Relation between Social Isolation and Depression on Nutritional Status of Elderly at Abu Hammad City

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Abstract

Background: Social isolation and depression in older adults are major public health problems and associated with increased morbidity and mortality, and negatively impact their nutritional status including malnutrition. Therefore, this study aimed to assess the relation of social isolation and depression on nutritional status of elderly at Abu Hammad City, Sharkia Governorate. Design: A descriptive design was used. Setting: This study was conducted at a village called " Bahtet" at Abu Hammad City, Sharkia Governorate. Sample: A purposive sample consisted of 125 elderly. Tools: Four tools were used for data collection: Tool I: A structured interview questionnaire composed of two parts; demographic characteristics, and medical history of the studied sample, Tool II: The Mini Nutritional Assessment. Tool III: Lubben Social Network Scale-Revised, and Tool IV: The Geriatric Depression Scale: short form. Results: 60.8% of the elderly were at risk of malnutrition. Also, 20.8% of them had normal nutritional status, while 18.4% of them were malnourished. 53.6% of the elderly had moderate level of social network, and 17.6% had high level. Moreover, 28.8% of them had low level. 48% of the elderly had mild depression, additionally 4.4% & 5.6% of them had moderate and severe depression respectively. The study indicated that there was a highly significant relation between nutritional status of the elderly and depression and social network (P= < 0.01). Conclusion: less than two thirds of the elderly were at risk of malnutrition, and the minority of them were malnourished. Additionally, more than half of the elderly had moderate level of social network. Moreover, slightly less than half of the elderly had mild depression. The study indicated that there was significant relation between nutritional status of the elderly and depression, Social network. Recommendation: Replicate the study on a larger group; selected from different geographical areas in Egypt to obtain more generalized findings in relation to current study.

Keywords: Elderly, Depression, Nutritional Status, Social Isolation.

Introduction:

Aged individuals have specific physiological, psychological and social frailties, due to the losses that occur throughout life, which make them susceptible to health state alterations, and their problems are marked by their diversity, chronicity and complexity **(Farag et al., 2023).**

Social networks tend to shrink in older age because of numerous life transitions such as retirement, relocation to supportive housing, and the loss of friends and partners through death. When physical and mental capacities decline, older people may find it more difficult to maintain their relationship or build new ones. These experiences can increase the risk of loneliness (dissatisfaction with the quantity and quality of social relations) and of social isolation (lack of social contact). Estimates of the prevalence of social isolation, among older people, range from 7 to 17%, while about 40% of older people report feeling lonely **(Abd Allah et al., 2019).**

As a result, poor functioning, increased perception of poor health, increased demand for medical services could increase the rate of morbidity and mortality in this vulnerable groups. Physiologic changes, as well as social and environmental factors such as poor socioeconomic status, social isolation, reduced independence, loneliness, and various chronic diseases, all contribute to the high prevalence of depression in older adults (**Chegini et al., 2022).**

Depression, social isolation in older adults may negatively affected the nutritional status among older adults and caused malnutrition. Malnutrition impacts quality of life by undermining individual autonomy to perform necessary, instrumental, and social activities of daily living. Malnutrition is defined as a state in which a deficiency, excess or imbalance of energy, protein, and other nutrients causes measurable adverse effects on tissue/body form (body shape, size, and composition), function, and clinical outcome. It is more prevalent and increases among older adults (**Schorr et al., 2021).**

Malnutrition among the elderly is one of the most growing concerns on this demographic shift. During the change into older years, often nutrition priorities change towards meeting and minimizing increased nutrient needs with fewer energy requirements and preventing lean muscle loss. Malnutrition in the elderly leads to protein-energy malnutrition, sarcopenia, and cachexia. The protein-energy malnutrition increases with age and the number of comorbidities **(Ahmad et al., 2021).**

Gerontological Nurses (GN) who work with the depressed, socially isolated, or malnourished elderly must use their assessment skills to measure the effect of disabilities on their patient's health and care **(Rodrigues et al., 2022).**

The gerontological nurses can also encourage older folks to keep in touch with friends and family by making simple phone calls. Volunteering can boost self-esteem and provide meaningful responsibilities for mildly depressed older persons. Nurses can encourage those senior citizens to investigate volunteer options **(Abd El-Fatah et al., 2022).**

Significance of the study:

Nutrition is an important element of health in the older population and affects the aging process. The prevalence of malnutrition is increasing in this population and is associated with a decline in: functional status, impaired muscle function, decreased bone mass, immune dysfunction, anemia, reduced cognitive function and increased mortality **(Rosselli et al., 2019).** So the current study aimed to assess the relation of social isolation and depression on nutritional status of elderly at Abu Hammad City, Sharkia Governorate.

