-Square =69.774
Negative/Low burden	33	34.7	87	91.6	67	76.1	P= 0.000
Positive/Highly burden	62	65.3	8	8.4	21	23.9	
Quality of life:							Chi-Square =127.72
Low QOL (less than 50)	95	100	15	15.8	21	23.9	P=0 .000
High QOL (50 and more)	0	0	80	84.2	67	76.1	
Total	95	100	95	100	88	100	

(36.8%) and (63.2%) respectively and greatly decreased to reach to 51.6% one month after in the form of moderate and severe anxiety (45.3%) and (6.3%) respectively, but after three months moderate anxiety decreased to (31.8%). The same was true with stress, all caregivers experienced stress which decreased to more than half of caregivers (51.6%) and one third (31.8%) after one month and three months of intervention respectively. A statistically significant difference was revealed between depression, anxiety and stress pre and post implementation of the family intervention (($P \leq 0.000$, $P \leq 0.000$, $P \leq 0.000$) respectively.

Table 6: represents the correlation between quality of life and caregivers' burden, their experience of depression, anxiety and stress. It shows statistically significant negative correlations among all these parameters. The strongest of these correlations are between QOL and caregivers' burden one month ($r = -.700^{**}$), and depression, anxiety and stress three months after

family intervention ($r = -.762^{**}$, $r = -.762^{**}$, $r = -.762^{**}$) respectively. Conversely, there is a statistically significant positive correlation among caregivers' burden and their feeling of depression, anxiety, and stress. The strongest of these correlations are between caregivers' burden and depression, anxiety and stress pre and post intervention three months ($r = .913^{**}$, $r = .955^{**}$, $r = .955^{**}$, $r = .762^{**}$, $r = .762^{**}$, $r = .762^{**}$) respectively. In relation to the correlation between socio-demographic and clinical data, it was observed that there is a positive significant correlation between duration of illness and caregivers' burden, depression, anxiety and stress ($r = .419^{**}$, $r = .419^{**}$, $r = .384^{**}$, $r = .384^{**}$).

Table 5: Depression, Anxiety and Stress among caregivers according to Depression, Anxiety and Stress scale (DASS).

Parameter	Baseline		One month after		3 months after		Test of significance P Friedman Test
Depression:							
Normal/mild	0	0	44	46.3	60	68.2	Chi-Square = 144.409 P=0.000
Moderate	37	38.9	45	47.4	28	31.8	
Severe/extremely severe	58	61.1	6	6.3	0	0	
Anxiety:							
Normal/mild	0	0	46	48.4	60	68.2	Chi-Square = 141.478 P=0.000
Moderate	35	36.8	43	45.3	28	31.8	
Severe/extremely severe	60	63.2	6	6.3	0	0	
Stress:							
Normal/mild	0	0	46	48.4	60	68.2	Chi-Square = 141.478 P=0.000
Moderate	35	36.8	44	45.3	28	31.8	
Severe/extremely	60	63.2	6	6.3	0	0	
Total	95	100	96	100	88	100	

Table 6: Correlation between Caregivers' burden and their QOL, depression, anxiety and stress level

	QOL pre N=95	QOL 1m N=95	QOL 3 N=88	CGB pre N=95	CGB 1m N=95	CGB 3m N=88
CGB pre	a					
CGB 1m	r p	-.700-** 0.000				
CGB 3m	r p		-1.000-** 0.000			
Dep. Pre	a r p			.913** 0.000		
Dep. 1m	r p	-.477-** .000			0.415** 0.000	
Dep. 3m	r p		-.762-** .000			0.762** 0.000
Anxiety pre	a r p			.955** 0.000		
Anxiety 1m	r p	-.490-** 0.000			.521** 0.000	
Anxiety 3m	r p		-.762-** 0.000			.762** 0.000
Stress pre	a r p			.955** 0.000		
Stress 1m	r p	-.490-** 0.000			.521** 0.000	
Stress 3m	r p		-.762-** 0.000			0.762** 0.000

**Correlation is significant at the 0.01 level (2-tailed).

a Cannot be computed because at least one of the variables is constant

r=Pearson Correlation coefficient P value using Pearson Correlation test

CGB= Caregiver Burden Dep. =Depression QOL= Quality of life

Discussion

Depression has an intense impact not only on the patients but also on their family members (Keitner et al., 2003). Depression is the most common psychiatric disorder worldwide. It is a leading cause of individual disability and family burden worldwide. The movement of de-institutionalization led to increase the burden of caregivers and increase their feelings of depression, anxiety and stress.

Previous studies reported that caregivers commonly don't have enough knowledge and skills for providing care to a patient with mental illness, therefore, family intervention has been established to intervene and teach effective coping strategies for the families with mentally ill members (Fallahi et al., 2014; Yazici et al., 2016). Moreover, some studies have revealed that family psycho-educational interventions significantly improve depressive symptoms and reduce caregivers' burden (Bernhard et al., 2006; Perlick et al., 2010).

Family intervention is an effective therapy in treating people with depression. Family therapy for depression, is widely used across the developed countries, e.g. United Kingdom and United States (Henken et al, 2007). Abdel-Razek et al, (2001) concluded that clinical interventions to improve QOL in people with mental illness should include family psycho-educational programs and better recognition, evaluation, and treatment of both depressive symptoms and side effects of drugs.

So, caregivers need family psycho-educational interventions to decrease their burden, and feelings of depression, anxiety and stress. Also families of patients with depression need to be taught effective coping strategies, moreover, to enhance the quality of life of family caregivers. Therefore, the present study aimed to investigate the effect of family intervention on Caregivers' Burden, Depression, Anxiety and Stress and Quality Of Life among caregivers of depressed patients, in conjunction with psychopharmacological drugs.

Regarding caregivers' gender, the majority of the caregivers were females more than half of them were in the adulthood or elderly. In relation to the degree of relation to patients, mothers or wives of the patients were the main caregivers. This is expected because females are responsible about caring for all family members especially the sick members. In addition, most of the patients live in rural areas where the extended families are common. Mothers as caregiver represents less than half of the studied samples; this may be related to the nature of the extended families, more than one third of the patients were single which means that mothers are responsible for their caring and this reflects the nature of the women in Egyptian culture. These results are similar to the previous studies by (Wong, lam and Chan 2011; George, Sharma and Sreekumaran 2015) who highlighted that more than half of the caregivers were females, were married and housewives. In line with the foregoing, Abdel-Aziz et al., (2011) , El-Mahdi et al.,(2010) and Souza et al., (2016) mentioned that mothers, wives and daughters were most of the caregivers. In contrast, studies done in Portugal (Goncalves et al., 2011; Ranjbar et al., 2015) showed that the most of the caregivers were male.

Regarding caregivers' burden, (WHO, 2003) highlighted that the burden of mental disorders will arise significantly over the next decades. Mental disorders are associated with massive disruption in patients' lives, causing impaired quality of life and burden to their families and society. It was observed that two thirds of caregivers experience high level of burden (positive caregivers' burden); this may be related to many reasons, such as the effect of caring for mentally ill family members, health illiteracy, and lack of coping strategies among caregivers which help them to deal with burdens of mental illness in effective ways, in addition to the effect of stigma, non-compliance to medication, financial costs of the drugs, lack of community health resources, and overlapping or role confusion within the families. In agreement with the foregoing study findings, Abdel-Kader et al., (2011) demonstrated that there is a severe burden imposed upon the whole family when caring for a patient with mental illness, because of unpredictable and bizarre behavior, external stressors of stigma and isolation, family conflict, emotional frustration and burnout. Moreover, several studies reported a high level of burden experienced among caregivers with mentally ill patients; it was 47.3% in Nigerian, (Yusuf, 2010), 90% in Turkey (Unal et al., 2004; Magliano et al., 2005) and 92% in Egyptian caregivers (Kamel 2014). Similar finding were also reported in a study conducted in Mansoura, Egypt by Aboul-Ezz (2006) who reported that caregivers who have patients not married and males have greater burden.

After one month of intervention the level of burden decreased to around one fifth. This is expected due to the effect of psycho-educational intervention which leads to increased adherence to medication, increased awareness about depression and enhanced stress management among the caregivers. But the level of burden slightly increased again to around one quarter after three months. This may be related to the residual effect of the mentally ill, and effect of psychosocial stressors still present in the community such as stigma, unemployment and the cost of the treatment. In line with the foregoing, studies carried out by (Tanriverdi and Ekinci 2012; Huis et al., 2015) reported that caregivers who received psycho-educational intervention expected a decrease of caregivers' burden. In the same line, (Yildirm et al., 2014) found that psycho-education programs are effective in reducing the pressures imposed on the family. Caregivers' burden causes destructive effects not only for themselves but also for patients, other family members, and the health care system (Caqueo-Urizar et al., 2009).

The present study reported that more than two thirds of the studied samples have sufficient support system. This reflects the Arab culture, which emphasizes the importance of the role of families and friends in supporting patients according to the teachings of Islamic law. But still there is insufficient support and they need more support for both patients and their families. In line with the foregoing, (Kathleen et al., 2011) recommended the importance of family and friends in supporting people with depression. Also in congruence with the current study findings, (Christensen et al., 2006) found that an internet psycho-educational intervention was effective in reducing depressive symptoms.

Regarding QOL among caregivers of depressed patients, all of the caregivers had low quality of life. After implementation of the intervention one month and three months, family caregivers with low quality of life constituted (15.8%) and (23.9) respectively. This may be explained by (Fredman et al., 2010) who mentioned that caring for mentally ill patients is a persistent stressor due to the constant physically and emotionally demanding role of caring and other factors such as loss, disability, and prolonged distress. It may reflect the effect of family intervention. This finding is consistent with (Kulhara et al., 2009) who highlighted the positive effect of psycho-education on family caregivers' burden.

Moreover there is a statistically significant negative correlation between caregivers' burden and their QOL. This means that quality of life was significantly affected by the caregivers' burden. The present study is supported by several studies which concluded that the physical demands of caring of depressed patients may cause increased risk for physical health problems, leading to poor quality of life (Richardson et al., 2013). In congruence with this, (Shah, Wadoo, Lato, 2010; Zamzam et al., 2011) revealed the negative effect of caregivers' burden on their QOL such as physical and emotional distress, and restriction or impairment in social and occupational functions. Similarly, (Velligan et al., 2009; Awadalla et al., 2005; Struening et al., 2001; and Kamel 2014) reported that high level of caregivers' burden is associated with poor quality of life.

Depression is the most prevalent mental problem among caregivers. The current study assessed feelings of depression, anxiety and stress levels among caregivers. The study results indicated that all caregivers had moderate or severe levels of depression. Moreover, after intervention the level of depression was significantly decreased. The differences are statistically significant. Depression level was found to be positively and significantly correlated to the caregivers' burden, because caregivers' burden may be an important risk factor for the onset of many psychiatric disorders. In this regard, (Epstein-Lubow et al., 2012; Joling et al., 2012) indicated that depression is the most common mental health problem experienced among caregivers of depressed patients more so than non-givers. Also, in congruence with the current study findings, (Stelling, Habers, Jungbauer, (2008); Duffy et al., 2014; and Maoz et al., 2014) reported that caregivers of bipolar disorder patients suffer positive burden and are at high risk for developing emotional and behavioral disorders such as depression, social isolation, anxiety and suicidal ideation as a result of the heavy responsibility of the caregiving (Chessick et al., 2007 and 2009; and Steele; Maruyama, Galynker 2010). Also in congruence with the current study findings, (Mittleman, et al., 2004) concluded that sustained counseling and support lead to reduced depressive symptoms. This is agreement with (Katon, 1999) who emphasized that after the interventions, patients with major depression presented significant improvements in depressive outcomes, medication adherence, and satisfaction with care.

An important finding concerning caregiver experience of anxiety and stress, the present study showed that all of the participants experience moderate and severe levels of anxiety and stress, and after intervention the level of anxiety was significant

decreased. This may be due to the effect of family intervention, which decreases level of anxiety and stress through encouragement of social interaction and interpersonal relationships, as well as the effect of support system. Moreover, anxiety and stress levels were found to be positively and significantly correlated to the caregivers' burden. This is expected and reflects the interrelationship between caregivers' burden and experience of anxiety and stress. This result goes in line with (Henken et al., 2007) who concluded that family intervention is an effective therapy in treating people with depression. These present study findings are also in agreement with those of the study conducted by (Steele, Maruyama, Galynker, 2010). These authors stated that caregivers feel depressed and anxious as well and rates of depression and anxiety in the family members represent 40% to 55%.

In summary, the results of the present study suggest that after the implementation of family intervention, caregivers of patients with depression showed significant improvements in caregivers' burden, depression, anxiety and stress level.

Conclusions: Based on the current results, it can be concluded that caregivers' burden, depression, anxiety and stress are highly prevalent among caregivers of patients with depression and are significantly improved after implementation of family intervention one month after, and moreover slightly decreased three months after intervention. This conclusion leads to accept the hypothesis of the study which was that family interventions improve the caregivers' burden, QOL, feelings of depression, anxiety and stress. Further research is needed to follow the intervention 6 and 12 months after family intervention.

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Effect of interpersonal psychotherapy on the depression and loneliness among the elderly residing in residential homes

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ABSTRACT

Background: Depression and loneliness is the most common mental disorder among the elderly and it is the leading cause of disease burden worldwide. Mental health and well-being are basic and important elements in the life of the elderly more than in any time before.

The aim of the study: The aim of this study was to assess the effect of Interpersonal Psycho-Therapy (IPT) on depression and loneliness among the elderly residing in residential homes.

Subjects and method: A quasi experimental design was used in this study which included eighty-five (n=85) institutionalized elderly in four homes for the elderly in Dakahlia and Damietta Governorates, Egypt. Pre-tests and post-tests numbered 85 (n=85), and three months after intervention were eighty-one (n=81). A structured interview questionnaire for personal data, Geriatric Depression Scale short version (GDS), Berlin Social Support Scale (BSSS) and Katz and Akpom Activity of Daily Living scale (ADL) were used to collect data.

Results: The findings of the study indicate that depression, loneliness, social interaction, ADL and sleeping patterns were significantly improved after implementation of interpersonal psychotherapy one month and three months after. There was a statistically significant positive correlation between depression and sleeping

hours, insomnia, ADL and loneliness, while social interaction and social support were a negative correlation with depression.

Conclusion: It can be concluded from the present study that depression, loneliness, social interaction, sleeping patterns, and ADL were significantly improved after implementation of interpersonal psychotherapy. This conclusion leads to accept the hypothesis of the study that interpersonal psychotherapy improves the Bio-Psycho-Social condition among the institutionalized elderly.

Recommendation: Based on the results of this study we recommend use of IPT to improve the Bio-Psycho-Social condition of the elderly and IPT should be integrated as a basic intervention as well as physical intervention to improve the mental condition and prevent mental disorders.

Key words: Interpersonal Psycho-Therapy; depression; loneliness; elderly; residential homes.

Introduction:

The world's population is ageing speedily. Between 2015 and 2050, the percentage of the world's older adults is estimated to almost double from approximately 12% to 22% and it is expected to extend from 900 million to two billion people above the age of sixty. Elderly people encounter physical and mental health challenges which need to be known and managed in a proper manner (1; 2). More than 20% of the elderly suffer from mental or neurological disorders like depression and dementia. Moreover, around 7% of disability (Disability Adjusted Life Years-DALYs) among the elderly are related to mental and neurological disorders (1; 3; 4).

Increasing life expectancy could also be related to good health or illness in the form of disease, disability and dependency. Depression is a main leading cause of disability and health problems among the elderly (3; 5). Older people's need for social support tends to extend with decline in capabilities (cognitive, mental, social and physical) and when environments, like social places and transport, aren't accessible (2). Psychosocial treatments are also effective for mild depression. Antidepressants can be an effective form of treatment for moderate-severe depression but are not the first line of treatment for cases of mild depression (6). Mental health and well-being of the elderly are more important than at any other time of life (1).

WHO has developed a brief manual of psychological intervention for depression like problem management to solve problems and encouraging and supporting social support, Interpersonal Therapy (IPT) for Depression and thinking healthy through use of cognitive behavior therapy (6).

Interpersonal Psycho-Therapy (IPT) was originally developed by Gerald Klerman and Myrna Weissman in the 1970s (7). Interpersonal psychotherapy (IPT) is a manual-based, short-term psychotherapy mainly developed for the treatment of depression (8). IPT is a time-limited, interpersonally focused, and concerned with the interpersonal context that predisposes and precipitates individual distress, to help the patients to enhance their interpersonal condition, assist patients to improve their social support so they can manage and relieve their symptoms of distress (9,10). IPT is a brief, time-limited treatment that was originally developed for the treatment of major depression. It is based on the linking of changes in the social surroundings to the beginning and maintenance of depression. The main aim of the IPT is to enhance the quality of the individual's current interpersonal relations and social conditions (11-13).

IPT techniques of exploration, clarification, encouragement of affect, communication analysis, and alternative coping strategies are used to induce therapeutic change (14). Also, (Stuart and Robertson, 2003) reported that IPT techniques include non-directive and directive exploration, clarification, encouragement of affect, communication analysis, role play, problem solving (or decision analysis), and the therapeutic relationship (9).

A Meta-analysis study done by (Cuijpers, et al., 2011) (15) reported that IPT is one of the best empirically confirmed psychological treatments for depression. Moreover, anti-depressants

aren't effective for the treatment of depression alone but a combination with psychosocial intervention are effective for delicate depression (6). Improvement of interpersonal functioning decreases symptoms of depression (16).

IPT is a time-limited treatment with 3 phases: a beginning, middle and end (17 ; 18). Also, These IPT phases/stages according to different authors are; according to Markowitz, and Weissman, (2004) they are divided into 3 phases and named as "a beginning, middle and end (17 ; 18) according to (Nemade, Reiss, and Dombeck, 2018) they are divided into 3 phases and named as "formulation, middle and termination Phases" (19). Stuart & Robertson, (2003) divided it into 5 different phases in the IPT approach; assessment, / the initial sessions, / middle sessions, / termination sessions or conclusion of acute treatment, / and finally, maintenance sessions (9) according to the latest references.

Significance of the study:

Institutionalization of the elderly may lead to depression, loneliness, social withdrawal, and lack of interest in social and religious activities (20), due to physical and psychological problems in addition to the effect of relocation. A recent Egyptian study on the institutionalized elderly revealed that regarding prevalence of depression, around two thirds of the residents experience depression, and severe depression represents around one fifth (19.1%) (21). No amount of information can adequately convey the personal pain and suffering experienced by the residents with depression and loneliness (22). Moreover, to the best of our knowledge, there have not been many studies that have been conducted to look into the psychological wellbeing of the elderly population in Egypt and its intervention. Therefore, assessment of depression among the institutionalized elderly and implementation of interpersonal psychotherapy is timely and important for the future. So the present study was developed to assess the effect of interpersonal psychotherapy on depression and loneliness among the institutionalized elderly.

The aim of the study: The aim of this study was to assess the effect of interpersonal psychotherapy on depression and loneliness among the elderly residing in residential homes.

Research hypothesis: Interpersonal psychotherapy will improve depression and loneliness among the elderly residing in residential homes.

Subjects and method: The study was carried out in all residential homes for the elderly in Dakahlia and Damietta Governorates, namely Dar El-Amal in Sandoub district, Dar Thamaret El-Kalema in torial district, Dar Mar-Gergues and Dar El-Walaa in Mit Ghmer city, and Dar Kebar El-Sen in Ras El-Bar.

Research Design: It is a quasi-experimental design.