Research Questions:

1. What are the levels of social isolation and depression among the studied elderly?
2. What is the nutritional status of the studied elderly?
3. What is the relation between social isolation and nutritional status of the studied elderly?
4. What is the relation between depression and nutritional status of the studied elderly?

Aim of the study:

The study was conducted to assess the relation of social isolation and depression on nutritional status of elderly at Abu Hammad City, Sharkia Governorate.

Subjects and Method:

Design:

A descriptive research design was used to conduct the study.

Setting:

The study was conducted at a village called " Bahtet"; that was randomly selected from 34 villages of " Abu Hammad center" which located in Sharqia governorate, Egypt. (using A multistage cluster technique to choose the sitting, according to the eligibility criteria, as followed :

i. First stage (selection of district): The study was conducted in Sharkia Governorate, which consists of 23 district. The researcher used simple random sampling technique to pick up district, it was Abu Hammad district, (consists of 34 main villages).

ii. Second stage (selection of village): The researcher picked up one village from the 34 main villages, (randomly called "Bahtet.("

iii. Third stage (selection of participants): The selected village was divided into several clusters. From each cluster five streets were selected randomly and finally building from these streets included (door to another door) to yield the desired sample.

Sample:

A total purposive sample of 125 elderly was recruited to participate in this study according to the following criteria:

✓ ***Inclusion criteria:***

1. Aged 60 years or more.
2. Both sexes.
3. Accept to participate in the study (Oral consent).

✓ ***Exclusion criteria:***

1. Elderly who are not able to communicate or having hearing problems.
2. Elderly having any mental or psychological disorders (except symptoms of depression and social isolation which diagnosed according to the scales in this research)
3. Elderly having malignant diseases or last stage diseases.

Tools for data collection:

Tool (I): Structure interview questionnaire: A structured interview questionnaire format was developed by the investigator after reviewing the lasted related literatures to collect the necessary data for achieving the study objectives, it included two parts:

- **Part (1): Demographic characteristics:** It was composed of 12 items such as age, level of education, marital status, previous occupation, and income.
- **Part (2): Medical history of the studied sample:** It was composed of five items to investigate the present and past medical history of the studied elderly such as , Do you suffer from any chronic health problems, if "Yes" what is this problem, do you take your medication regularly, do you take any drugs without the doctor's order.
- **Tool II: Lubben Social Network Scale-Revised (LSNS-R): (Lubben, 1988).**

The LSNS-revised (LSNS-R), a revised version with 12 items, it was developed by Lubben, (1988) and transelated into Arabic by the researcher. The LSNS-revised (LSNS-R) distinguished between the social network of family and that of friends was developed. The LSNS-R is composed of six questions regarding family (relatives) and the same six questions regarding friends. Each item can be graded from 0 to 5 points, and the degree of support of the social network can be graded from 0 to 60 points. Higher LSNS-R scores signify a greater level of support from the social network.

Scoring system:

Each item was evaluated regarding five Likert scale. Each item can be graded from 0 to 5 points, and the degree of support of the social network can be graded from 0 to 60 points. Higher LSNS-R scores signify a greater level of support from the social network. These scores were summed up and converted into a percentage score. It was classified into three categories:

- High for ≥ 75%
- Moderate for ≥ 60 to <75
- Low for < 60

Tool III: The Geriatric Depression Scale: short form (GDS: SF): (Sheikh &Yesavage, 1986). This scale was developed by Sheikh &Yesavage, (1986); as a basic screening measure for depression in older adults, and translated into Arabic by the researcher. The GDS: SF consists of 15 questions requiring "yes" or "no" answers.

Scoring system:

Of the 15 items, 10 indicate the presence of depression when answered positively, while the rest (question numbers 1, 5, 7, 11, 13) indicate depression when answered negatively. A score higher than five suggests depression. Scores exceeding ten are almost always depression.