Sample: All residents of the previously mentioned settings were included in the study. Their total number was eighty five elderly (twenty six in Dar El-Amal, twenty in Dar El-Walaa, fourteen in Dar Thamaret El-Kalema, five in Dar Mar-Gergues, and twenty in Kebar El-Sen)

Inclusion criteria: The residents of this study were selected based on the following inclusion criteria:

- 1- All the males and females
- 2- Giving informed oral consent to participate in the study,
- 3- Able to communicate.

In accordance with the criteria for admission into these homes it included:

Ambulatory persons higher than 55 years, independence, free from infectious or mental disease, and they have permanent income except in two homes “ Dar Thamaret El-Kalema in torial district, and Dar Mar-Gergues” considered as shelters for the elderly, financially supported through the church and the Minister of Social Affairs.

Tools of data collection:

Tool (I): Based on the related review of literature, we developed a Structured interview questionnaire sheet, which included:

- 1- Socio-demographic characteristics of the residents such as: Age, gender, religion, marital status, level of education,
- 2- Clinical variable of the subjects such as: duration of stay, sleeping habits, personal hygiene, and presence of chronic illness.
- 3- Interpersonal relationships of the residents which included: initiation and maintaining relations, social interaction and social withdrawal, social support and support system
- 4- Psychological condition of the residents: presence of loneliness, depression, resident’s reaction toward institutionalization and their satisfaction with ageing process.
- 5- Participation in social and spiritual home activities.
- 6- Attitudes toward aging and residential homes: feelings about ageing, satisfaction about admission to residential homes.

Tool (II): Berlin Social Support Scale (BSSS)

Berlin Social Support Scale (BSSS) was used to assess social support among the elderly. BSSS was adopted from Schwarzer and Schulz (2000) (23). This scale is four-point Likert scale. Possible responses are strongly agrees (4), somewhat agree (3), somewhat disagree (2) and strongly disagree (1). Social support is categorized into four levels: highly adequate social support from 32 to 25, moderate adequate social support from 24 to 15; adequate social support from 14 to 9 and not adequate social support from 8 to 1.

III- Katz and Akpom Activity of daily living scale (ADL):

ADL was designed originally in 1976 by Katz and Akpom, and translated and validated on the Egyptian aged population by El-Bilsha 1999(24;25). The scale comprised six basic activities of daily living: bathing, dressing, feeding, transfers, continence and ambulation. The six different functions are measured and scored per the individuals’ actual performance of these functions. 1= independent, 2= partial dependent, and 3= completely dependent. Scoring was interpreted as three levels of dependency: totally independent score 6 points, partially dependent score seven to twelve points and totally dependent score thirteen to eighteen.

IV- Geriatric Depression Scale short form (GDS-15):

This scale was originally developed by Yesavage and others in 1982(26). The long form was 30 items then revised to short form 15 items. GDS-15 consists of 15 yes or no questions which were

used to assess the presence of depressive symptoms among the elderly. Scoring was interpreted as: normal from 0 – 5, mild depression from 6-10 and severe depression from 11-15 (27). It was translated and validated on the Egyptian institutionalized elderly (25).

Pilot study:

A pilot study was carried out on 5 residences, to establish the simplicity, and applicability of the study tools. According to the results obtained, essential modifications were created. Some questions have been read in slang language to simplify their meanings to the patients.

Administrative design:

Ethical consideration: The study protocol was approved by the Research Ethics Committee of school of Nursing, Mansoura University and therefore the official permission to hold the study was obtained from the Vice Minister of Social Affairs and administrators of all residential homes.

The study subjects volitionally agreed to participate within the study and gave their verbal consent and every participant was allowed to withdraw at any time throughout the study. Before the interview, residents were informed regarding the aim of the study and were assured regarding confidentiality of data.

- Each resident was interviewed individually at different times throughout the day (morning and afternoon) to establish a trusting relationship and gain their cooperation in responding to the interview sheet. For most of them more than one session was needed to avoid exhaustion and to gain their cooperation and confidence. The interview took around thirty to fifty five minutes per respondent. The data collection took around 9 months (from January to September 2015). The resident’s record (admission record) was reviewed to ascertain biosocial information obtained from the resident.

The researcher interacted with the elderly on an individual level (one-on-one interaction), then interacted with them in small and large groups; the number of participants varied from 6 to 8 individuals for each group. The interpersonal therapy was done for 12 sessions with 2-3 sessions a week. IPT mainly focuses on the present – the ‘here and now’ rather than the past.

Actual work:

Implementation of interpersonal Psychotherapy:

The main aims of the IPT are to improve interpersonal relationships among residents or change their expectations about them, and to help residents to improve their social support network. This can be achieved through: Establish trusting relationship, express feelings, enhance self-esteem, and enhance social interaction and interpersonal relationships, enhance problem solving technique, enhance independence of ADL, improve sleeping and eating patterns. Decrease feeling of loneliness and depression among the residents (9 ; 28).

- **Orientation Phase (initial phase):** Establish rapport and therapeutic relationship between the researcher and residents for gathering information about the elderly.

- **Assessment phase:** Assess Activities of daily living, sleeping and eating patterns, social interaction, support system, presence of depression and loneliness among the residents.

- **Designing phase:** An interpersonal therapy was designed for 12 sessions for 2-3 sessions / week. Firstly, it starts on the individual level, small groups and on large groups (from 6- 8 residents). The residents were divided into ten groups, which ranged from 6 to 8 residents in each group; each group attended 12 sessions.

-**Implementation Phase:** Implementation of the interpersonal therapy through use of IPT techniques according to Mark et al., 2001; Stuart and Robertson, 2003 (9; 14).

1- Therapeutic relationship: An ability to identify and provide constructive feedback on recurring interpersonal patterns, “to establish trusting relationship”.

2- Encouragement of affect: to help the residents to express, understand and manage their feelings (28). To help the residents to recognize their immediate affect and to communicate their affect to the others effectively (9).

3- Communication analysis: This technique was used to identify communication problems, encourage the residents to com-

municate more effectively and learn new and more effective skills “problem solving skills” (9).

- **Termination phase:** to discuss feelings about termination, planning for future interpersonal issues.

- **Evaluation phase:** evaluate the effect of the implementation of interpersonal therapy on the Bio-psychosocial condition of the residents. Through re-assessment of the ADL, sleeping patterns, social interaction, and presence of depression and loneliness, this showed differences in their response to the questions before and after the application of the interpersonal psychotherapy.

Analysis of the results: Data were analyzed using SPSS (Statistical Package for Social Sciences) version 20. Qualitative data were presented as a number and percent. Comparison between groups was done by Chi-Square test. $P \leq 0.05$ was considered to be statistically significant.

Results

Part I: Socio-demographic characteristic of the study sample (Table 1)

Table 1: Socio-demographic characteristics of the residents in the study sample

Socio-demographic characteristics	No 85	% 100
Age in years:		
60- less than 65	21	24.7
65 to less than 70	22	25.9
70 to less than 80	25	29.4
80+	17	20.0
$X \pm SD = 70.8000 \pm 7.28959$		
Gender:		
Male	38	44.7
Female	47	55.3
Religion:		
Muslim	66	77.6
Christian	19	22.4
Level of education:		
Illiterate	30	35.3
Read and write	26	30.6
End formal education	15	17.6
End university education	14	16.8
Marital status:		
Single	24	28.2
Widow	46	54.1
Divorced/ separated.	15	17.6
Duration of stay:		
Less than 1 year	27	31.8
1year-less than 5 years	27	31.8
5years - less than 10 years	16	18.8
10 years and more.	15	17.6
Total	85	100

Table 1 shows that the study sample age ranged from 60 up to 80 years and more with mean \pm SD 70.800 \pm 7.28959 year; more than half of the sample (55.3%) were females, more than half of the sample (54%) were widows. More than one third (35.3%) were illiterate and more than three quarters (77.6%) were Muslim.

Part II: Bio-Psycho-Social condition of the elderly (Tables 2-3).

Table 2: Clinical data as assessed among residents in the study sample (n= 85)

Variables	No 85	% 100
Depression (GDS)		
Normal	20	23.5
Mild /moderate	50	58.9
Severe	15	17.6
Feeling of loneliness:		
No	13	36.5
Feeling lonely	54	63.5
Berlin Social Support Scale (BSSS)		
Not adequate	29	34.1
Adequate	56	65.9
Social interaction		
No	54	63.5
Yes	31	36.5
Receive support		
No	29	34.1
Yes	56	65.9
Support satisfaction		
No	67	78.8
Yes	18	21.2
Attitude toward aging process		
Negative	31	36.5
Positive	54	63.5
Practice religious activity		
Sometimes	1	1.2
All the time	84	98.8
Participation in home activities		
No	41	48.2
Yes	44	51.8
Total	85	100

a- Psychological condition of the elderly:

As regards psychological conditions of the residents in the study sample Table 2 shows that the presence of depression among the residents: more than half of the residents (58.9%) suffer from mild or moderate depression and (17.6%) suffer from severe depression while the rest of them 23.5% were non-depressed. In relation to feelings of loneliness, around two thirds of the residents (63.5) suffer from feelings of loneliness. Regarding attitudes of the residents toward the aging process, more than one third (36.5 %) had a negative attitude toward the aging process.

b- Social condition of the residents:

Regarding support system, Table 2 shows that around two thirds of the residents (65.9%) have a support system; out of these 42% receive their support from outside the home while 78.8% of the residents are not satisfied with their support system. And according to Berlin Social Support Scale (BSSS) more than one third of the residents (34.1%) did not receive adequate social support and around two thirds receive adequate support (65.9%); out of this 2.8% of the residents received highly adequate social support. Regarding social interaction among the residents, less than two thirds of the residents (63.5%) suffer from social isolation, in relation to participation in home activities like birthdays, party and religious meetings; less than half of the residents (48.2%) did not accept participating in home activity. In the same Table 2 it reveals that participation in religious activities such

as prayer, going to the mosques or churches, 100% of the residents practice religious activities of which 98.8% practice religious activities on a regular basis.

c- Physical conditions of the residents:

Table 3 illustrates the clinical data of the residents. It shows that, more than two thirds of the residents (76.5%) were dependent or need help in performance of the ADL. Of 85 residents, 17 (20 %) sleep less than 4 hours, more than half of the residents had late or early insomnia representing 55.5% and 51.8% respectively, moreover, recurrent insomnia represents 37.6%.

Table 3: Activity of daily living and sleeping and sleep problems as assessed among the residents in the study sample

Variables	Frequency	Percent
Activity of Daily living (ADL)		
Independent	20	23.5
Need help	53	62.4
Completely dependent	12	14.1
Number of sleeping hours / day		
Less than 4 hours	17	20
6 hours –	48	56.5
8 hours +	20	23.5
Sleeping difficulties:*		
Falling asleep (late insomnia)	47	55.3
Frequent wake up (recurrent insomnia)	32	37.6
Early insomnia	44	51.8
Total	85	100

* Some residents reported more than one type of insomnia

Part III: Bio-psychosocial conditions of the residents pre and post implementation of the interpersonal psychotherapy one month and three months after (Table 4).

Table 4 describes the Bio-psychosocial conditions as assessed among the residents in the study sample. Regarding activity of daily living, more than two thirds of the residents (76.5%) were dependent or partially dependent in relation to performance of ADL. While one month after implementation of IPT, dependent and partially dependent represented 1.2% and 16.5% respectively. This percentage changed to dependent (6.2%) and partially dependent (25.9%) three months after implementation of IPT. The differences are statistically significant $P<0.000$. In relation to sleeping hours among the residents, of the eighty five, 17 (20%) who slept less than 4 hours, and more than half of the residents 56.5% who slept from 4 to less than 6 hours, one month after implementation of IPT 85.9% slept from 6 to 8 hours and more and three months later this percentage changed to 75.3%. The differences are statistically significant $P<0.000$. Concerning sleeping problems among the residents, more than half of the study sample (55.3%) experienced late insomnia, one month after only 5.9% and three months later the percentage became 25.9%. Similarly with early insomnia, more than half of the residents (51.8%) experienced early insomnia, one month after, 7.1% suffered from early insomnia. This percentage slightly increased to reach 21% three months after implementation of IPT. The differences are statistically significant $P<0.000$.

The same Table 4: illustrates that more than one third of the residents (34.1%) had inadequate social support and only 2.4% had high social support according to Berlin Social Support Scale (BSSS), one month after implementation less than one third (29.4%) had high social support. Meanwhile, this percentage changed to (39.5%) three months after implementation of IPT. Regarding social interaction among the residents, more than one third of the residents (36.5%) suffering from social withdrawal changed to (5.9%) one month after and increased to reach (34.6%) three months after implementation of IPT. Concerning experience of depression among the residents, more than two thirds of the residents (76.5%) suffer from feelings of depression, which changed to (14.1%) one month after and slightly increased to reach (19.8%) three months after implementation of IPT. Studying the presence of loneliness among the residences, around two thirds (63.5%) suffer from feelings of loneliness; this percentage changed by only 3.5% one month after and increased to become 33.3% three months after implementation of IPT.

Table 4: Bio-Psychosocial conditions of the elderly pre and post implementation of the Interpersonal psychotherapy immediately and three months after

Variables	Baseline		Post 1 m.		Post 3 m		Test of significance
	No(85)	%	NO (85)	%	No (81)	%	
Activity of Daily living							Friedman Test
Independent	20	23.5	70	82.4	55	67.9	Chi-Square
Need help	53	62.4	14	16.5	21	25.9	=90.700
Completely dependent	12	14.1	1	1.2	5	6.2	P= 0.000**
Sleeping patterns							Friedman Test
Less than 4 hours	17	20	0	0	0	0	Chi-Square
4 hours – less than 6	48	56.5	12	14.1	20	24.7	=90.604
6 hours – 8 hours +	20	23.5	73	85.9	61	75.3	P= 0.000**
Late insomnia :							Friedman Test
No	38	44.7	80	94.1	60	74.1	Chi-Square
Yes	47	55.3	5	5.9	21	25.9	=51.95
							P= 0.000**
Early insomnia :							Friedman Test
No	41	48.2	79	92.9	64	79	Chi-Square
Yes	44	51.8	6	7.1	17	21	=46.372
							P= 0.000**
Berlin Social Support Scale							Friedman Test
Not adequate	29	34.1	0	0	1	0.9	Chi-Square
Adequate	30	35.3	25	29.4	15	18.5	=126.38
Moderate adequate	24	28.2	35	41.2	33	40.7	P= 0.000**
Highly adequate.	2	2.4	25	29.4	32	39.5	
Social interaction							Friedman Test
No	54	63.5	80	94.1	53	65.4	Chi-Square
Yes	31	36.5	5	5.9	28	34.6	=61.44
							P= 0.000**
Presence of depression							Friedman Test
Non depressed	20	23.5	73	85.9	65	80.2	Chi-Square
Depressed (mild, moderate and severe)	65	76.5	12	14.1	16	19.8	=85.321
							P= 0.000**
Presence of loneliness							Friedman Test
No	31	36.5	82	96.5	54	66.7	Chi-Square
Yes	54	63.5	3	3.5	27	33.3	=68.03
							P= 0.000**
Total	85	100	85	100	81	100	

Table 5 displays the correlation matrix of depression with clinical data pre, one month and three months after implementation of IPT. It shows statistically significant positive correlation among depression and sleeping hours, insomnia, ADL and loneliness. The strongest of these correlations was between depression and ADL and sleeping hours three months after ($r=0.769$ and $r=0.723$) respectively. Conversely, there was a statistically significant negative correlation among depression and social interaction and social support. The strongest of these correlations was between depression and social support pre intervention ($r=0.797$). Moreover, the same Table 5 presents the correlations between depression, receive support, support satisfaction and practice religious activities. It shows statistically significant negative correlation among all these parameters.

Table 5: Correlation between depression, Sleeping hours, ADL, social interaction, BSSS and felling of loneliness pre and post intervention

Parameters	Sig.	Depression Baseline	Depression immediately	Depression 3 months
Sleeping hours (base line)	r	.054		
Sleeping hours (1month)	p	.620	.321** .003	
Sleeping hours (3 months)				.723** .000
Late insomnia (base line)	r	.003		
Late insomnia (1month)	p	.976	.186 .089	
Late insomnia (3months)				.626** .000
ADL (base line)	r	.737**		
ADL (1month)	p	.000	.623** .000	
ADL ((3months)				.769** .000
Social interaction (baseline)	r	-.674-**		
Social interaction (1month)	p	.000	-.617-** .000	
Social interaction (3months)				-.422-** .000
Loneliness (baseline)	r	.674**		
Loneliness (1month)	p	.000	.472** .000	
Loneliness (3months)				.439** .000
Berlin Social Support Scale (baseline)	r	-.797-**		
Berlin Social Support Scale (1 month)	p	.000	-.176- .107	
Berlin Social Support Scale (3 months)				-.400** .000
Receive support	r	-.399-**		
	p	.000		
Support Satisfaction	r	-.459-**		
	p	.000		
Practice religious activities.	r	-.336-**		
	p	.002		

*Correlation is significant at the 0.05 level (2-tailed).

* Pearson Correlation

**Correlation is significant at the 0.01 level (2-tailed).

Discussion

Interpersonal psychotherapy (IPT) is usually suggested in most depression treatment guidelines, however very little is known regarding its effectiveness in real-life practice. Therefore, the intent of this study is to assess the bio-psycho-social conditions of the residents residing in residential homes, then to evaluate the effect of IPT on the feeling of loneliness and depression among the elderly living in residential homes. It was hypothesized that IPT will decrease feelings of depression and loneliness among the elderly. Depression is one of the foremost frequent enervating mental disorders with a worldwide prevalence of ten to fifteen percent. Further adding to this problem, depression among the elderly is usually undiagnosed or untreated (29) (Blazer, 2009).

According to the present study, more than two thirds of the residents experience depression, either moderate or severe levels according to GDS. This may be due to many reasons: physiological changes such as hearing and vision impairments without use of hearing and vision aids, and impairments in ADL. Social changes such as loss of social status, lack of social support and interaction. Psychological changes like feelings of loneliness, lack of interest in social and recreational activities. Furthermore, the effect of relocation, "transference of the elderly from their homes to residential homes". This high prevalence rate, which is consistent with the findings of other studies in Turka by Mine (2000) (30), Colombo by Wijeratne et al., (2000) and Brasília by (Silva et al., 2012) (31;32) who indicated that the prevalence of depression among the institutionalized elderly was 58.3%, 56% and 49% respectively. A similar finding of high prevalence of depression among institutionalized elderly has been reported by (Sarin et al., 2016) (33).

More than two thirds of the residents had depression, which changed to less than one fifth one month and slightly increased to one fifth three months after implementation of IPT in the present study. The differences are statistically significant. This may be related to the effect of IPT techniques like therapeutic relationship technique which helps to establish a trusting relationship with the residents and encouragement of affect technique which encourages the residences to express their feelings and decrease their feelings of anxiety and enhance social interaction between the residents which leads to improved feelings of self-esteem and decreased feelings of hopelessness, helplessness, loneliness and depression. This is supported by (Weissman et al., 2007) (28) who mentioned that encouragement of affect technique is used to help the patients express, understand and manage affect. In line with the foregoing, (Lenze, et al., 2002) (34) highlighted that treatment of late-life depression is better with a combination of antidepressant and IPT than treatment or psychotherapy alone. Moreover, the combination of IPT with pharmacotherapy improves the quality of wellness. Similarly, (Toth et al., 2013) (35) found that depressive symptoms significantly decrease after IPT intervention for depression among women with major depressive disorder. This is in agreement with (Bernhard et al., 2006) and (Perlick et al., 2010) (36; 37) who concluded that psycho-educational interventions significantly reduce depressive symptoms. Moreover, (Bolton et al., 2007) (38) found that depressive symptoms significantly improve after implementation of IPT for girls with depression. (Van Schaik, et al., 2006) (39) reported that IPT was valuable and more effective in reducing the proportion of patients with a

diagnosis of depression. Also, in congruence with these present study findings, a report of (Stuart, and Koleva, 2014) (40) mentioned that IPT and Cognitive Behavior Therapy (CBT) are shown to be more effective for the treatment of mild and severe prenatal depression. Also they mentioned IPT may be thought of as a first line treatment choice particularly for pregnant and lactating women with depression, furthermore, it is considered better than antidepressant medication.

Importantly, about two thirds of the residents suffer from feelings of loneliness. This high prevalence rate of loneliness among institutionalized elderly in the present study could be attributed to a number of factors. Firstly, institutionalized elderly are more susceptible to the risk of loneliness than elderly in the community due to lack of social interaction and support, either within the home or outside the home. Secondly, the elderly experience social changes and losses such as loss of status, friends and relatives, loss of income. Thirdly, due to physiological changes like hearing and visual impairment without using aids and dependence in performance of ADL. Fourthly, the majority of Egyptian elderly especially women have fewer hobbies and less outdoor activities. Add to this, there are no suitable services in the community that help the elderly integrate into society and some institutional homes are in front of graves.

After implementation of IPT the number of elderly experiencing feelings of loneliness significantly decreased one month after and further increased to reach around one third, three months after implementation of IPT. This may be explained by the effect of IPT techniques which encourage the residents to establish trusting relationships, help the residents to express their feelings, enhance social interaction and interpersonal relationship among the elderly, enhances and encourages support systems within the homes and encourages the elderly to participate in social and recreation activities within the homes. This high prevalence rate, which is consistent with the findings of the study carried out by (Runcan 2012) (20) reported that institutionalization leads to loneliness. Loneliness, in many cases, can be considered a disease of old age. Unfortunately, more and more residents are suffering from this scourge of loneliness.

Functional aging refers to the ability of people to perform activities of their life experience (Laidlaw, 2003) (41). Regarding Activity of daily living (ADL), more than two thirds of the residents were dependent or partially dependent in relation to performance of ADL, which changed to less than one fifth one month after and to around one third three months after implementation of IPT. This may be related to the physiological changes and problems associated with ageing process and the major effect of depression which is characterized by loss of interest and loss of energy. While after implementation of IPT among residents the present study reported that there is a statistically significant improvement of ADL. This may be explained by the fact that improvement of social and psychological conditions improves the physical condition. In agreement with these findings, (Roach, 2001) (42) stated that frail residents refer to those older than sixty five years who have some type of functional impairment. Elderly persons with functional dependence they need help with ADL, or in making decisions. Moreover, (Eran et al., 2012) (43) highlighted that early and effective intervention of the psychological condition of the depressed patients may have a positive improvement in performance of ADL.

Concerning sleeping patterns of the residents, the present study showed that there is a significant improvement of sleeping hours and sleeping problems like early and late insomnia after implementation of IPT. This may be related to the effect of IPT techniques which improve social and psychological conditions of the residents such as decreased anxiety and depression, improvement of social interaction and decreased feelings of loneliness, which reflect on the physical condition in the form of sleeping pattern. In congruence with the present study, Pigeon et al, (2009) (44) reported that, in terms of insomnia subtype, 51% had severe sleep initiation insomnia, 57% had severe middle of the night insomnia, and 30% had severe complaints of early morning awakening (some individuals reported more than one type of severe insomnia); the distribution of these subtypes did not change appreciably following treatment. Moreover, IPT helped the individuals to improve low mood, feeling of hopelessness, poor concentration, low energy and poor sleep patterns (45).

Social isolation was significantly higher among the residents and significantly improved after implementation of IPT. This may be related to circumstance around the residences in residential homes which reflect the lack of social and recreational activities, and lack of support system, in addition to the lack of stimulating environment which encourages social interaction among the elderly and presence of sensory impairment among the residents without use of aids. Moreover, there was a statistically significant negative correlation between depression and social interaction and social support. The strongest of these correlations was between depression and social support pre intervention ($r=0.-.797$). This may be related to the strong interrelation between depression and support system. Moreover most of the residents suffer from social isolation, sensory impairments and loneliness. So if we improve these circumstances among the residents through improvement and enhancement of support system we can prevent and eliminate the occurrence of depression and loneliness among the residents.

Regarding social interaction, there is a significant relation between depression and social interaction. This is expected and clarifies the strong correlation between social interaction and depression. Also, most of the residents, suffer from loneliness, are dependent in performance of ADL, have lack of activity therapy, and have hearing and visual impairment without using aids; all of these factors facilitate the occurrence of depression. In this regard, (Lenze et al., 2002) (34) indicated that combination of pharmacotherapy and psychotherapy in the form of interpersonal psychotherapy in the treatment of late-life depression is more likely to maintain social adjustment than treatment with either alone. Moreover, (Palompon, Ente, and Bantugan, 2010) (46) determined that social support is an essential element for the prevention of depression among institutionalized elderly. Similar results reported by several studies were reported by (Wijeratne et al., 2000 and Florida et al., 2011) (31; 47) who reported that social and psychological support among the institutionalized elderly is a basic element to prevent late life depression.

Conclusion

It can be concluded from this study that the bio-psychosocial condition of the elderly in form of ADL, sleeping pattern, social interaction, and feeling of depression and loneliness of the elderly residing in residential homes improved after implementation of interpersonal psychotherapy. This conclusion leads to accept the hypothesis of the study that interpersonal psychotherapy improves depression, loneliness, sleeping pattern, ADL and social interaction among the elderly residing in residential homes.

Recommendation

Based on the results of this study we recommend use of interpersonal psycho-therapy to improve the psycho-social condition of the elderly residing in residential homes. Give attention to supportive psychological environment as well physical environment. Encourage and facilitate access to appropriate assistive devices. Further research is needed to follow the effect of IPT after 6 months and 12 months.

Limitation

Limitations of the study include the absence of longer term outcomes, some elderly (4 residents) dropped out of the study during follow up three months after. Additional research is needed to evaluate the efficacy of IPT and/or pharmacotherapy for treating depression, loneliness among the elderly in residential homes for long term outcomes. A slightly significant difference between one month and three months after implementation of the IPT shows need for continuity and sustainability of IPT.

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Screening for Frailty and Sarcopenia in Primary Care: Where are we now?

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ABSTRACT

Objectives: The aging of the global population and its associated challenges result in increased burden on our health care system. The policy of many countries is therefore becoming more focused on preventive programs for geriatric syndromes. Frailty and sarcopenia are two emerging syndromes that are usually overlooked and undertreated in clinical practice. Early identification of these conditions by primary care physicians, would postpone and even reverse the progression towards disability and other negative health outcomes. This narrative review aims to discuss and propose reliable and feasible screening tools for frailty and sarcopenia in primary care.

Methods: PubMed was searched (last search 1st of November 2018) looking for articles concerning screening for sarcopenia and frailty in primary care. Articles were considered relevant if they discussed or compared different screening tools for frailty or sarcopenia among community-dwelling older people within a primary care setting.

Results: Three widely used frailty models and three screening methods of sarcopenia are summarized. The applicability of these models and screening methods in primary care is discussed. Recommendations regarding the screening are formulated and the benefits of building a structured model based on preventive medicine are highlighted.

Conclusion: This review recommends screening for physical frailty and sarcopenia in primary care using the FRAIL and SARC-F questionnaires respectively. Involvement of home nurses in the screening and partnership with hospital specialists would optimize the care of older people and afford a significant and sustained advance in combating frailty and sarcopenia.

Key words: Frailty, sarcopenia, primary care, family medicine, screening tools

Introduction:

Population aging is a well-known worldwide phenomenon, primarily due to falling of fertility rates and longer life expectancy [1]. By 2050, people aged 60 years or more will encompass up to 19% of the population in Middle East and Northern Africa [2]. With this global population aging and the rising costs of health and social care, the strategy of many health systems is shifted towards focusing on health promotion and disability prevention among older people [3]. Disability exerts deleterious consequences on health systems because of its association with poor health outcomes such as hospitalization, institutionalization, increased home healthcare and higher health care expenses [4]. Among several chronic conditions that drive the disabling cascade, frailty and sarcopenia are receiving a lot of attention because of their high prevalence in older people, their association with poor health outcomes and the fact that both are potentially reversible provided there is early screening and intervention [5].

Frailty is defined as a state of vulnerability to poor resolution of homeostasis after a stressor event and is a consequence of cumulative decline in many physiological systems during a lifetime. This cumulative decline depletes homeostatic reserves until minor stressor events trigger disproportionate changes in health status [6]. The prevalence of frailty differs between studies due to different definitions of frailty [7]. In a recent systematic review including studies from the UK, the USA, Europe, Australia and Canada, the overall prevalence of frailty was 10.7% (95% CI 10.5% to 10.9%) in community-dwelling adults aged 65 and older; that prevalence was higher in women than in men and increased with age [7]. Frailty is associated with poor health outcomes such as loss of activities of daily living, falls, fractures, hospitalization and increased risk of premature mortality [8].

The concept of sarcopenia was first proposed by Irwin Rosenberg in 1989 to describe the age-related decrease of muscle mass [9]. In 2010 the European Working Group on Sarcopenia in Older People (EWGSOP) extended the definition of sarcopenia by adding muscle function to the former definition [10]. More recently, the Working Group (EWGSOP2) updated the original definition [11]. Sarcopenia is now defined as generalized and progressive skeletal muscle disorder that is associated with negative health outcomes including falls, fractures, physical disability, and mortality. The new definition advises the use of low muscle strength as the primary parameter of sarcopenia, since muscle strength is at present the most reliable measure of muscle function (Table 1).

Using the original definition of the EWGSOP, the reported prevalence of sarcopenia is up to 29% in community-dwelling older adults and up to 33% in long-term care populations [12]. Since nearly two decades, frailty and sarcopenia have been studied in parallel [5]. Due to their close relationship with the musculoskeletal system, frailty and sarcopenia largely overlap. They share a unique condition: impairment of physical function, which represents the primary stage of a process dragging the older patient towards functional deterioration and disabilities [5].

Despite their close relation, frailty and sarcopenia should be considered distinct entities, as frailty is more multifaceted than sarcopenia alone [13]. Recently, sarcopenia was recognized as an independent condition -code (M 62.84) in the International Classification of Disease, 10th Revision, Clinical Modification (ICD-10-CM) [14].

Diagnosing frailty or sarcopenia is challenging, particularly in an early stage. Clinical signs like general weakness, slow gait, low physical activity and loss of weight usually begin and progress insidiously, can be related to many illnesses, or are wrongly attributed to 'physiological aging'.

Primary care physicians are often confronted with complex geriatric problems in their daily practice. Inability to recognize geriatric syndromes like frailty and sarcopenia can elicit confusion and frustration among the physicians and their patients and might lead to insufficient care of these conditions [15]. Family physicians still have the privilege over other specialists to an early identification and treatment of geriatric syndromes, taking into consideration their patient-centred approach that allows them to understand patients' problems, preferences and experiences of illness [15]. In the primary care setting, practices are busy, consultation time is limited, and multidisciplinary services are mostly unavailable. Consequently, primary care physicians might face another obstacle in finding a simple, feasible, and accurate tool to identify geriatric syndromes.

In this narrative review we will discuss and compare the theoretical aspects and the clinical utility of different models of frailty and screening tools for sarcopenia. The aim of this review is to identify the best known and recent screening methods for these two syndromes in consideration of their applicability within primary care.

Table 1: 2018 operational definition of sarcopenia [11]

Probable sarcopenia is identified by criterion 1. Diagnosis is supported by additional documentation of criterion 2. If criteria 1, 2, and 3 are all met, sarcopenia is considered severe.
1. Low muscle strength 2. Low muscle quantity or quality 3. Low physical performance

Methods

1. Search strategy

PubMed database was searched (last search 1st of November 2018) looking for articles concerning screening for sarcopenia and frailty in primary care. The first and the second author (ZK and SP) searched the initial database independently. Search was restricted to articles in English, Dutch and French. Frailty and sarcopenia were separately searched using predefined medical terms. First we used the terms ((frailty) AND ((primary care) OR (general practice) OR (family medicine))) AND ((screening tools) OR screening) looking for reviews relevant to screening for frailty in primary care. The second search was performed using the terms ((sarcopenia) AND ((primary care) OR (general practice) OR (family medicine))) AND ((screening tools) OR screening) looking for reviews relevant to screening for sarcopenia in primary care.

2. Selection criteria

Articles were considered relevant if they discussed or compared different screening tools for frailty or sarcopenia among community-dwelling older people within a primary care setting. Additional articles have been selected from the reference list of the included articles and lateral search. Papers were excluded if they focused on screening among institutionalized older people, those admitted to the hospital or patients during their stay in the emergency department. Articles concerning association of frailty or sarcopenia with a specific disease such as cancer, COPD and heart failure were also excluded. An overview of the study selection process is shown in (Figures 1 and 2).

Figure 1: Process of article selection concerning sarcopenia

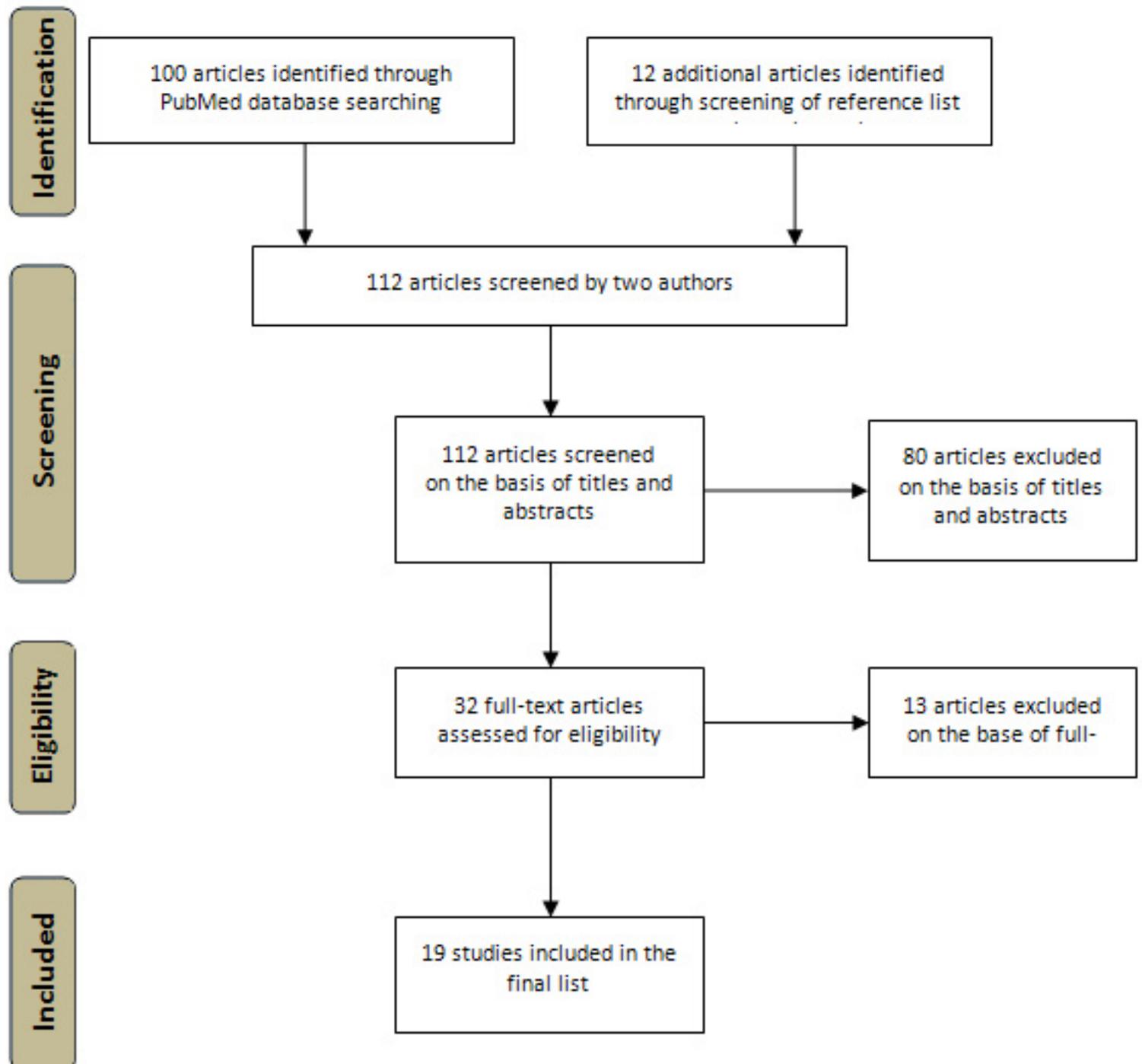
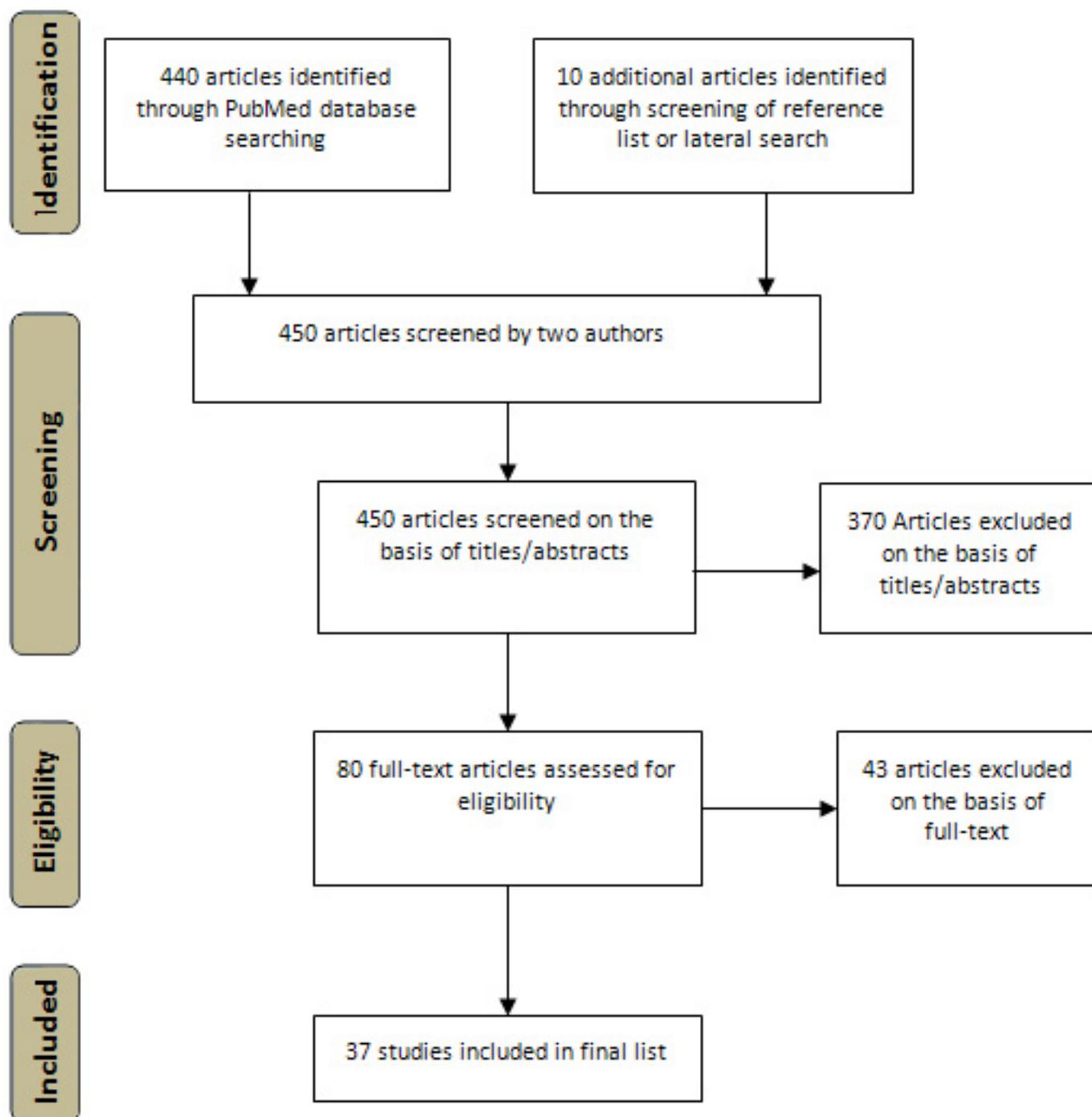


Figure 2: Process of article selection concerning frailty



Findings

1 Screening for frailty in primary care:

Over the last years, several models of frailty have been suggested to give a better understanding of the concept of frailty and to construct a number of assessment and screening tools to measure the frailty status of an individual [16]. Rockwood proposed three criteria for a successful definition of frailty [17]: content validity, construct validity and criterion validity. Content validity means that a successful frailty model should include multiple determinants, should be dynamic, supersede earlier definitions and could be broadly applied in different contexts. Construct validity in contrast, refers to whether the definition correlates with other measures of frailty, such as age, gender and disability. In the third criterion, criterion validity, the model should predict adverse outcomes including mortality.