Tool IV: The Mini Nutritional Assessment [MNA]: (Guigoz et al., 1997).

The MNA is a screening tool originally developed by **Guigoz et al., (1997),** and was translated into Arabic by the researcher. This is a simple to use, sensitive, reliable, and valid tool for rapid assessment of the nutritional status of older adults. Unlike the full MNA, the short form is faster to complete and equally reliable when compared to the full MNA. Considering its ease of administration, this was the preferred tool to assess nutritional status in the present study as it reduces participant burden. The scale is mainly used to assess the nutritional status for elderly people, it consisted of 18 questions in addition to the tall and the height of the elderly person.

Scoring system:

with score ranging from 0 to 30 (a score below 17 indicates malnutrition, a score from 17 to 23.5 indicates risk for malnutrition and ≥ 24 identifies patients with a good nutritional status) **(Vellas et**

al., 2006). These scores were summed up and converted into a percentage score. It was classified into three totally categories:
Normal nutritional status if total scores ≥ 24
At risk of malnutrition if total scores 17 to 23.5
Malnourished if total scores < 17 degree

Method:
An official permission was obtained using proper channels of communication. This was done through letters addressed from the Dean of the Faculty of Nursing, Zagazig University; explaining the aim and procedures of the study and asking for cooperation to the authored person (who was the village mayor) at the village Bahtet, Sharqia governorate, Egypt.The title and objectives of the study had been explained to them to obtain their conducting of the study to facilitate data collection.

1- Informed oral consent was obtained from the elderly after explaining the aim of the study and assuring them about the confidentiality of the information.

Field work:

- The researcher met with the elderly, introduced herself and explained to them the aim of the study to obtain their consent to participate in the study and gain their cooperation and confidence.
- The elderly were interviewed individually to collect the baseline data using all study tools. This interview took about 25 to 30 minutes.

Content validity:
The validity of tools had done through five expertise professors of Community Health Nursing Specialties, from different Faculties of Nursing. The tools were modified based on their guidance and views.

Reliability:

- Lubben Social Network Scale-Revised (LSNS-R): at Cronbach alpha 0.891
- The Geriatric Depression Scale: short form (GDS: SF) at Cronbach alpha 0.857
- The Mini Nutritional Assessment [MNA]: at Cronbach alpha 0.976

Ethical considerations
- Anonymity, confidentiality and privacy of the elderly were assured.
- Voluntary participation and right to refuse to participate in the study was emphasized to the subjects.

Statistical analysis:
Data entry and statistical analysis were done using SPSS 20.0 statistical software package.

Results:
Table (1): showed that, 46.4% of the studied elderly their age ranged between 60-<70 years, the mean of age was 76.68±6.34 year. As regard to gender 60.8% of the studied elderly were male. Regarding the previous work before retirement, 44% of the studied elderly were employee. Regarding current working, 85.6% of the elderly were not working. Also, 57.6% of the studied elderly their crowding index was 1-<2. Moreover, 44% of them their source of income was from pension.
Figure 1: demonstrated that, 53.6% of the elderly had moderate level of social network. Also, 17.6% of had high level. Moreover, 28.8% of them had low level.
Table (2):- illustrated that, 81.6% of the studied elderly were suffering from chronic diseases, 70.6% of them suffered from hypertension and 90.2% of them were taking drug treatment for these diseases regularly. 78.3% of them take 3-5 drug at the present time. Also, 69.6% of the studied elderly take medicines without consulting a doctor.
Table (3): illustrated that, 48% of the elderly had mild depression. Also, 14.4% & 5.6% of them had moderate and severe depression respectively. While 32% of them were normal.
Table (4): indicated that, 60.8% of the elderly were at risk of malnutrition. Also, 20.8% of them had normal nutritional status. While 18.4% of them were malnourished.
Table (5): presented that there were significantly higher frequencies between educational level, and total social network on total geriatric depression of the studied elderly at (p = <0.01). The frequency of total geriatric depression was not predicted by age, gender, and crowding index at (p= > 0.05).
Table (6): revealed that there were significantly higher frequencies between, current working, Living condition, and total geriatric depression on total social network of the studied elderly at (p = <0.01). The frequency of total social network was

not predicted by age, gender, educational level and crowding index at (p= > 0.05).