Several models met most of these criteria. However, these models are not uniform; some are one-dimensional, focusing on physical aspects of frailty, others are multidimensional, and broaden the concept to include cognitive, psychological and social aspects. In addition, the tools derived from these models are also different. Where some rely on a self-report questionnaire, others rely on measurements using special tools. These differences are important to determine the suitability of the models that are to be used in primary care [16].

1.1 Frailty phenotype model

This model was operationalised by Fried et al using data from the Cardiovascular Health Study (CHS) [18]. In this model, frailty was standardized as a distinct clinical syndrome in which three or more of the following criteria were present: unintentional weight loss (10 lbs in past year), self-reported exhaustion, muscle

weakness, slow walking speed, and low physical activity; frailty is thereby not synonymous with either comorbidity or disability. This categorical model classifies people into three categories, being robust (none of the criteria), pre-frail (one or two criteria) or frail (three or more criteria). This frailty phenotype was independently predictive (over 3 years) of incident falls, disability in activities of daily living, hospitalization, and mortality in the Cardiovascular Health Study. Pre-frail status, showed an intermediate risk of these outcomes and an increased risk of becoming frail over 3-4 years of follow-up compared to those who were robust at baseline.

In clinical practice, assessment of deficits using this model requires one instrument (dynamometer) to assess muscle strength, a tape measure and a watch with a seconds hand to measure gait speed over 4 meters distance. The other parameters can be assessed by asking patients about weight loss, exhaustion and low physical activity.

A simple screening tool derived from the frailty phenotype model is the FRAIL scale. This 5-item questionnaire can be quickly administered by any healthcare provider or even by the patient (Table 2). FRAIL questionnaire correlates with instrumental activities of daily living, gait speed and grip strength [19].

1.2 The cumulative deficit model

In this model, frailty is understood as an ‘at risk’ state that results from age-associated accumulation of deficits [20]. In contrary to the frailty phenotype model in which deficits can be specified, the deficits in this model come in many forms and represents a variety of health problems or injuries that are not fully recovered from. The more accumulated deficits a patient has, the higher the frailty level and risk of adverse outcomes becomes [20].

The Frailty index (FI) was introduced as a quantitative measure for the deficit model using data from the Canadian Study of Health and Aging [21]. This frailty index encompasses a set of health deficits (symptoms, signs, disease classifications, functional impairments and laboratory abnormalities). It serves as an individual state variable, reflecting severity of disease and proximity to aging and mortality [21]. The original version of

the FI include 70 items but shorter versions (such as 30 deficits) exist without major influence on the properties of the FI, which enables application in and comparison between different data-sets [22]. The proportion of deficits present forms the patient’s FI score, which can range from zero to one [21]. Some authors have questioned the validity of the FI in the primary care setting, due to its complexity and its discriminative ability [23]. Others have supported the appliance of FI in primary care relying on its ability to predict adverse health outcomes, to encompass all important frailty aspects and from the fact that routine health care data can be used to calculate FI score [6,20].

1.3 The multidimensional model

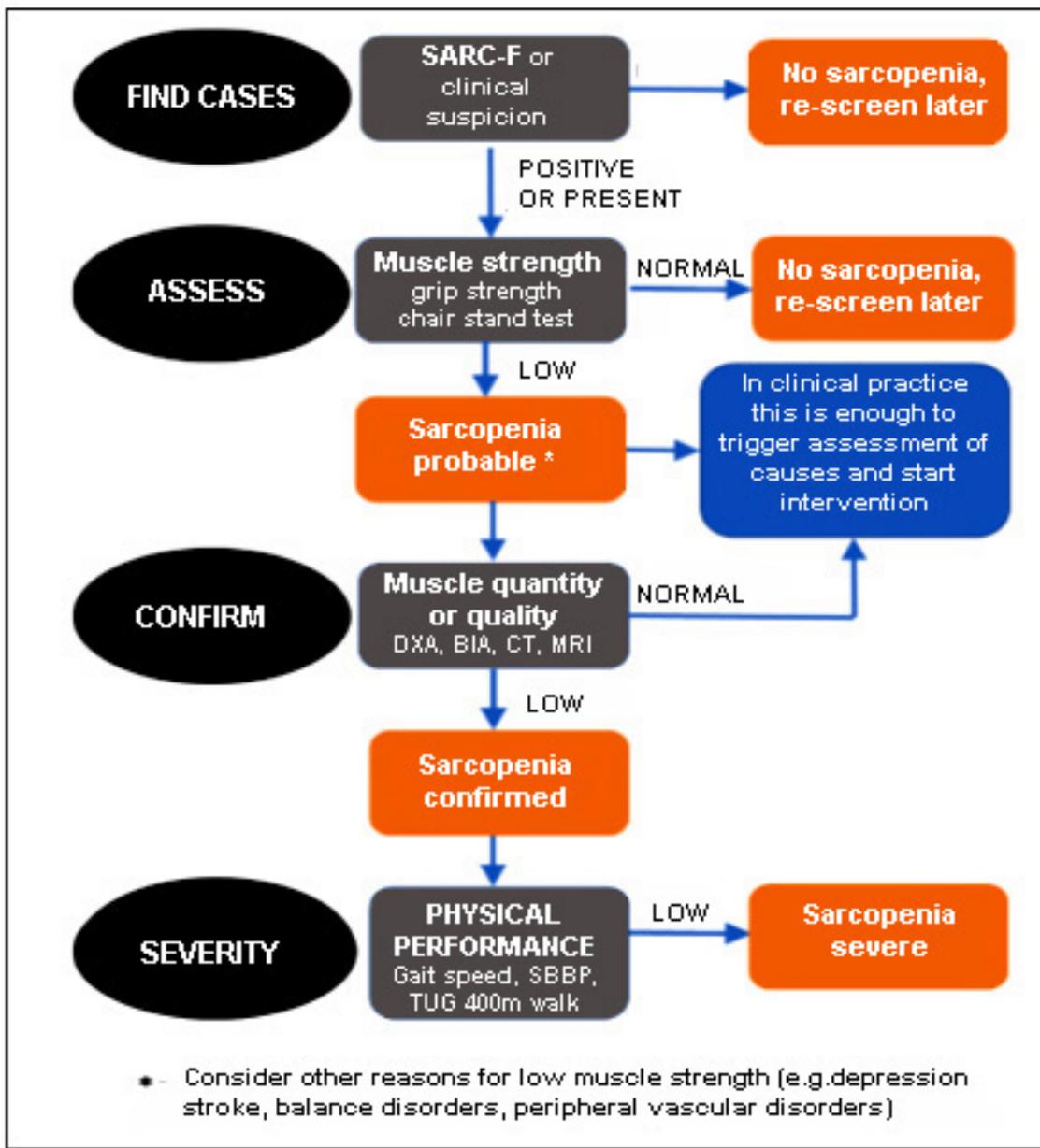
There is a long lasting discussion as to whether frailty should be restricted only to deficits in physical functions or if social and psychological aspects should be added as well. At present, there is a growing consensus among researchers and health care providers over the multidimensional approach of frailty [24]. To be applied in clinical practice, the multidimensional model needs an easy operational definition of frailty [25]. The Tilburg Frailty Indicator (TFI) is a self-administered questionnaire that was developed to demonstrate the multidimensional approach of frailty [26]. The TFI is mainly based on an integral conceptual frailty model [27], a model that illustrates the evolution of life course determinants and disease(s) towards frailty and disability. The TFI requires approximately 14 minutes to administer and includes 15 components of frailty that refer to three domains of frailty (8 components refer to physical frailty, 4 to psychological frailty and 3 to social frailty) [26]. These 15 components also represent the TFI score (score 0-15). A total score of 5 or more is considered as a cut-off point to assess a patient as frail [26].

The Groningen Frailty Indicator (GFI) is another example of a screening tool based on the multidimensional model. The GFI is a 15-item screening tool that is widely used in clinical practice and can be used for both community-dwelling and institutionalized older people. It measures functional losses in many domains: the physical (mobility functions, physical fatigue, vision and hearing), the cognitive (cognitive dysfunction), social (emotional isolation), and psychological (depressed mood and anxiety). The range of the GFI total score is 0 to 15, with a score of 4 or more representing moderate to severe frailty [28].

Table 2: FRAIL questionnaire [19]

Component	Question
Fatigue	How much time did you feel tired during the last 4 weeks?(all of the time, most of the time= 1 point)
Resistance	Do you have any difficulty walking up 10 steps alone without resting and without aids?(yes= 1 point)
Ambulation	Do you have any difficulty walking several hundred yards alone and without aids?(yes= 1 point)
Illness	How many illnesses do you have out of a list of 11 total(5 or more= 1 point)
Loss of weight	Self-reported weight decline of >5% within 12 months (yes= 1 point)

Figure 3: EWGSOP2 algorithm for case-finding, diagnosis, and quantifying severity in practice. The steps of the pathway are represented as Find-Assess-Confirm-Severity or F-A-C-S [11]



2 Screening for sarcopenia in primary care:

The concept of sarcopenia as a muscle failure is better understood nowadays; however, there is still a gap between research findings and clinical practice [11]. It is not easy for primary care physicians to decide what parameters of sarcopenia to measure, how to measure them, what cut-off values to choose for diagnosis and treatment and how to follow up the results of an intervention [29].

A wide variety of tools are available for characterization of sarcopenia in practice and in research [11]. Recently, the EWGSOP2 has developed a new algorithm (Figure 3) for sarcopenia case-finding, diagnosis, and severity determination [11]. This algorithm is consistent with the updated sarcopenia definition, and practical to use in clinical settings.

Next, we will focus on the first step of the algorithm (case-finding) as this is the most relevant one to the primary care setting. Assessment of muscle strength, quantity/quality as well

as quantification of severity of sarcopenia is considered beyond the scope of this article.

2.1 SARC-F questionnaire

This self-reported questionnaire was developed as a possible rapid screening test for sarcopenia [30]. SARC-F is an acronym made up by its five components: Strength, Assistance in walking, Rising from a chair, stair Climbing and Falls. Each component is scored from 0 to 2 points, giving a global score between 0 and 10 points. A score ≥ 4 points is reported to be predictive of sarcopenia and poor outcomes and should thus be a trigger for a further assessment. The SARC-F questionnaire was recommended by EWGSOP2 as a way for patients to reflect on their perception of the ability or disability of lifting 10 pounds, walking across a room, rising from chair or bed, climbing a flight of 10 stairs and incidents of falls in the last 12 months. Three large studies - the African American Health (AAH) study, the Baltimore Longitudinal Study of Aging (BLSA), and the National Health and Nutrition Examination Survey (NHANES) - have

investigated the utility of SARC-F and concluded that the internal consistency and validity for detecting persons at risk for adverse outcomes from sarcopenia is good [31]. Because of its low sensitivity and high specificity, SARC-F is more useful to exclude sarcopenia and muscle function impairment [32].

2.2 Ishii screening test

The Ishii screening test is a method that estimates the probability of having sarcopenia using an equation-derived score based on three variables—age, grip strength and calf circumference [33]. This test could help to identify functionally independent older adults with sarcopenia who are good candidates for intervention. This test is suitable as a case-finding instrument in populations where sarcopenia is likely [34].

2.3 The red flag method

This method has been identified by the European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO) working group on frailty and sarcopenia [35]. With this method, awareness is generated among general practitioners about the clinical presentation of patients with particular regards to the physical manifestations of sarcopenia such as general weakness, slow gait or muscle wasting. Patients can also be asked about symptoms such as loss of weight, loss of muscle strength, loss of energy, falls, etc. If the screening detects any red flag suggesting the presence of sarcopenia (Table 3), patients should be referred for further assessment.

Discussion

This narrative review reveals that several models and tools can be utilized for the screening of frailty and sarcopenia in primary care medicine. While there is a recent agreement (at least among European countries) to use a self-reported questionnaire for screening for sarcopenia in clinical practice, there is until now still no consensus over which frailty model is the gold standard to be implemented as screening instrument in primary care. This is not unexpected, taking into consideration the multifaceted, multifactorial and complex nature of frailty compared to sarcopenia as being ‘one organ failure’.

The multidimensional model might be theoretically preferred to reflect the holistic nature of frailty. However, cognitive, social and affective dimensions of frailty need a sophisticated multidisciplinary approach that goes beyond the capability of the primary care practitioner. The tools derived from the multidimensional model are too complex to be primary care friendly.

For example, the TFI has the most robust evidence of reliability and validity and has been the most extensively examined in terms of psychometric properties among 38 multidimensional frailty assessment instruments [36]. Even so, this tool requires approximately 14 minutes to administer which is longer than the average consultation time of the family physicians (10-12 minutes). Another study compared the multidimensional model represented by GFI to the deficit model represented by FI [37]. This study suggested using a two-step screening tool by combining the two models. Initial FI screening in routine healthcare data, followed by a GFI questionnaire for patients with a high FI score or otherwise at high risk was recommended to provide an optimal proactive primary care approach. Although the sequential two step screening approach is the most efficient to

Table 3: The Red flags proposed by (ESCEO) working group on frailty and sarcopenia

Clinician’s observation	General weakness of the subject
	Visual identification of loss of muscle mass
	Low walking speed
Subject’s presenting features	Loss of weight
	Loss of muscle strength, in arms or in legs
	General weakness
	Fatigue
	Falls
	Mobility impairment
	Loss of energy
Clinician’s assessment	Difficulties in physical activities or activities of daily living
	Nutrition
	Body weight
	Physical activity

personalized elderly care, using two complex models for a screening goal seems impractical in primary care.

In contrary, physical frailty represented by frailty phenotype model might be more suitable for screening purposes in primary care. Physical frailty indicators such as slow walking speed, exhaustion, weakness and weight loss can be objectively measured in clinical practice. In this regard, family physicians need an easy tool to approach these physical indicators. As De Lepeleire et al suggested, a simple heuristic tool as the first step, followed by a more comprehensive assessment as the second step, is what family physicians really need to use for frailty [38].

The FRAIL scale could be a promising first step screening tool for physical frailty, unlike the frailty phenotype which requires measured performance (walking speed, grip strength) or the FI which includes numerous items, typically 40 or more, and may include measured performance (e.g., cognition, physical performance). The FRAIL scale is short, interview based, simple to administer and interpret and has demonstrated validity so it may prove to be valuable for use in a busy clinic [39]. A recent study compared 4 frailty scales in the African American Health (AAH) cohort [39]. The FRAIL scale was compared to the Study of Osteoporotic Fractures (SOF) frailty scale, the phenotype-based Cardiovascular Health Study (CHS) frailty scale, and the comprehensive Frailty Index (FI). The FI and the FRAIL scale exhibited the strongest predictive validity for new disability and mortality. The FRAIL scale was good enough in prediction of new 3-year disability, 9-year disability and 9-year mortality.

Noteworthy, physical frailty is a preventable and manageable condition [13] that shows great overlap with sarcopenia. Sarcopenia is a major contributor to the development of physical frailty [11]. Patients who are suspected to be physically frail should be screened for sarcopenia.

Sarcopenia should be suspected by recognizing symptoms or signs that are relevant to muscular dysfunction such as general weakness, difficulty rising from a chair, falling and slow walking speed. If these clinical pictures are suspected, then screening should take a place.

The most available screening tests for sarcopenia have a very good specificity but low sensitivity [34]. An ideal screening test must exhibit rationally accurate sensitivity and specificity [40]. Tests with a high sensitivity are needed to promptly detect patients at risk of sarcopenia and refer them in the early stages to start with prevention and treatment. A recent study compared the psychometric properties of five screening tools for sarcopenia against five diagnostic definitions and found that the tool of Ishii et al had higher sensitivity than SARC-F regardless of the definition used [34]. Nonetheless, calculations required in the tool of Ishii might be time-consuming and complicated for general practitioners, which may limit its utility.

Screening for frailty and sarcopenia would help to construct a structured model based on preventive medicine, converting thereby the reactive care to proactive care [15,24]. In general, family physicians offer a lot of health services including treatment of acute self-limiting illnesses, follow-up of chronic dis-

eases and screening of cancers and cardiovascular diseases. Thus they provide a continuity, coordination and comprehensiveness of care for their patients [41].

Elderly people who are severely frail or sarcopenic, have increased risk of complications and mortality if they undergo invasive interventions. In this case, family physicians can appropriately discuss the potential risks and benefits of these interventions with the patients and their family, make informed recommendations around preventive and screening programs, and, thereby, have the potential to decrease unnecessary hospitalizations or potentially harmful interventions [15]. The role of home nurses should not be ignored, and family physicians can share their knowledge with them so they can together speak the same language with the patients, families and friends and educate them about geriatric syndromes [42].

An integrated model based on alliance among health care providers in primary and secondary care is still recommended to optimize the care for seniors. Such a model enhances awareness for geriatric syndromes in the general public, promotes prevention programs and provides intervention before a traumatic event occurs. This has a positive impact on the 'aging in place' phenomenon by helping older people live autonomously in their favourable environment for as long as possible.

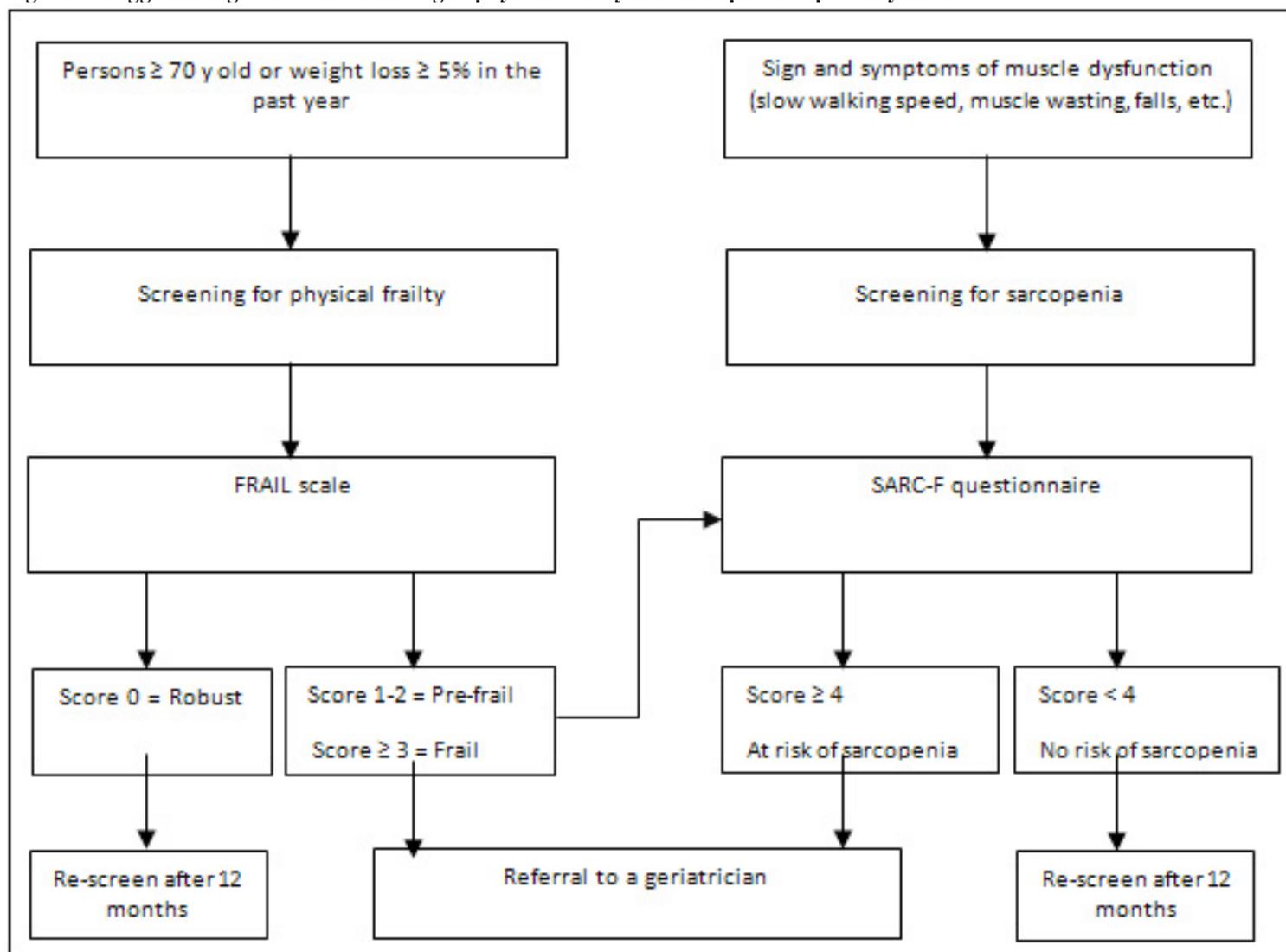
Recommendation

We thus recommend screening for physical frailty in persons 70 years or older [13]. Due to the overlap between physical frailty and sarcopenia, those who are pre-frail and frail should also be screened for sarcopenia before referral to a geriatrician. Patients with suspected muscular dysfunction should be separately screened for sarcopenia (Figure 4 - next page).

Conclusion

Primary care physicians have the opportunity and the responsibility to identify frailty and sarcopenia in their daily practice. Early detection of these conditions might postpone and potentially even reverse the evolution toward disability and other negative health outcomes. Screening for physical frailty seems to be more suitable for the primary care context compared to other aspects of frailty. Use of validated self-report questionnaires such as FRAIL and SARC-F appears to be the most appropriate elementary screening steps for physical frailty and sarcopenia respectively. Partnership between primary physicians, home nurses on one side and hospital specialists on the other side might importantly optimize the continuity of care and yield significant and sustained progress in combating frailty and sarcopenia.

Figure 4: Suggested algorithm for screening of physical frailty and sarcopenia in primary care



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**Population Ageing in the Eastern Mediterranean Countries:
A Regional Overview of the Situation
JORDAN**

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ABSTRACT

Introduction: Jordan is a small, upper middle-income country with a relatively young, largely urban population. This report is a thorough analysis of aging of the Jordanian population in terms of population structure, growth, aging indicators, and consequences of aging. The latter includes poverty and income security, health services, vulnerability and family support. Policies and legislations have also been looked at in light of Madrid International Plan of Action on Ageing.

Methodology: An extensive review of the literature was conducted looking for both qualitative and quantitative data obtained from development and demographic databases published by various national and international bodies.

Conclusions: In order for Jordan to move forward with mainstream ageing, stakeholders must become intimately aware of the implications of the ageing population, and invest in strengthening Jordan's capacity to provide the older people with an excellent quality of life. Key issues include augmenting the incomplete databases, encouraging late-life community engagement, financial support to the agencies dealing with older persons as well as their caregivers, in addition to universal health coverage and pension security. A complete reform is needed for the health sector to introduce geriatric training for all allied health team members and establish research databases in different geriatric topics.

Key words: Jordan; older adult; elderly; aging / ageing.

Introduction

The Hashemite Kingdom of Jordan, one of the most modern developing countries in the Middle East, and is a land steeped in history. It is a small, almost entirely landlocked country divided administratively into 12 governorates. Economically, it is an upper middle-income country with a gross domestic product (GDP) per capita of JOD 9,829.2 and with an estimated annual growth rate 3.7% (current prices in 2017). (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

Due to its location, in the heart of the Middle East, the country has witnessed many political conflicts including the wars in 1948, 1967 and the “Arab Spring” in 2011. These events have affected the demographics and structure of the country and as a result it has transformed from a sparsely populated country to one with ten million people (10,053,10 Thousand) in 2017. This rapid growth has led to doubling of the population in the last few decades, with another doubling expected to ensue again by 2040. Importantly, however, is the demographic transition the country is undergoing, as it moves from high fertility and mortality, to low fertility and mortality. As a result, Jordan’s demographics will further change dramatically— a change that has the potential to translate into dividend or disaster for the country. This altering of the population’s age structure might lead to fundamental changes in parents’ perceptions of what their children can and should achieve. (Statistics D. o., Jordan in Figures, 2017)

Over the next 30 years, Jordan will see the relative size of its working age population more than double. It can also expect demand for quality education and health care to rise, and for people to save increasing proportions of their income, so that they can maintain a reasonable standard of living in their old age. Policies will be needed to continue to reduce fertility rates, anticipate future retirement needs, and address issues that might impede efficient use of the anticipated new labor, national savings, and human capital. (Bloom, et al., 2001).

Objectives and Methods

The objectives of this paper were to study population aging in Jordan and the determinants of its pace of growth in the period 1950-2050. These include the changing age structure over the years, the share of the older population in the total population, feminization of aging and aging of the older population. The

pros and cons of population aging were also discussed thoroughly from economic, social and health points of view. Further, the evolution of policies and legislations involving older people in Jordan was reviewed in concordance with Madrid International Plan of Action on Aging (MIPA). The last part of the paper drew on key recommendations that can be adopted by policy makers to offset the impact of the demographic shift and to enhance the aging process in Jordan.

The data sources for the analysis included in this paper were based on national and international demographic and development databases. The national databases included Department of Statistics, Ministry of Health, Ministry of Social Development, the Higher Population Council, and the National Council for Family Affairs. On the other hand, international databases included the United Nations, the World Health Organizations, and the Center for Disease Control. Published original articles and reviews, and unpublished PhD’s and master’s dissertations were also included in this comprehensive paper. All quantitative and qualitative data in both English and Arabic languages were included.

Results and Discussion

1. Overview of population ageing; 1950-2050

1.1 Pace of ageing and changing share of older persons:

Population ageing, the process by which older individuals become a proportionally larger share of the total population, is a distinctive demographic event mostly observed in the developed world. In its report, the United Nations’ Department of Economic and Social Affairs (DESA) has estimated 962 million people aged 60 or over living in the world in 2017, with a projected rise to 1.4 billion in 2030. Rapid ageing will occur in all parts of the world, so that by 2050 all regions of the world except Africa will have nearly a quarter or more of their populations at ages 60 and above. (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

In Jordan, there were no organized attempts to study the population prior to 1952, except for rough estimates based on registers compiled by the United Nations Relief and Welfare Agency (UNRWA). The 1952 Housing Census provided some information about the population, yet the first population census was carried out in 1961. A summary of the censuses and estimates done by the Department of Statistics in Jordan (DOS), and their results are shown in Table 1.

Table 1: Summary of censuses done by Jordanian Department of Statistics

Indicator	1952 census	1961 census	1979 census	1994 census	2004 census	2012 estimates	2015 census	2017 estimates ^e
Population (millions)	0.59	0.90	2.13	4.14	5.10	6.30	6.60	10.05
Intercensal growth rate (%)	N.A	N.A	4.8	4.4	2.6	2.2	3.1 ^a	5.2 ^d
Life expectancy/years								
Male	N.A	N.A	N.A	68.5	70.6	70.6	72.47 ^b	72.80
Female	N.A	N.A	N.A	69.2	72.4	74.4	74.00 ^b	74.2

(National Population Commission, 1991), (Department of Statistics, 1982)

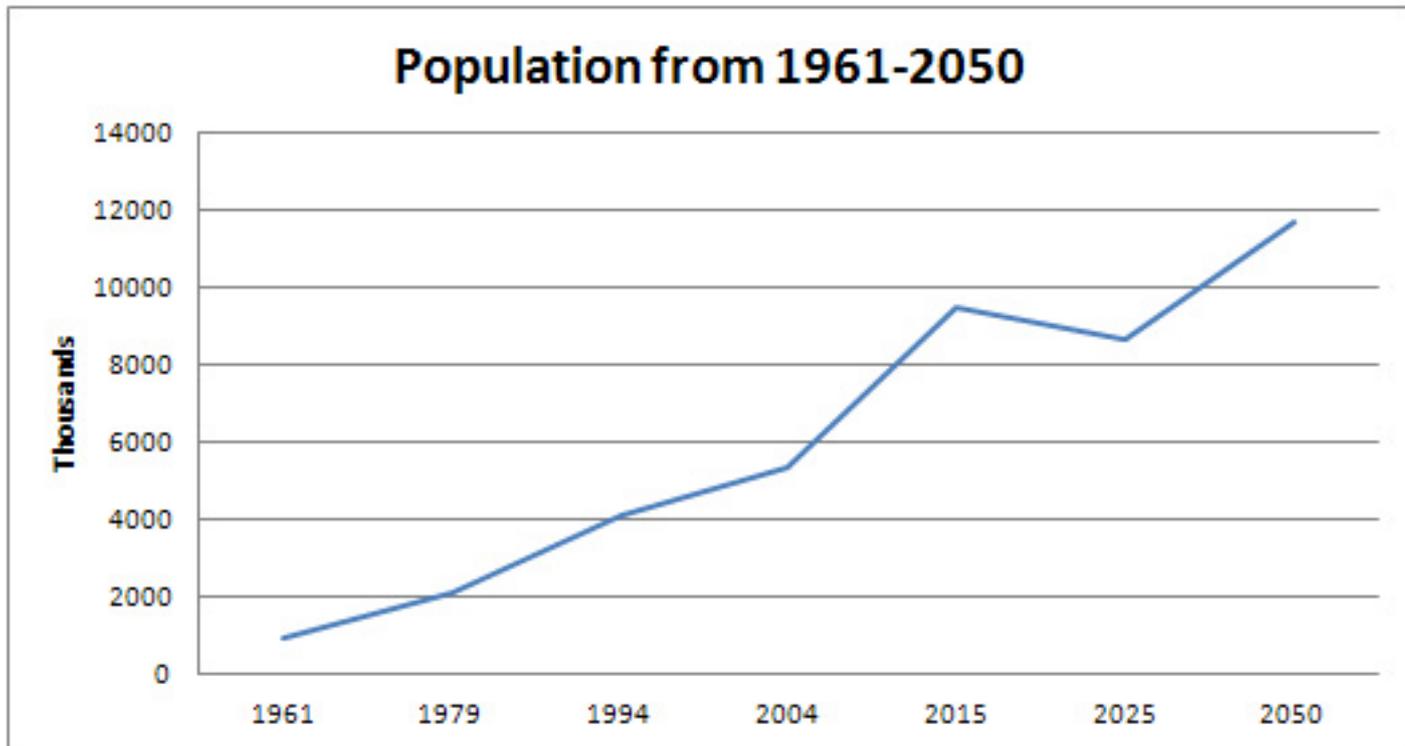
^a Ranging from 3.1% for Jordanians to 18% for non-Jordanians. The average is 5.3% per year for the total population. (DOS2015, 2015)

^b (World Health Statistics 2015, 2015): Data are for the year 2013, ^c (Statistics D. o., Population Estimates, 2017), ^d 2.4% for Jordanians only

Jordan's population is relatively young with 62% in the age group 15-64 years and only 3.7% above the age of 65. It is projected to increase into almost 11 and 14 thousand in 2030 and 2050, respectively (Table 2). (DOS2015, 2015) (Statistics D. o., Population Estimates , 2017) (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

Figure 1 shows Jordan's population count from 1961 to 2050 as published by the Department of Statistics and the United Nations' report titled World Population Ageing 1950-2050. (DOS2015, 2015) (World Population Ageing:1950-2050, 2002).

Figure 1: Jordan's population count from 1961 to 2050



(DOS2015, 2015) (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

Table 2 summarizes the percentages of older ages living in Jordan from 1950 to 2050, and Figure 2 shows growth rates of all age groups in Jordan in the same period. (World Population Ageing:1950-2050, 2002) (DOS2015, 2015).

Table 2: The share of older adults out of the total population in Jordan from 1950 to 2050a

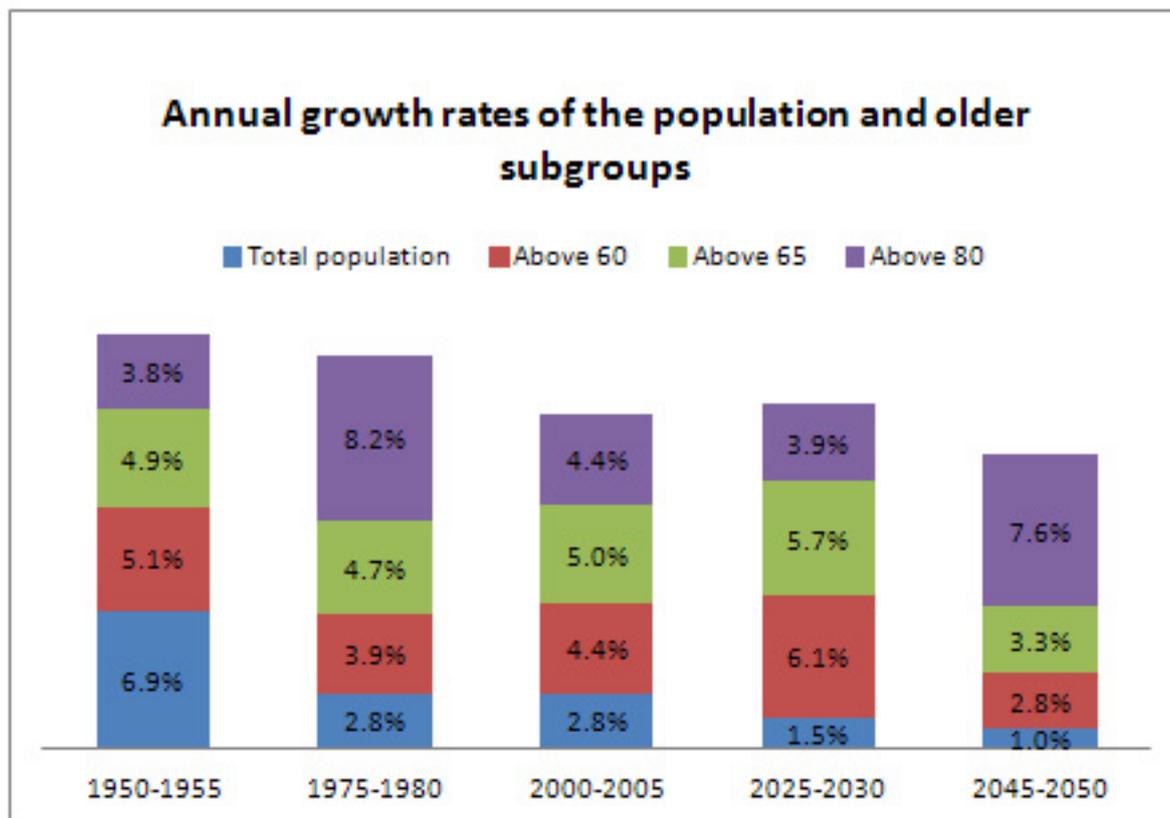
Population	1950 Thousand (%) ^b	1975 Thousand (%)	2000 Thousand (%)	2015 ^c Thousand (%)	2025 Thousand (%)	2050 Thousand (%)
Total	472.5	1 936.7	4 913.1	6613.6	8 666.1	11 709.1
+60	35.1 (7.4)	84.1(4.3)	223.3 (4.5)	406.2 (6.1)	609.2 (7.0)	1821.3(15.6)
+65	22.9 (4.8)	55.0 (2.8)	137.0 (2.8)	278.0 (4.2)	374.0 (4.3)	1315.2 (11.2)
+80	2.0 (0.4)	6.7 (0.3)	17.8 (0.4)	41.2 (0.6)	63.7 (0.7)	254.5 (2.2)
Males/Total	245.2	990.7	2553.9	3368.1	4444.1	5931.0
+60	18.8 (7.7)	41.0(4.1)	113.4 (4.4)	204.7(6.1)	300.7 (6.8)	878.8 (14.8)
+65	12.2 (5)	27.0 (2.7)	68.3 (2.7)	140.0 (4.2)	178.0 (4.0)	625.7 (10.5)
+80	1.1 (0.4)	3.0 (0.3)	8.5 (0.3)	20.2 (0.6)	28.6 (0.6)	109.7 (1.8)
Females/ Total	227.3	946.0	2359.3	3245.5	4222.1	5778.2
+60	16.3 (7.1)	43.2 (4.6)	110.0 (4.7)	201.5 (6.2)	308.6 (7.3)	942.6 (16.3)
+65	10.7 (4.7)	28.3 (3.0)	69.0 (2.9)	138.1 (4.3)	196.0 (4.6)	689.7 (11.9)
+80	0.9 (0.4)	3.7 (0.4)	9.3 (0.4)	21.0 (0.65)	35.2 (0.8)	144.8 (2.5)

a (World Population Ageing:1950-2050, 2002), (Department of Economic and Social Affairs, World Population Prospects: The 2015 Revision, Key Findings and Advance Tables, 2015)

b % of the total population c (DOS2015, 2015)

In practically all regions of the world, the older population is growing faster than the total population. Jordan is no exception; as this fast growth is more noticeable in the very-old elderly (+80) where their number has grown by 6.6% yearly versus 3.1% yearly growth of the total population in the past few years. Further, it is expected by the year 2050 that the total population will double, reaching 11.7 million, while the older people's population (+60) is projected to expand by more than eight times reaching 1.85 million which makes up 15.8% of the population. Noteworthy, these growth rates of the older population in Jordan are projected to be higher than they are for the rest of the world. (United Nations, 2015)

Figure 2: Annual growth rate of the population and older people subgroups



(Profiles Of Ageing 2015, 2015), (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

Figure 3 (next page) shows the change that the population age structure has witnessed in the past three decades. The most important feature of this change is definitely the decline in the percent of children (individuals under the age of 15 years) as well as the increase in the proportion of the working age group (15-64 years).