Table (7): indicated that, there was high significant relation between geriatric depression and malnutrition in the elderly, and social network at (P= < 0.01).

Table (8): showed that, there was highly significant positive correlation between total nutrition status of the studied elderly and their social network at p value <0.01. While there were negative correlations between geriatric depression score and nutrition status, social network at p value <0.01.

Table (9): showed that there were significantly higher frequencies between age, educational level, monthly income, total geriatric depression and total social network on total Nutrition status of the studied elderly at (p = <0.01). The frequency of total Nutrition status was not predicted by gender and crowding index at (p= > 0.05).

Discussion:

Concerning the socio demographic characteristics of the studied elderly; the current results found that the mean of age of the elderly was 76.68±6.34 year, also, more than half of the studied elderly were males, and the majority of the elderly were not working.

Those results are the same with the results of Figueiredo et al., (2021) as they found that the majority (89.4%) of their Brazilian elderly were retired and didn't work. Also, those results agreed with Domènech-Abella et al., (2019) in Ireland as they shared with their results that more than half (52.4%) of the studied elderly were males.

On other hand Alhalaseh et al., (2022) in their Japanese study reported more than half (50.8%) of their subjects were females. Additionally, the present results disagreed with Alam et al., (2021) in their study which done in Bangladesh as they revealed that the average age of the study population was 72.1 ± 7.0 years, and the number of female and male participants was equal.

Related to medical history of the studied elderly; illustrated that, most of the studied elderly were suffering from chronic diseases with most of them suffered from hypertension, and the majority of them were taking drug treatment for these diseases regularly. From the researcher's view this could be due to their aging; as with older age all physiological, psychological, immunity system declines so chronic diseases increased.

This current result is in similar with AbdElaziz et al., (2020) in their Egyptian study at Assuit city, in which they revealed the hypertension among most (74.3%) of their studied subjects as concerning their types of chronic diseases.

Depression is one of the most common illnesses in the elderly population. It is associated with increased risk of morbidity, decreased physical, cognitive and social functioning, and greater self-neglect. Thus, depression among elderly population is likely to be a major cause of disease burden in the future **(Pilania et al., 2019).**

Concerning the total levels of depression among the studied elderly; the current study illustrated that, slightly less than half of the studied elderly had mild depression. Also, the minority them had severe depression. From the researcher's view, those depressed symptoms could be explained due to the changes in their lives and also the elderly in Egypt have suffered as a result of rising costs of living especially after retirement, and shifting family priorities, and in some times old age connected with helplessness, dependency, widowhood, poor health, and lack of self-esteem which are risk factors for mental morbidity, and affect the presence of depressed symptoms.

This result is similar to the results of Noguchi et al., (2021), in their cross-national longitudinal study in England and Japan; in which they found more than half (59.7%) of their subjects had mild symptoms of depression. Also, this current results agreed with the Egyptian results of a study done by Elsayed et al., (2019) in which they revealed about half (50.1%) of their studied elderly subjects having mild level of depression.

On other hand, this present result not similar to the results showed by Al zorkany et al., (2021) in their Egyptian study at Gharbia Governorate, Egypt about "Screening for depression among geriatrics in the rural community"; they 16.5% were suffering from mild depressive symptoms, 47% were suffering from moderate depressive symptoms, and 25% were suffering from severe depressive symptoms.

Regarding Multiple Linear regression model, the present study presented that there was significantly higher frequencies between Educational level, and total social network on total geriatric depression of the studied elderly at (p = <0.01). The frequency of total geriatric depression was not predicted by age,

gender, and crowding index at (p= > 0.05). Those results are supported by Al zorkany et al., (2021) as they revealed that age group was not a statistically significant factor (P=0.165) with 88.6%, 86.4%, and 93.1% of 60–64, 69_65 and over 70 years old of age groups, respectively, suffering from depression.

Social isolation can be defined as the objective measure of physical absence of social interactions, relationships and support from family, friends or even society The effects of social isolation and loneliness on mental health contributes to the overall psychological impact on an individual. The common psychological impact of older adults during social isolation includes anxiety, boredom, depression and suicide **(Rodrigues et al., 2022).**

Concerning distribution of the studied elderly according to their total social network score; the current study demonstrated that, more than half of the elderly had moderate level of social network. Moreover, less than one third of them had low level of social network. From the researcher's view; this could be due to the changes done because of aging as during later life, social networks are unstable, often with severe disruptive changes such as bereavement, and are more likely to become smaller as compared to middle life. These disruptions are mainly caused by situational and personal characteristics such as retirement, ill-health, loss of a spouse, residential changes and other life events primarily associated with ageing.