1.2 Determinants: decline in fertility and improvements in life expectancy:

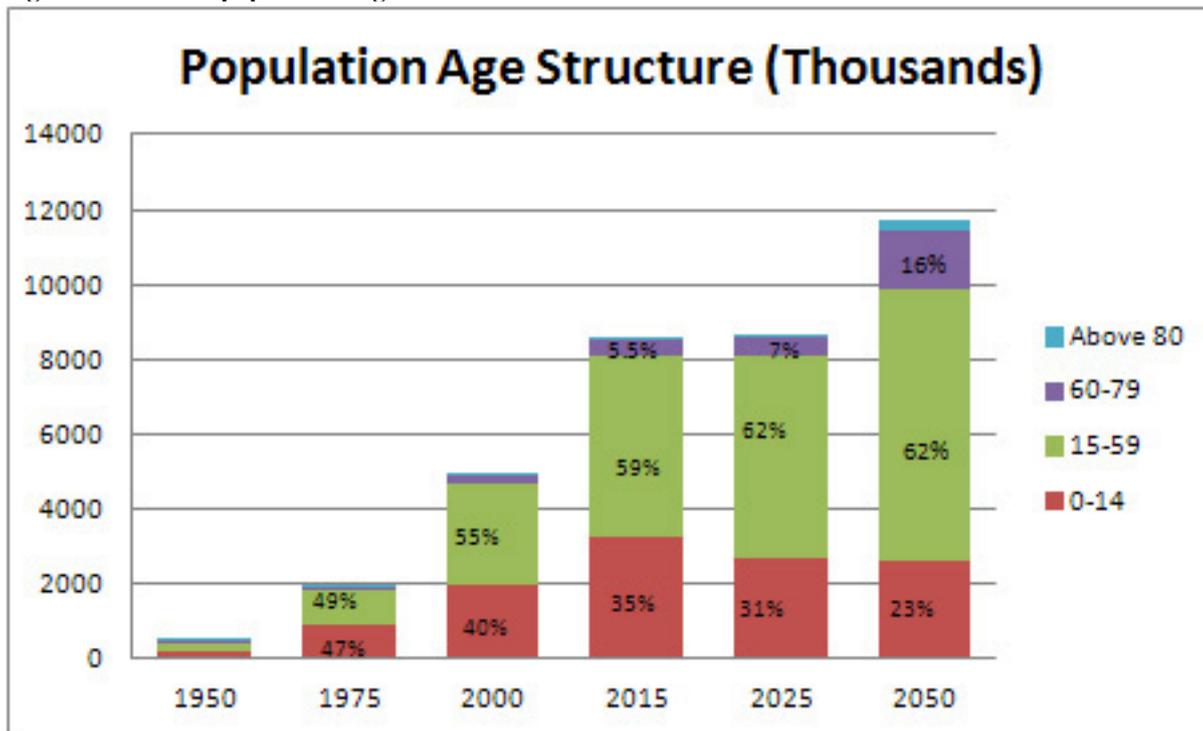
Population growth is a natural result of Jordan's mortality and fertility transition. International migration is also a contributing factor in changing a populations' structure. In fact, the immediate cause of population ageing is fertility decline that, along with increases in longevity, is producing substantial shifts in the population age structure, so as the share of children is shrinking while that of older persons continues to grow. (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

In Jordan, data in Figure 4 show that the total fertility rate (TFR) has declined steeply in the past century, with 50% reduction from 7.38 births per woman in 1975-1985 to 3.60 births per woman in 2010-2015. (Statistics D. o., JPFHS 2002, 2003), (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

The main factors behind this decline include an increase in the rate of contraceptive use among couples and an increase in the age at first marriage. This is due to the increase in education opportunities for females, which has led to a decrease in the percent of married women (15-49 years) who are likely to become pregnant and reproduce. (Council T. H., 2009)

Despite these declines in the TFRs, they remain higher than the global rates (2.52, 2.39, and 1.97 children per woman in the years 2010-2015, 2025-2030, and 2095-2100; respectively) and reproduction continues to remain an important determinant of population change and rapid growth in Jordan and explaining the main reasons behind doubling of the population in the year 2050. (Council T. H., 2009) (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017).

Figure 3: Jordan's population Age Structure 1950 to 2050



(DOS2015, 2015), (World Population Ageing:1950-2050, 2002)

When it comes to death rates, Jordan has outpaced its geographical neighbours in increases in life expectancy, due to remarkable developments in the health sector. In numbers, life expectancy at birth has risen from 43.2 years in the second half of the last century to 73.8 in the period 2010-2015. Furthermore, it is projected to approach 78.9 years in 2050. Table 4 summarizes trends in life expectancy in Jordan, and Figure 4 shows the trends in life expectancy and fertility rates in the period 1950-2100. (Nations, Prospects of Ageing with Dignity in the Arab Region, 2017)

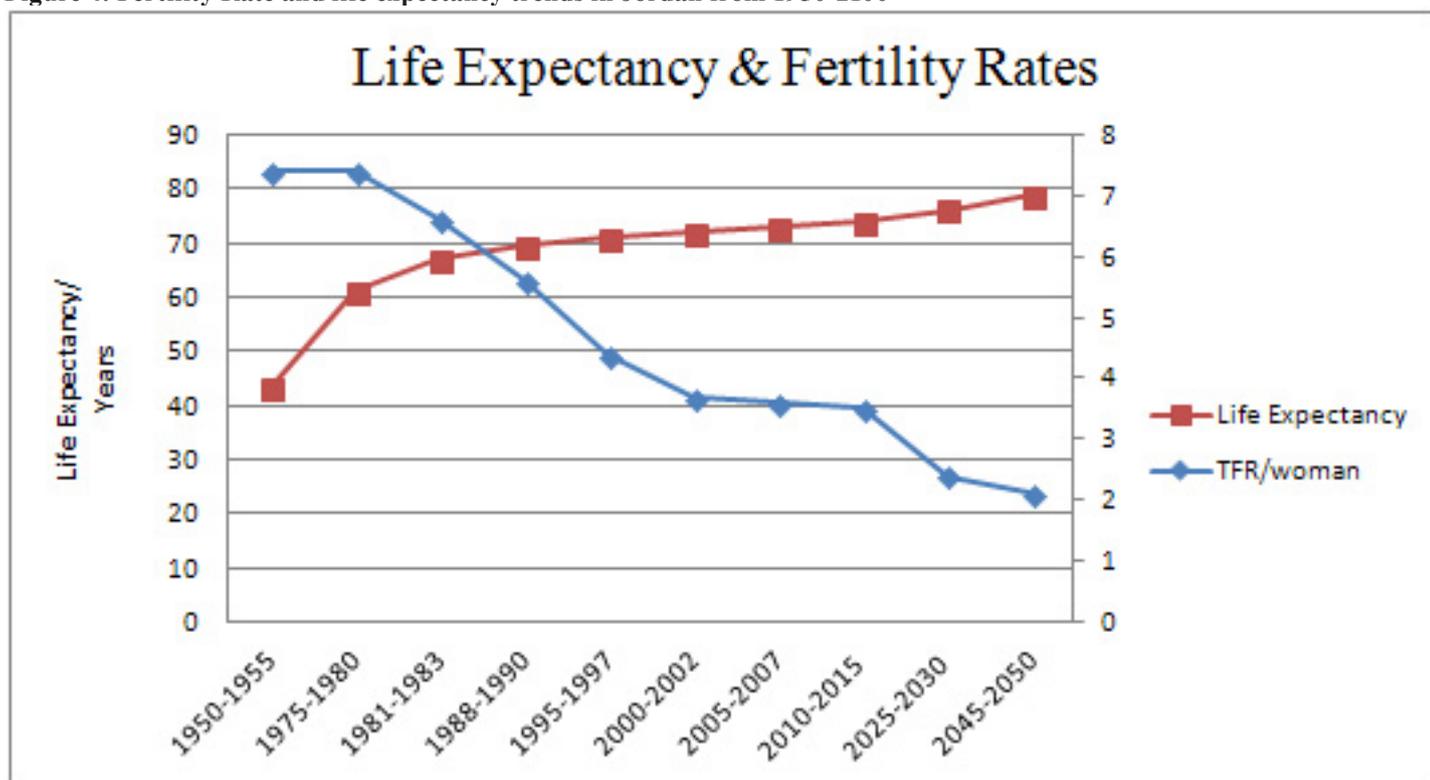
The report published by the United Nations in 2017 shows that significant gains in global life-expectancy-at birth have been achieved in recent years rising from 69.1 years to 70.8 years in the past decade. Moreover, global life expectancy- at birth is projected to further rise to 76.9 years in 2045-2050, which is less than what is expected for Jordan. (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

Table 3: Life expectancy in Jordan in the period 1950-2050

	Age	1950-1955 ^a	1975-1980 ^a	2010-2015 ^b	2030-2035 ^b	2045-2050 ^b
Both sexes	At Birth	43.2	61.2	73.8 (74.1 ^c)	76.8	78.9
	60	--	--	19.0	20.7	22.1
	65	--	--	15.2	16.7	17.9
	80	--	--	6.4	7.2	7.9
Females	At Birth	44.3	63.0	75.5 (75.9 ^c)	78.6	80.5
	60	--	--	20.2	22.0	23.3
	65	--	--	16.2	17.9	19.1
	80	--	--	6.8	7.8	8.5
Males	Birth	42.2	59.4	72.2 (72.5 ^c)	75.1	77.4
	60	--	--	17.8	19.4	20.8
	65	--	--	14.2	15.6	16.9
	80	--	--	6.0	6.6	7.2

a (World Population Ageing:1950-2050, 2002), b (Profiles Of Ageing 2015, 2015), (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017) ^c (EMRO)

Figure 4: Fertility Rate and life expectancy trends in Jordan from 1950-2100



(World Population Ageing:1950-2050, 2002), (Statistics D. O., 1977), (Statistics D. o., JFFHS 1983, 1983), (Statistics D. o., JPFHS 1997, 1998), (Statistics D. o., JPFHS 1990, 1992), (Statistics D. o., JPFHS 2002, 2003), (Statistics D. o., JPFHS 2007, 2008), (Nations, World Population Prospects: The 2017 Revision, Key Findings and Advance Tables, 2017)

2. Demographic impact of ageing, 1950-2050

2.1 The changing age structure:

As mentioned above, the changing age structure of the population brings with it many impacts across society, with especially important effects on labor supply, savings, and human capital. According to data published by the Higher Population Council in 2009, the demographic opportunity is reached during demographic transition when Jordan witnesses a decline in fertility rates paralleled with an increase in longevity. These, in turn, will lead to having the proportion of working age population at its greatest, and the proportion of dependency at its lowest. The outcomes of using such an opportunity include growing labor force and increased savings and GDP (economic growth period), decreased load on the country and services and lower dependency rates on working Jordanians. It is expected that Jordan will enter such a demographic opportunity in the year 2030, when fertility reaches its nadir at 2.1, and to last for 20 years. After that, our demographic transition is expected to enter the next stage where the young and working age groups move to retirement age hence increasing the dependency ratio again. (Council T. H., 2009), (NCFA, Jordan's National Strategy for Older Persons, 2008)

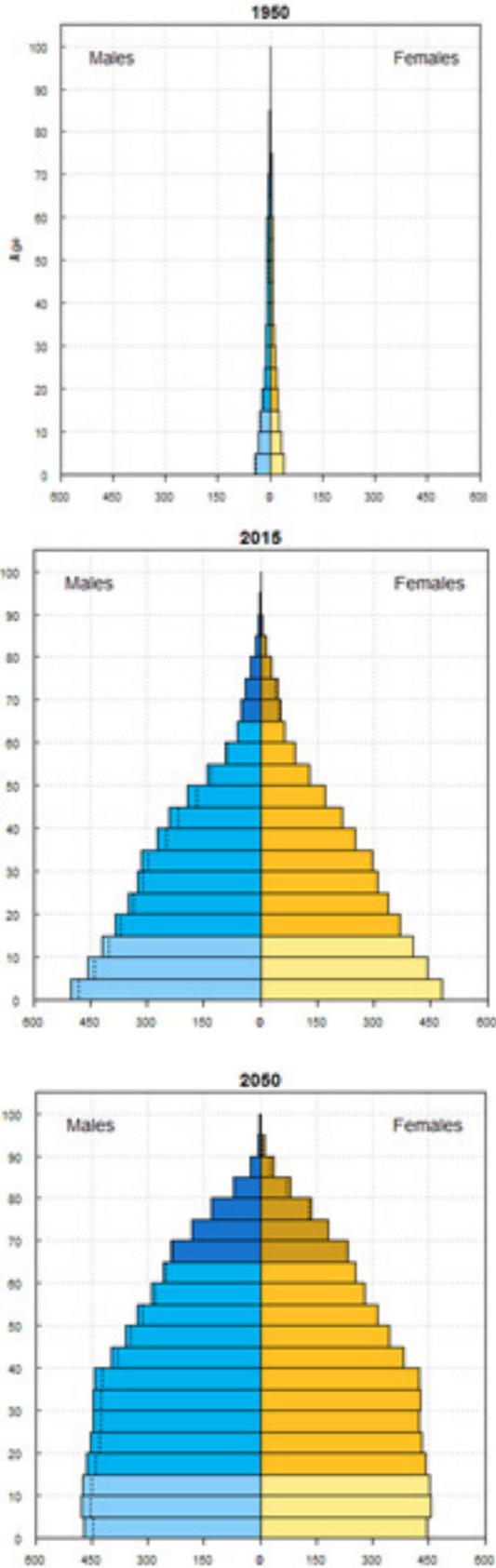
Figure 5 (next page) shows the Jordanian population's pyramids as published by the Department of Statistics.

2.2 Indicators of Population Ageing:

The **ageing index** is calculated as the number of persons 60 years old or over per hundred persons under age 15. Over the past 50 years, the ratio of people aged 60 or over to children younger than 15 has increased by only a small portion, from 16.3 per hundred in 1950 to 17.8 per hundred in 2015, yet it is projected to quadruple by the year 2050 reaching 69.1. By comparison, there will be 101 people 60 years or older for every one hundred children 0-14 years in the world in 2050, which is much higher than that expected for Jordan. (World Population Ageing:1950-2050, 2002)

The **median age** of a population, on the other hand, is the age that divides a population into two groups of the same size, such that half the total population is younger than this age, and the other half is older. During the past 50 years, the median age of Jordan's population increased by only about 2 years, from nearly 17 years in 1950 to nearly 19 years in 2000. Over the next half century, the increase will be approximately 13 years. By 2050, half of Jordan's population is projected to be more than 32 years old. This is lower than the world's median age, which is projected to be more than 36. It is also lower than the median age of the less developed countries (35), yet higher than the least developed countries (26.5). (World Population Ageing:1950-2050, 2002)

Figure 5: Jordan's Population Pyramids in the years 1950, 2015 and 2050.a



The **potential support ratio** is the number of people aged 20 to 64 per every person aged 65 or older. It is an alternative way of expressing the numerical relationship between those more likely to be economically productive and those more likely to be dependents. The number of workers per retiree is expected to drop globally by more than 50% over the next 50 years. By 2050, the number of workers for every person 65 or older is projected to be 4.1; ranging from 2.2 in the more developed regions to 10.2 in the least developed countries. Jordan is no different from the rest of the world, where potential support ratio is expected to drop markedly to 5.7 by 2050 with consequent political and fiscal pressures. (World Population Ageing:1950-2050, 2002)

The **parent support ratio** is a measure used to assess the demands on families to provide support for their oldest-old members. It relates the oldest-old to their presumed offspring, who were born when the older persons were in their twenties and thirties. So it measures the number of persons aged 85 years or over per 100 of those between 50 and 64 years. However, since the people in the numerator and those in the denominator are not necessarily related by kinship ties, the parent support ratio should be taken only as a rough indicator of changes in the family support system required for the oldest-old. (World Population Ageing:1950-2050, 2002) (Kinsella & Taeuber, 1993).

High levels of parent support ratio are expected in the world by 2050, more markedly in the developed countries and to a lesser extent in the least developed countries. The global ratio was 4 per hundred in 2000, and is projected to triple by 2050. (World Population Ageing:1950-2050, 2002).

In Jordan the ratio has increased minimally during this century and will continue to be lower than is expected in the least developed regions of the world. Tables 4 through to 7 summarize the above-mentioned ageing indicators in Jordan.

Table 4: Ageing Index

Ageing Index	1950	1975	2000	2015*	2025	2050
	16.3	9.2	11.4	17.8	22.8	69.1

(Profiles Of Ageing 2015, 2015), (World Population Ageing:1950-2050, 2002)
a (DOS2015, 2015)

Table 5: Median Age

Median Age (years)	1950	1980	2000	2015	2030	2050
	17.2	15.5	19.5	22.5	26.3	32.4

(Profiles Of Ageing 2015, 2015), (World Population Ageing:1950-2050, 2002)

Table 6: Potential support ratio (per person aged 65+)

Potential support ratio	1955	1980	2015	2030	2050
	10.2	14.9	16.0	12.4	5.7

(Profiles Of Ageing 2015, 2015) (World Population Ageing:1950-2050, 2002)

Table 7: Parent support ratio per 100 persons 50 to 64 years

Parent support ratio	1950-1955	1975-1980	2000-2005	2025-2030	2045-2050
	1.6	2.1	2.6	2.3	5.3

(Profiles Of Ageing 2015, 2015), (World Population Ageing:1950-2050, 2002)

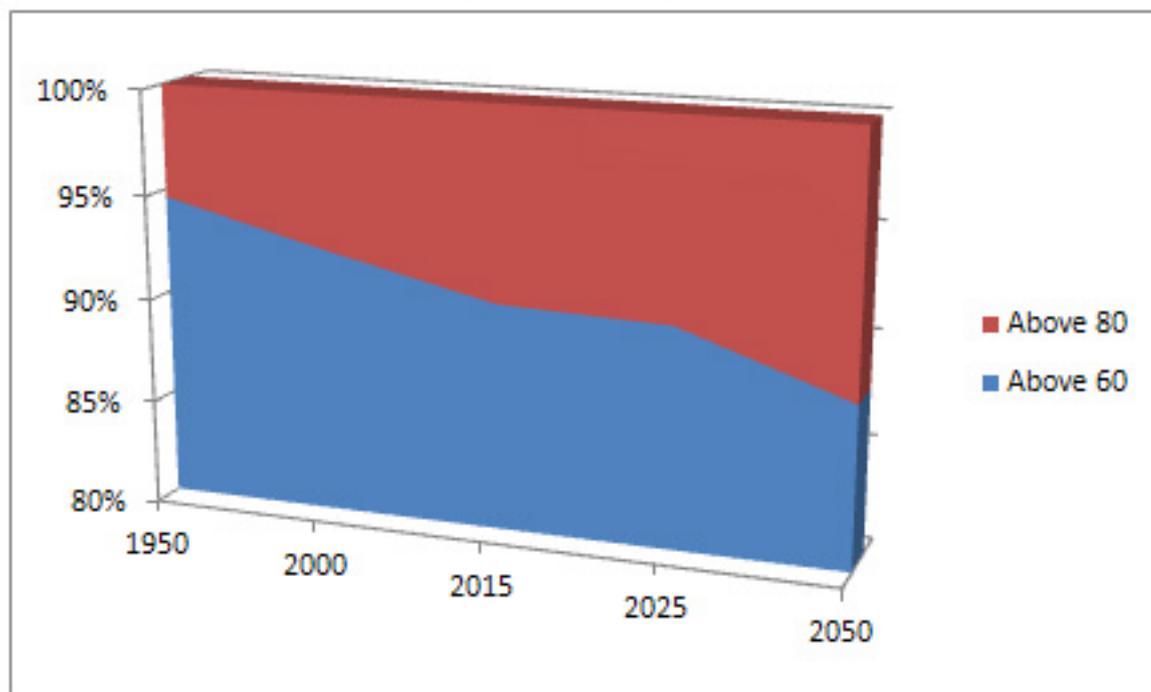
3. Characteristic features of the ageing population, 1950-2050

3.1 Ageing of the older population:

As the numbers and relative proportions of the older population increase, their demographic characteristics are also changing. The 80 and over age group is growing faster than any younger segment of the older population in all nations, regardless of their geographic location or developmental stage. Table 3 and Figures 2 and 3 above, show that the growth rate of the Jordanian population had slowed down in the past century and is expected to further go down to 1% per year in the period 2045-2050. This decline is offset by the increased growth rates of the older people population above the age of 60 and largely those in the age group above 80. This considerable growth rate of the very-old elderly is expected to increase their numbers six times from 18 thousand in 2000 to 255 thousand in 2050 corresponding to 8% and 14% of the total older people's generation, respectively (Figure 6- next page). Noteworthy, the percentage of the very-old elderly is still low, currently 0.6% of the total Jordanian population, compared to the developed world which has 3% of its population above the age of 80. (DOS2015, 2015) (World Population Ageing:1950-2050, 2002)

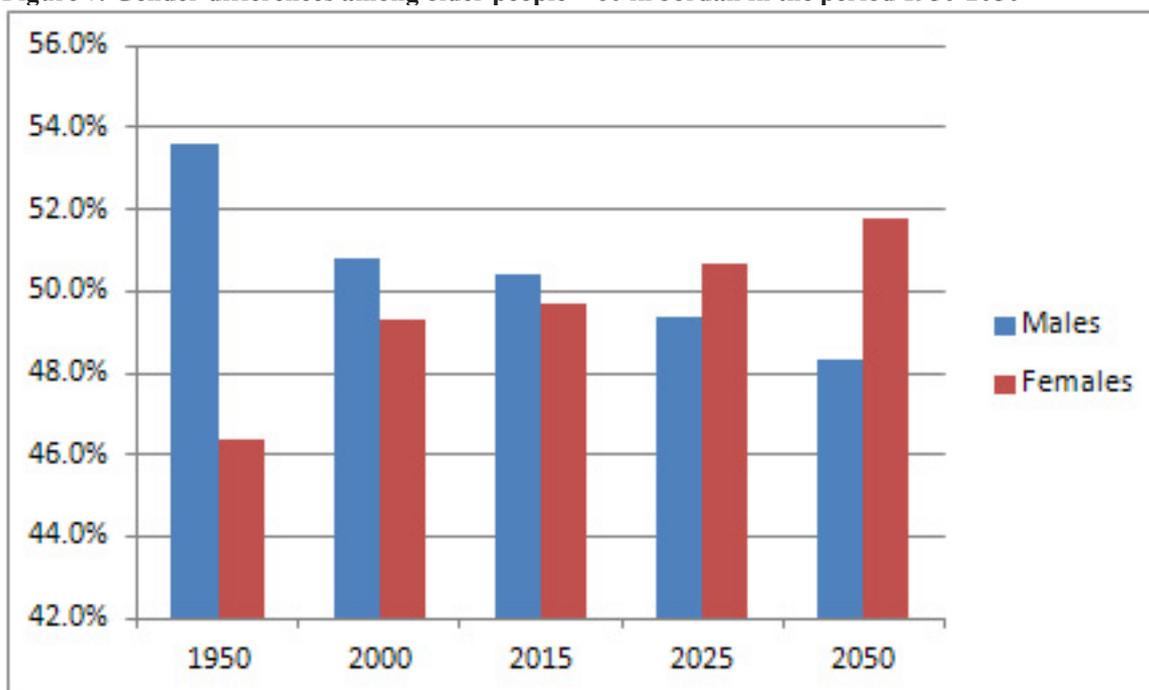
As for the centenarians, there are no adequate data about their numbers in Jordan. However, the UN- Department of Economics and Social Affairs has estimated their numbers in the year 2000 by 0.1 thousand, with a projected rise to 0.8 thousand in 2050. Needless to say, the great majority of centenarians (more than 75%) live in the more developed regions of the world, with a very small proportion living in the less developed countries.

Figure 6: Ageing of the older Jordanian population in the period 1950-2050



(World Population Ageing:1950-2050, 2002), (Department of Economic and Social Affairs, World Population Prospects: The 2015 Revision, Key Findings and Advance Tables, 2015)

Figure 7: Gender differences among older people + 60 in Jordan in the period 1950-2050



3.2 Feminization of ageing:

Because their life expectancy is greater than men's, women comprise a significant majority of the older population. The number of men per 100 women in Jordan (sex ratio) has come down during the past century from 115 for the +60-age group and 122 for the very-old elderly (+80), to 103 and 91, respectively. Currently, the Department of Statistics' latest census shows that men outnumber women in the age group 60 and above by 2 per 100 (Sex ratio= 102.16), whereas, sex ratio goes down to 95.8 in the age group +80. The projected changes in the coming few decades predict a sex ratio of 97 and 93 in the age group +60 during the years 2025 and 2050, respectively. The changes are more striking for the oldest-elderly where the expected ratio will be 81 and 76 in 2025 and 2050, respectively.

Regarding global gender differences, sex ratios at older ages are significantly lower in the more developed than in the less developed regions due to the large differences in longevity between genders that translate into very low sex ratios among the older population in the more developed regions. For instance, the global number of men per hundred women is projected to rise to 85 at ages 60 or over, and to 61 at ages 80 or over, by 2050.

3.3 Spatial dimension: the rural-urban differences:

Historically, rural-to-urban migration and immigration have contributed to rapid urban growth in Jordan. The recent international crises in Iraq and Syria have also affected urban growth in Jordan. Latest data from the Department of Statistics in 2016 show that the percentage of the population living in urban areas has increased by 13% between 1979 and 1994, reaching 83% in 2004 and 90.3% in 2016. Urbanization of Jordanian older people has also gone up from 44% in 1961 to 55% in 1979 and further to 80% in 2004. (Department of Statistics, 2012) (Recent Demographic Estimates for the Countries and Regions of the World, 1983)

4. Positive side of ageing

It is a universal fact that cultures, heritage, and religious norms dictate respectfulness toward individuals who have attained old age in any society, where family caregiving is considered fundamental. Jordan is no different as familial support among generations typically runs in both directions where older people are involved in financial and domestic help to their offspring, including childcare, where an unspoken system of obligations and duties is in place. On the other hand, it is the day to day and hands on care duties that are implicitly, and many times explicitly, placed on daughters or daughters in laws. (NCFJA, Jordan's National Strategy for Older Persons, 2008) (Hussein & Ismail, 2017) (Kamel, 2016)

Older parents are recognized as the source of wisdom and leadership, and are responsible for conservation of customs and traditions. Their role in raising grandchildren is also pivotal in light of increasing numbers of working mothers where 22%-33% of women in the age group 25-45 are economically active. (DOS2015, 2015)

There is a paucity of research studying family structure and dynamics in Jordan, but unpublished master dissertations addressing living arrangements of older people and analyzing their living experiences provide further insight. Ibrahim Gharaibeh

surveyed 312 community living older people in Amman in 2003, and concluded that most respondents showed a positive attitude and satisfaction towards their consultancy role in their families. Moreover, most of the study participants were getting pension coverage and they indicated that they support their families financially. They described the relationship between them and their extended family as being based on collaboration, understanding and mutual support. It was also shown that self-satisfaction was more prevalent among those living with their families. (Gharaibeh, 2003)

Hayfa Al Saleh interviewed 850 community living older people in Amman and Zarqa in 2002. Seventy six percent were satisfied with the help and support they were getting from their families, and the same percentage showed an atmosphere of respect to the old age where they spend most of their time with their family. She noted that the most common needs older people get through their families are housekeeping and help to get to their doctors' appointments. (Saleh, 2002)

Another master thesis by Sahar Mady in 2002 on 350 older women in Amman showed that the main tasks done by them are, in order of frequency, housekeeping followed by cooking, shopping, paying pills and consultancy roles in resolving conflicts among their siblings and relatives. 60% of those women were satisfied with the changing social roles associated with aging. (Mady, 2002)

These results emphasize the positive sides of ageing seen in the Jordanian community, although more recent and structured data studying older people's satisfaction rates are needed to better understand their social roles.

5. Implications of population ageing

Population aging is an inevitable global demographic process with profound economic, social, and environmental consequences affecting economies, living arrangements, and personal and professional aspirations. These domains are discussed below with a specific relevance to the Jordanian population.

5.1 Poverty and Income Security:

Over half of older people worldwide lack income security, and the number could grow to 1.2 billion by 2050.

In Jordan, studies have shown that older people were particularly vulnerable to sickness or disability. As they age, they are likely to become even poorer. Household Energy and Expenditure Data (HEIS) concluded that large numbers of children, low levels of education, unemployment, and non-Jordanian nationality are all associated with increased probability of being in poverty. (Household Expenditure and Income Survey 2008/2009, 2008-2009).

The Government of Jordan adopted its first "Poverty Alleviation Strategy" in 2002, followed by the National Agenda 2006-2015, that implemented its key strategic development directions of Jordan through the National Employment Strategy (2011-2020) and Poverty Reduction Strategy 2013-2020. The net result led to lowering the absolute poverty rate in the population from 21.3% in 1997 to 14.2% and 13% in 2002 and 2006, consecutively. It should be noted that the 2010 poverty rate of 14.4% should not

be compared to the previous rates as a new calculation methodology has been adopted to produce this figure. (UNDP, 2013) (Bank, 2004) (Elbers, 2003)

Unpublished data from World Bank Aspire show that 4.6% of the Jordanian elderly were poor in 2006, and more recent Department-of-Statistics' data show a higher rate of poverty among the older people at 6.6% in 2010. Unemployment further contributes to the problem as data from the 2015-census show that only 2.9% of the Jordanian workforce was made up of older persons +60; older males constituted 3.6% of the male workforce vs. 1.1% older females. (NCFA, The Analysis Report of the Evaluation of the Jordanian National Strategy for Senior Citizens (2009-2013), 2013) (DOS2015, 2015)

To complicate things more, the low average wage in Jordan coupled with the high prices of the various commodities and services, along with low GDP following the latest global economic crisis have led to a greater need and pressure on the social security systems in Jordan to help those subjected to indigence and poverty. These challenges have become even worse after the influx of the huge number of Syrian refugees in the past few years. (Awad, 2016)

Social protection systems in the Arab region are not well-developed and are mostly limited to workers in the public, military personnel or formal private sector. In Jordan, the engines are mainly governmental and they include the systems of Social Security Corporation (SSC), civil and military retirement pensions, professional associations pensions, Ministry of Social Development (MoSD), as well as some institutions and campaigns including inter alia Takiyet Um Ali (Food for Life), National Aid Fund (NAF), and National Zakat Fund (NZF). Private non-governmental engines are not well developed; they include Metlife Alico, and Al Nisr Al Arabi Insurance Company.

MoSD manages a range of social assistance services and benefits to poor, disabled, unemployed, older people, and other vulnerable groups. It "buys" beds in nursing homes for the older people, who need institutionalization and cannot afford it, and it implements an emergency cash transfer similar to NAF activities. This program is not linked to NAF assistance database and it might lead to duplicated efforts.

SSC has become one of the key players in providing large numbers of Jordanians with social protection, particularly those retired, ill, and unemployed. In order to help beneficiaries below the poverty line, particularly individuals who receive salaries

below JD 180 per month, SSC shares its data with National Aid Fund (NAF) who in turn complement the income of beneficiaries to a ceiling of JD 180 if eligible. (Ghaith Zureiqat, 2015)

Table 8 shows sources of pension coverage of Jordanian older people in the years 2009 and 2013.

Jordan's National Zakat Fund (NZF) is one of the oldest funds in the region. It is under the Ministry of Awqaf and consists of a NZF with headquarter operations in Amman and 210 voluntary Zakat committees throughout the country. The largest of the NZF programs are cash assistance, orphan cash assistance, occasional in-kind benefits, and rehabilitation assistance programs. If a poor person or family receives recurring cash assistance from NAF, he or she is not eligible to receive the minute Zakat assistance which is around 30-50 JOD (40-70 USD) per month (Fund, 2012)

The successive governments have made some changes towards social security reforms by directing all pensions to the SSC to be the main and the only body providing retirement pensions. The problem that many retirees face is that they (helped by their employer) have to pay for the SSC for 15 years, that makes 180 contributions, before they would be able to get a retirement pension at the age of 60 for males and 55 for females. If they were unable to pay the total amount of these contributions, they can "BUY" them ahead. Table 8 shows that 25% of senior citizens are not covered by retirement pensions. Further, the percentage of retirees who receive retirement pensions below the national poverty line reached 66%. These strict laws need revision to protect the poor older people especially those who are also unemployed and unable to "buy" pension. Laws also need to keep enrolling those older people in jobs that they are capable of doing, as only 2.4% of older people and 0.3% of older females were working in 2013. (NCFA, The Analysis Report of the Evaluation of the Jordanian National Strategy for Senior Citizens (2009-2013), 2013)

Collaboration is also needed between social security bodies like MoSD, NAF, NZF and other charity institutions that need to be involved on a more organized level in order to ensure more equal distribution of beneficiaries and to avoid duplication. What is concerning in the long run, though, is that current estimates forecast a cash deficit for the SSC by 2053. This deficit threatens social security of the older Jordanians and necessitates policies to prevent or even mitigate its consequences. (Performance, 2006)

Table 8: Pension coverage for older Jordanians

Source of Retirement pension	Percentage of older people covered in 2009	Percentage of older people covered in 2013
SSC pension	10.9%	12.2%
Total Civil and Military pensions	58%	62.5%
Total pension coverage from all resources	68.9%	74.7%

SSC: Social Security Corporation. (NCFA, The Analysis Report of the Evaluation of the Jordanian National Strategy for Senior Citizens (2009-2013), 2013)

In a nutshell, although Jordan has higher public social protection expenditure on pensions and other benefits for older persons than most of the Arab countries, the social protection system needs substantial reforms to make sure it covers all recipients as a right, including women and older people living in rural areas.

5.2 Health Services and increased disability:

The health situation in Jordan is one of the best in the Middle East due to a set of effective development plans and projects that included health as an important element and essential part of sustainable development. (Council H. H., 2015)

In common sense, proposed health strategies are regarded as successful when they are shown to make health coverage expansion, healthcare quality enhancement, and health cost minimization their high priorities. (Abu-Kharmeh, 2012).

Some of the major challenges of the health care system in Jordan include the increased demand for health services due to steady population growth and the influx of refugees, in addition to changing population structure due to increased proportion of the senior citizens with resultant increased rate of non-communicable diseases. Rising health care costs in light of the challenging economic situation should not be overlooked, as well.

Despite these challenges, the per capita total expenditure on health is 359 USD, and the general government expenditure on health as a percentage of the total government expenditure is 13.7%. Furthermore, the general government health expenditure makes 70% of the total health expenditure. This governmental contribution to health expenditure is one of the highest among countries of the Middle East and North Africa. (EMRO) (WHO, 2014)

Health services providers include the Ministry of Health, the Royal Medical Services, university hospitals (University of Jordan Hospital, King Abdullah University Hospital), and the Centre for Diabetes and Endocrinology and Genetics. The private sector includes private hospitals and diagnostic and therapeutic centers in addition to hundreds of private clinics. The international and charitable sectors provide services through UNRWA clinics, the UNHCR, King Hussein Cancer Center and charity association clinics. Of those, Ministry of Health (MOH) is the main provider of health services, followed by the Royal Medical Services. Civil Insurance Program (CIP) is a mandatory service provided by the MOH to cover all government employees (and their dependents), in addition to those receiving beneficiaries from the National Aid Fund. On the other hand, private health insurance is provided either by private insurance companies or by self-insured firms.

In 2006, the CIP has expanded to include those uninsured persons aged sixty years and above under the umbrella of health insurance in public hospitals and centers against a small nominal amount from each beneficiary (six dinars per month/8.4\$). These efforts have helped widening of the insurance coverage to include more seniors from all social classes including the financially well off, with a rate of coverage going up from 67.3% in 2010 to 73.3% in 2015. (Council H. H., 2015) (DOS2015, 2015) More laws were also changed to further expand health insur-

ance coverage, although the feasibility of which is still questionable. For example, the SSC's law in 2014 was modified to include health insurance for all SSC beneficiaries. Despite these changes, SSC's studies indicate that applying health insurance for SSC services will require a deduction of 17% from the beneficiary's salary, which makes the implementation of this law unfeasible (Ghaith Zureiqat, 2015).

In terms of accessibility and equality of care, it is noted that health care services are unequally distributed, where those living in the north of the kingdom have better chances compared to those living in the south. The same principle is also applied to people living in urban compared to rural areas (Abu-Kharmeh, 2012).

When it comes to analyzing the health situation of the Jordanian older people, results are scarce due to the absence of specific studies targeting older people, and reliance on the national and international health surveys, which cover the population as a whole and do not focus on the older people as the main category of research. The results of a study done by Taani indicate that advanced age was highly associated with poor health status that was associated with high utilization of health services. The study also showed that 86% of the sample suffered from at least one medical problem during the year prior to the study. In addition, the older people felt that they were not receiving adequate care for several of the health problems they suffered from. The results also indicated that females tended to suffer from more health and social problems than males. (I, 1995)

Further, a survey conducted by the Jordanian Ministry of Health and World Health Organization (WHO) in the year 2000, showed that only 10.5% of the sample perceived that their health was excellent vs. 26% who believed that their health was poor. More than a quarter of the sample suffered from an accident or illness that affected their abilities to perform activities of daily living. Interestingly, 75% of the sample had always had feelings of loneliness, anxiety, depression, and difficulty falling asleep in addition to being tired all the time. Another important point to mention is that 19% believed that health care was unavailable for a health problem they had at present, and the main reasons for not receiving care were the high cost of care (70.1%), absence of health insurance (14.3%), perceived poor medical treatment (7.8%) and treatment not available (7.8%). (Mahasneh, 2000)

Table 9 shows increased prevalence of chronic diseases among older people compared to the general population especially hypertension, dyslipidemia and diabetes. Disabilities are, also, more prevalent among Jordanian older people as per the latest 2015 Department-of-Statistics' Census. Tables 10 and 11 show the prevalence of ANY of the following disabilities involving: hearing, vision, memory and concentration, walking, dependence in any of the Activities of Daily Living (ADLs), or communication difficulties. The questionnaire used by the Department of Statistics 2015 is based on Washington Group on Disability Statistics.

Table 9: Prevalence of Selected Chronic, Non-communicable Disease Risk Factors

Chronic disease	Prevalence among +65 ^a (%)	Prevalence among population ^b (%)
Obesity	43.6 ^b	36
High Blood Pressure	53%	29.8
High Blood cholesterol	30	13.9
Diabetes Mellitus	25	19.5
Current smoking	19.4	-
Heart Disease	13	-
Asthma	10	-

a Higher Health Council (Council H. H., 2015). b CDC data 2012 (Al-Nsour M, 2012).