Those results are similar to Figueiredo et al., (2021) as they found among their Brazilian elderly that more than half (57.4%) of them had moderate level of social network. On other hand, the present results aren't similar with Wu and Sheng (2019) in their pathway analysis in China; as they revealed the most (74.2%) of their elderly had low level of social network.

Regarding the distribution of the studied elderly according to their total malnutrition indicator score; the current results indicated that, more than half of the elderly were at risk of malnutrition. While, less than the fifth of them were malnourished. From the view of the researcher; This could be due to their aging as changes in the secretion and action of hormones that govern hunger, changes in gastrointestinal motility, taste loss and the functional decline of many systems can all impact the nutritional status as people get older and also could be explained by the present results as the all studied elderly suffered from symptoms of social isolation and the majority of them had symptoms of depression which indicated negative impact on the nutritional status .

Those results are similar to the results of Shuremu et al., (2023) in their study at Southwest Ethiopia as they reported about (17.4%) people were malnourished (MNA score less than 17) and (58.1%) at risk of malnutrition (MNA score 17─23.5), respectively. Also, A similar study in Nepal done by Sharma et al., (2021) found that 55.7% of elderly persons were at risk of malnutrition, and 19.8% were malnourished. Additionally, AbdElaziz et al., (2020) supported the present study with their results in Assuit city, Egypt; as they illustrated that 63.1% of studied sample at risk for malnutrition, and only 30.7% were well-nourished while 6.2% of them were malnourished.

On other hand, those results disagreed with Khalaf et al., (2023), in their Egyptian study at Assiut City; in which they presented that 41.0% of the geriatric club members were not at risk, at this time, for a malnutrition status.

Regarding the relation between social isolation, depression and nutritional status of the studied elderly; the present study indicated that, there was high significant relation between Malnutrition of the elderly and geriatric depression, Social network at (P= < 0.01).

In similar with those results , Yokoro et al., (2023) found the same results when doing a study in Japan to assess the association between social network and dietary variety among community-dwelling older adults as they concluded their research as Social networks were associated with dietary variety; social isolation was related to poor dietary variety among community-dwelling older adults, an association between social networks and dietary variety was observed among young-old older adults, women and those living with someone. Also, those results agreed with Asamane et al., (2020) as they found in their study that there was high statically significant relation between the level of social network and the nutritional status at p value= 0.004.

Furthermore, the current results agreed with Alam et al., (2021) in their study which done in Bangladesh as they revealed that there was highly

significant relation between malnutrition scale of the elderly and total geriatric depression scale at (P= < 0.01).

Regarding the correlation between the studied variables, there was highly significant positive correlation between total nutrition status of the studied elderly and their social network at p value <0.01; which mean when the social network improve and increase, the total nutritional status also will be improved and increased.

While there was negative correlation between depression scale and nutrition status, social network at p value <0.01; which mean when depression increased, the nutritional status and social network will be decreased .

Those results agreed with Schorr et al., (2021) in their cross-sectional study of a convenience sample of 201 Jewish and Arab older adults, aged 65 and over, representing the two main ethnic groups; as they found that there was negative correlation between depression scale and malnutrition, social network at (p value= 0.04 and r= 0.15). Also, Mautong et al. (2021) agreed with those results and found there was negative correlation between depression scale and anxiety, social network at p value= 0.0001 .

Conclusion:

Based on the results of the present study; it was concluded that less than two thirds of the studied elderly were at risk for malnutrition, while only minority of them were malnourished. Additionally, more than half of the elderly had moderate level of social network, and slightly less than half of the elderly had mild depression. The study indicated that there was a highly significant relation between nutritional status of the elderly and geriatric depression and social network. Moreover, a highly significant positive correlation was found between nutritional status of the studied elderly and their social network, while there were negative correlations between depression and nutritional status and social network.

Recommendation:

Based on the study findings, the following recommendations can be deduced:

- Replicate the study on a larger group; selected from different geographical areas in Egypt to obtain more generalized findings in relation to current study.
- Developing and conducting educational programs and psychological counselling for elderly with depression in the study setting to prevent malnutrition.
- Developing and conducting educational programs for elderly with social isolation in the study setting to prevent depression and malnutrition.
- Establish periodically nutritional assessment of elderly to identify at risk by using Mini-Nutritional Assessment scale as a simple and firm screening tool.
- Paying more attention regarding nutritional needs of the elderly should be provided to improve the health of elderly.
- Developing and implementing continuous health educational programs for elderly and their caregiver about nutritional need and measures to improve nutritional status and general health of the elderly

Acknowledgements:

We would like to thank all the elderly who participated in the study for their help and cooperation during the study period.

Table (1): Number and percentage distribution of the studied elderly according to their socio-demographic characteristics (n= 125).

Items	N	%
Age (year)		
60-<70	58	46.4
70-<80	46	36.8
≥80	21	16.8
Mean SD **76.68±6.34**		
Gender		
Male	76	60.8
Female	49	39.2
Working before retirement		
Worker	15	12

Farmer	22	17.6
Free business	10	8
Employee	55	44
Housewife	23	18.4
Current occupation		
Work	18	14.4
Not work	107	85.6
Crowding index		
<1	22	17.6
1-<2	72	57.6
≥ 2	31	24.8
Source of income		
Pension	55	44
Still working	18	14.4
Property income	24	19.2
Assistance from relatives	8	6.4
Social assistance	20	16

Table (2): Number and percentage distribution of the studied elderly according to their medical history (n=125).

Items	**N**	**%**
Suffering from chronic diseases?		
Yes	102	81.6
No	23	18.4
Types of chronic diseases do you have? (n=102)		
Hypertension	72	70.6
Diabetes mellitus	48	47.1
Heart disease	27	26.5
Respiratory diseases.	16	15.7
Kidney Diseases	5	4.9
Diseases of the digestive system	42	41.2
Neuropsychiatric diseases	14	13.7
Arthritis	4	3.9
Anemia	9	8.8
Do you take drug treatment for these diseases regularly? (n=102)		
Yes	92	90.2
No	10	9.8
If yes, How many medications are you taking daily regularly at the present time? (n=92)		
<3	11	12
3-5	72	78.3
>5	9	9.8
Mean SD	**3.92 ± 0.84**	
Do you take medicines without consulting a doctor?		
Yes	38	30.4
No	87	69.6