Table 10: The presence of functional disabilities and dependency among older age groups¹

Age Groups	Total number (Thousands)	Presence of any ² functional disability N in thousands (%)	Presence of severe functional disabilities and/or dependency N in thousands (%)
60-64	166.0	52.7 (32%)	14.5 (8.7%)
65-69	135.1	53.8 (40%)	17.5 (13%)
70-74	99.5	48.1 (48%)	17.6 (17.7%)
75-79	64.0	36.2 (57%)	15.4 (24%)
80-84	30.9	19.8 (64%)	-
Above 85	20.3	14.0 (69%)	17.9 (34.9%) ³
Overall +60	515.8	224.6 (43.5%)	82.9 (16%)

1 Calculated based on DOS data. (DOS2015, 2015)

2 Any disability includes any one or more of the following: hearing or vision impairment, mobility/walking difficulty, difficulty concentrating or remembering, needing help in Activities of Daily Living (ADLs) and communication.

3 Above 80

Table 11: The distribution of disabilities among older people in Jordan, 2015

Disability	Number in Thousands (%) ¹	Number of males in Thousands (%) ²	Number of females in Thousands (%) ²
Vision	140.6 (62.6)	69.5 (49.4)	71.0 (50.6)
Hearing/Speech	102.4 (45.6)	48.4 (47.3)	54.0 (52.7)
Mobility	161.1 (71.7)	69.0 (42.8)	92.1 (48.2)
Trouble remembering & concentrating ³	79.0 (85.2)	34.5 (43.6)	44.5 (56.4)
Dependence in ADLs ⁴	66.0 (29.4)	26.8 (40.6)	39.2 (59.4)
Communication with others	40.8 (18.2)	17.3 (42.3)	23.5 (57.7)
Total	224.6 (43.5)	107.3 (47.8)	117.2 (52.2)

(DOS2015, 2015); Department of Statistics has adapted the Washington Group on Disability Statistics

1 The percentage of the older people with the particular disability out of the total number of disabilities among the population

2 The percentage of each gender within the same functional disability group.

3 Only by informant without a formal diagnosis of dementia.

4 ADLs: Activities of Daily Living

Having known these relatively high rates of chronic diseases and disabilities, here comes the importance of the role of prevention and proper management of these diseases in order to prevent the development of complications that are the cause of disabilities in approximately 7.4% of the cases of the older people. That's why more money needs to be allocated for the development and improvement of primary health care services and for specialized home care services which lack coverage under public and private insurance in addition to their high cost if they were available. (Council H. H., 2015)

Fortunately, the Ministry of Health has developed treatment protocols to deal with some chronic diseases and prepared a guide to the families of the older people on how to deal with them, in addition to provision of training of health care providers on the proper healthy patterns and treatment of older people. These efforts seem optimistic but sadly are inadequate, as they ignore social care and physical activity partaking which, along with the preventive services, constitute a backbone of the effective interventions in achieving the wellbeing of our older people. Most importantly, the absence of formal geriatric training programs approved and licensed by the Jordan Medical Council hinders the process of delivering the best specialized, coordinated and comprehensive health care our senior citizens deserve, given the fact that geriatricians are the principal doctors defining the medical, social, physical and psychological needs of the older people, in addition to coordinating their care plans. (Hayajneh, 2015)

Summarizing the situation of the health sector, The National Strategy for Health Sector in Jordan 2015-2019 was prepared by the Higher Health Council with the support and cooperation of the WHO through a participatory approach with all health sectors in Jordan. Through analysis of the social, economic and health status of the Jordanian community, the strategy concluded that there are lots of challenges facing the older people in Jordan that should be considered by the strategic plans to maintain a decent quality of life for the older people. These challenges include financial destitution, the prevalence of disabilities and chronic diseases, insufficient number of specialized home care service providers, the lack of a legal framework to protect them as well as the high cost of these services if they are not available, in addition to the lack of their coverage in the government and private health insurance programs. Absence of medical and nursing geriatrics is also a major challenge as the few doctors who practice geriatrics in the country are trained abroad without obtaining any accreditation from the Jordan Medical Council or the Jordan Medical Association. They provide geriatric care individually and their number is less than 10 in the whole country! (Council H. H., 2015)

5.3 Living arrangements and family support:

Older people's care in the region is predominantly the responsibility of the families in light of the weak social protection systems. It is part of the Jordanian culture and religion that children care for their older parents and it is not acceptable to let them live alone. These traditional norms work against the proliferation of residential care for the older people and the general institutionalization of older people's care in the country, and the Arab region as well. (UNESCWA, 2017) (Hafez G, 2000, July)

In spite of the social norms, the latest DOS census showed that only 16.7% (324.4 thousands) of the total households (1941.9 thousands) in Jordan are headed by older people +60. Of those, 73.5% were males and 26.5% were females. (DOS2015, 2015)

Mahasneh found in her study in 2000, on 420 community older people living in Amman, that only 6.7% were living alone. Moreover, elders with long-term care needs, relied exclusively on their families to provide assistance and they rejected the idea of going to a nursing home. The few that accepted this level of care was a necessity and had severe physical disabilities and/or were neglected by their children. On the other hand, Haifa Ahmad Al Saleh showed in her unpublished Master thesis in 2002 that half of the study sample of community older people, living in Amman and Governorate of Zarqa, preferred to be institutionalized in order to not burden their children physically and economically. (Mahasneh, 2000) (Affairs)

Another interesting study in 2009 on 137 institutionalized older people representing all of the nursing homes in Jordan, found that 90% of the residents were single (never married, widow or separated) at the time of admission to the nursing home. Two thirds of those older people did not have adult children living in the country. This study reflects the changing socio-economic conditions of the Jordanian families where the family size has declined, and children who would normally live close to their parents are now working abroad leaving some older people to manage on their own. To complicate things more, there are other hurdles that include insufficient number of specialized home care services' providers, lack of a legal framework to protect them as well as the high cost of these services, and the lack of their coverage in the government and private health insurance programs. (Rawajfah, 2009) (Council H. H., 2015) (Musa T. Ajlouni, 2015)

The consequences of these hurdles leave the older people, especially those who are disabled and need a special level of care, facing a challenging situation as there are only ten licensed houses for older persons in Jordan that do not cover all the governorates especially South Jordan. Moreover, most of these homes are either privately run or are part of the voluntary sector. Luckily, the government, through Ministry of Social Development, defrays the residency costs for poor older persons, the sick or those unable to look after themselves. Despite this governmental help, the actual occupancy rate of these nursing homes does not exceed half of its capacity in most cases, as the monetary allowance paid by the government is less than the actual cost of residence. (Development, n.d.)

5.4 Vulnerability of the older people, particularly older women:

Identifying vulnerable older people and understanding the causes and consequences of their vulnerability are of human concerns and an essential task of social policy. Vulnerability is the outcome of complex interactions of discrete risks, namely of being exposed to a threat, and of lacking the defenses or resources to deal with a threat. (Schröder-Butterfill & Mariani, 2006).

Common threats that particularly affect older people include low levels of education and employment, weak pension coverage especially for employees in the informal sector, limited participation in the economy, poor access to the credit market, and weak financial security. Women, who constitute the larger group among older persons, are particularly vulnerable, given higher illiteracy rates among them, higher economic dependency, and increased susceptibility to non-communicable diseases. (Nations, Prospects of Ageing with Dignity in the Arab Region, 2017)

In numbers, Department of Statistics' latest census showed that 53.5% of older women were single vs. only 9.4% of older men. Local studies highlight the different vulnerabilities single older women face in Jordan, including economic, social and emotional, let alone the unmet health needs. Furthermore, illiterate women constitute 48.5% of the total illiteracy rate among older Jordanians vs. 17.9% among older men. To complicate things more, the presence of at least one functional disability was more prevalent among older women +60 compared to older men (117.2 thousand= 52.2%, vs. 107.3 thousand= 47.8%; respectively). (DOS2015, 2015)

In terms of economic vulnerability, Jordanian women make up merely a quarter of those insured with the SSC, and have lower insurable wages and, therefore, lower pensions. Data in 2009 and 2010 reveal that only about 12% of those in receipt of pensions were females and their average benefits were lower than males' counterparts were. (UNDP, 2013) (ILO, 2014)

5.5 Other relevant implications:

The absence of Jordanian seniors' involvement in the economic and political dimensions is to be acted upon. The retirement age in Jordan, as mentioned above, is 60 for males and 55 for females. This means that retirees are "young" older people who are, most of the time, physically, emotionally and mentally capable to continue working. Strikingly, only 12.8% of older persons are still working and 14.7% are unemployed but looking for jobs (DOS2015, 2015). Moreover, it is forbidden by the social security laws to continue working once the senior gets his/her pension paid. These laws render a good portion of older retirees spending their days bored at home, at a time they are still capable of being active and productive members in the society.

When it comes to political contribution and decision-making, data from the Independent Election Commission show that only 11.02% of those who voted in the last parliamentary elections in 2013 were +60. Although the percentage of seniors in the Cabinet of Ministers in 2013 went up to 52% (from 25%), the percentage of seniors in the Upper House of Parliament has declined from 81% to 78%.

Another important aspect that needs attention is the absence of adequate recreational services for the elders. Gharaibeh showed in his Master thesis that one of the most important problems the older population faces is boredom (Gharaibeh, 2003). In addition to cultural and social factors, entertainment and social interactions were the most important motives behind choosing to be institutionalized (Rawajfah, 2009).

Noteworthy, the Ministry of Social Development has set elderly-friendly regulations and very affordable fees for establishing day centers for the older people in Jordan. Despite these facilitations, there are only three non-governmental day-centers in the kingdom serving 140 older persons. The relatively high membership costs make it very unlikely to the average-income person to join them, in addition to the absence of the inspection and control roles of the Ministry of Social Development which rather sets the legislations and the criteria of approving establishing new older people's homes (Rights, 2017).

6. Policy response and measures

6.1 Policies and programs introduced by the Jordanian government:

Jordan's National Strategy for Older Persons is the first document endorsing older Jordanians' rights. It was prepared in 2008 by the National Council for Family Affairs (NCFA), in collaboration with the Ministries of Social Development and Health, the Greater Amman Municipality, the Nursing Council of Jordan, and the World Health Organization along with the participation of many national institutions, experts and representatives of care homes, and a group of older people. It stems from the Arab and Islamic values and teachings of the monotheistic religions, which is keen to respect older persons, in addition to global and regional conventions, strategies and action plans, and the Madrid International Plan of Action for 2002.

The strategy included priority areas and actions that need to be undertaken within the period of its implementation which was structured along the following three overarching pillars:

- **Pillar One:** Contribution of senior citizens to the development process
- **Pillar Two:** Advancement of health care for senior citizens
- **Pillar Three:** Provision of a supportive physical environment and social care to senior citizens. (NCFA, Jordan's National Strategy for Older Persons, 2008)

The strategy was followed by an "Analytical Evaluation Report of the National Strategy for Senior Citizens" launched in 2015 under the patronage of HM Queen Rania (Chair of NCFA Board of Trustees). The report concluded with a range of findings and recommendations which have guided the update of the strategy and its executive plan for the years 2018-2022. Furthermore, a set of applicable actions has been incorporated within to help achieve the strategy's envisaged goal in "the realization of a positive ageing that ensures senior citizens a life of dignity and active participation in building the society".

6.2 Highlight Measures taken since Madrid 2002:

Madrid Plan has spread the awareness on older people's issues all over the world. In Jordan, the initiative "Amman, age-friendly city" was launched in 2007 and currently most governmental and nongovernmental buildings have taken into consideration access of older persons, who also have priority for benches and seats in public gardens and squares. Moreover, the national public institution for social security has rehabilitated its buildings to better serve the older people and the Ministry of Transportation has upgraded its shuttles and public buses with special seats for them.

The Disabled Persons Act No. 31 of 2007 also caters for older persons with disabilities. They are able to access the services they require, on an equal footing with other age groups, depending upon their disability and without discrimination. Further, directives governing exemptions for special vehicles for the use of persons with disabilities set forth the conditions whereby such vehicles may be obtained duty free. These directives also accommodate older persons, without discrimination.

The National Strategy for Older Persons 2008-2012 was based mainly on the Madrid International Plan of Action on Ageing (MIPAA) and the local, Arabic and Islamic values.

In 2008, the modified Public Health Act No. 47 included an article (4 g) about the responsibility of the Ministry of Health to collaborate with related partners in order to implement programs related to the health of older persons and to monitor the institutions which provide them with care.

Article 3 (c) of the Domestic Violence Act No. 6 of 2008 states that, for the purposes of the Act, “the father or the mother of either or the spouses” shall be considered as members of the family. In most cases, the father or the mother of the spouses are older persons. One of the conditions of the law is that they should all be living in the same family home. Moreover, under article 54 of the Criminal Code (Act No. 16 of 1960), as amended, account may be taken of the age of anyone convicted for major or serious offences, and the court may suspend the sentence if the offender is an older person. The years between 2009 and 2013 witnessed a noticeable drop in the number of cases examined by the sharia courts involving support for older persons by their children. In fact, the number of such cases fell from 746 in 2009 to 530 in 2013, a drop of 29%. This is a testament to the success of the Personal Status Act and of efforts made to promote social solidarity between the generations.

In 2011, Jordan amended an important constitutional provision concerning older persons in article 6(5) of the Jordanian Constitution. The article, currently, states that “The law protects motherhood, childhood and the elderly and cares for youth and the disabled and protects them from offense and exploitation.” The aim of this provision is to shield older persons from violence.

In labor force; the Higher Education Council issued the Decree No. 295 in 2014 allowing persons over the age of 70 who hold the rank of professor to remain in their posts as full-time lecturers on an annual contract without administrative duties.

6.3 Part played by other players: NGOs, civil society; social networks of older persons, community-based organizations etc.:

The Civil Society Organizations (CSOs), NGOs and Charity Organizations help to a limited extent in the planning and provision of needed health services. Therefore, there is a need to involve these CSOs in decision making through finding national initiatives to facilitate dialogue between stakeholders and decision makers on the one hand and CSOs on the other. (Council H. H., 2015)

Major local NGOs implementing social protection:

1. Tkiyet Um Ali (TUA)
2. National Alliance Against Hunger and Malnutrition (NAJMAH)
3. The Islamic Centre Charity Society (ICCS)

Other strategies introduced by the different non-governmental national institutions addressing almost all of the issues pertaining to the older people in Jordan include: The Human Rights Annual Reports by the National Centre for Human Rights, and The Jordanian National Commission for Women which has updated its National Strategy for Women to include a section on older women under the theme “Human Security and Social Protection”.

Conclusions and Recommendations

Based on the above analysis of the situation of older people in Jordan, we propose the following suggestions to enhance the quality-of-life older adults deserve, and to enable them to continue live with their families, in their own homes in the community.

1) Mainstream ageing:

Mainstream ageing is the integration and inclusion of older people’s issues into wider national policymaking to build a “society for all ages”. For mainstreaming to be successful, it is critical that both policymakers and policy implementers view mainstream policy through the lens of the Madrid Plan priority directions and recommended actions. (Ageing in the Twenty-First Century: A Celebration and A Challenge, 2012)

In spite of the recent legislative developments towards the benefit of the older people, Jordan’s current society does not have sufficient awareness or the resources to support implementing these policies on ageing. In order to best meet the care needs of our older population, stakeholders must become intimately aware of the implications of the ageing population, and invest in strengthening Jordan’s capacity to provide them with an excellent quality of life in their later years. Important stakeholders that need to engage synergistically in meeting the needs of our older population include governments, civil society, private sector, communities, and families.

In order for Jordan to move forward with mainstream ageing, there are key issues that must be addressed. First, Jordan must fix its incomplete databases on older persons. Many organizations do not classify information by age and this should be encouraged. Further, many organizations fail to incorporate issues relating to older persons into their strategies or set performance indicators that are in line with the Jordanian National Strategy for Older Persons. Further, there is limited allocation of financial resources to the budgets of agencies dealing with older persons, an issue that will continue to be problematic as the population ages.

2) Recreational services:

To succeed in mainstream ageing, we must rectify the low levels of community involvement of older persons. There should be priority on developing recreational services for the elderly, whether based in the community or in nursing homes in order to increase stimulation and reduce depression, loneliness and isolation. Programs to encourage late-life community engagement, such as volunteer activity, attending various hobby-groups or religious-groups, should be pursued.

3) Health care:

To encourage successful ageing, health care should be accessible by all older adults. The lack of universal health insurance and pension systems currently limits accessibility by older persons and should be addressed. Jordan must also address the lack of specialized home-care services within the state system and the increased cost of such services in private sector institutions. Innovative practices to meet the care needs of our older population include establishing mobile units and outreach teams that provide health and care services to older people in their own home, in addition to improving accessibility to such care through establishing widely available community-based health-care services. Skilled nursing facility care should also be available for those who do require it. We recommend improving upon the currently limited private sector participation in supporting older people's nursing homes. To further improve health care, geriatric training should be incorporated in health-schools' curricula, in addition to residency training that needs to be established and accredited by the Jordan Medical Council. These efforts will dually lead to increased interest in addressing the paucity of geriatric research.

4) Voluntary sector initiatives:

Volunteer initiatives, usually staffed by volunteers and students, play an important role in providing basic health and care services to poorer older people. These might be expanded and encouraged by providing volunteer network infrastructure, developing policies and offering financial incentives for volunteers in the form of tax relief or other benefits.

5) Caregiver recognition and support:

The literature highlights the importance of flexible and supportive work environments in enabling people who provide informal care to participate in the labour market. Similar to maternity care; cash allowances, tax-breaks and relief and other financial support should be provided to those who cannot work fully due to their caregiver duties. Working caregivers, especially women, are particularly in need of support to help in their work-life balance. They often have multiple competing demands in addition to their caregiving role, which render them at heightened risk of caregiver burnout and frustration. Caregivers should, also, have ample access to other services, such as psychosocial support and respite care, in order to maintain their own health and wellbeing which, in turn, helps them better support their older ones.

6) Financial security:

All older adults should have access to pension funds to prevent impoverishment in older age.

7) Develop evidence-informed policies for older adults:

Encourage gender and culturally sensitive research that focuses on the older adult, through the provision of research grants and other incentives. This will help develop a sound evidence base to inform policy. Integrate older adults into all national development policies and programmes. Older persons should be included in national humanitarian response, climate change mitigation and adaptation plans, and disaster management and preparedness programmes.

8) Enhancing society's perception and support of older persons:

The key to changing the society is to start off from within to build a culture of equity and justice. The smallest unit is the family institution; hence educating the younger generations and grandchildren is the most important tool in changing the attitudes and perceptions of the upcoming generations towards our older persons. Fortunately, Jordanian culture has a high level of social support, which in turn, contributes genuinely to assist in setting up successful interventions that rely on the social context in Jordan. The main pillars of interest should include:

- Modelling the religious values of taking care of the older parents
- Enabling and educating children to support their older parents as much as possible in their own homes among their families. This role can be facilitated through governmental support that includes caregivers training, involving social workers and volunteers, and financial assistance to subsidize the expenses beyond those covered by health insurance plans.
- Enhanced monitoring and identification of elder abuse. For older adults in whom there is a suspicion of elder abuse or neglect, there should be a system for reporting and support available.
- Involving older parents in taking care of the grandchildren and emphasizing intergenerational interaction to reduce loneliness and boredom while increasing self-esteem and satisfaction.
- Further, public education and awareness campaigns on celebrating older adults, especially in October celebrating the International Older People Day, should be created.

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