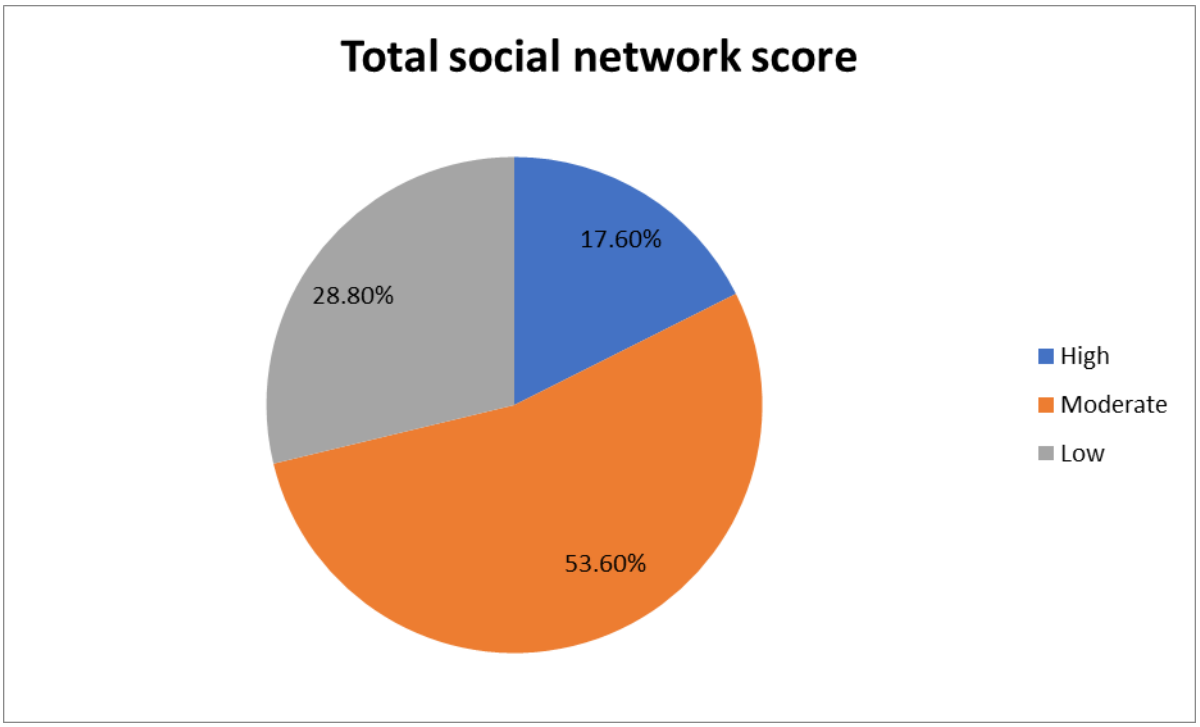

Figure (1): Percentage distribution of the studied elderly according to their total social network score (n=125).

Table (3): Number and percentage distribution of the studied elderly according to total geriatric depression scale short form (n=125).

Total geriatric depression scale short form	**N**	**%**
Normal	40	32
Mild depression	60	48
Moderate depression	18	14.4
Severe depression	7	5.6

Table (4): Number and percentage distribution of the studied elderly according to their total malnutrition indicator score (n=125).

Total Malnutrition Indicator Score	**N**	**%**
Normal nutritional status	26	20.8
At risk of malnutrition	76	60.8
Malnourished	23	18.4

Table (5): Multiple Linear regression model for geriatric depression.

	Unstandardized Coefficients		standardized Coefficients	**T**	**P. value**
	B		β		
Age	.127		.131	1.756	.101
Gender	.110		.117	1.128	.124
Marital status	.161		.176	2.451	.016*
Educational level	.405		.416	4.887	.001**
Current working	.242		.257	3.170	.013*
Monthly income	.217		.219	3.110	.015*
Living condition	.176		.184	2.174	.02*
Crowding index	.138		.141	1.601	.103
Total Nutrition status	.842		.902	6.124	.000**
Total social network	.854		.871	7.524	.000**
ANOVA					
Model	**Df.**		**F**	**P. value**	
Regression	10		11.10	.000**	

a. Dependent Variable: **geriatric depression**

b. Predictors: (constant) **Age, Gender, Marital status, educational level, Current working, Monthly income, Living condition, Crowding index, malnutrition and Total social network.**

Table (6): Multiple Linear regression model for social network

	Unstandardized Coefficients		standardized Coefficients	T	P. value
	B		β		
Age	.098		.109	1.754	0.18
Gender	.138		.132	1.124	.116
Marital status	.193		.202	2.791	.01*
Educational level	.135		.116	1.083	.182
Current working	.399		.409	4.730	.000**
Monthly income	.160		.179	2.607	.01*
Living condition	.406		.417	4.194	.000**
Crowding index	.129		.134	1.299	.148
Total Nutrition status	.917		.941	7.101	.000**
Total geriatric depression	.854		.871	7.524	.000**
ANOVA					
Model	**Df.**		**F**	**P. value**	
Regression	10		11.97	.000**	

a. Dependent Variable: **social network**

b. Predictors: (constant) **Age, Gender, Marital status, educational level, Current working, Monthly income, Living condition, Crowding index, malnutrition and Total geriatric depression.**

Table (7): Relation between Malnutrition scale, Social network of the studied elderly and their total geriatric depression scale short form (n=125).

Items		**Total geriatric depression scale short form**								**X2**	**P-Value**
		Normal (n=40)		**Mild (n=60)**		**Moderate (n=18)**		**Severe (n=7)**			
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**		
Malnutrition scale	Normal (26)	20	50	5	8.3	1	5.5	0	0	7.865	.009**
	At risk (76)	15	37.5	45	75	14	77.8	2	28.6		
	Malnourished (23)	5	12.5	10	16.7	3	16.7	5	71.4		
Social network	High (22)	20	50	2	3.3	0	0	0	0	9.174	.005**
	Moderate (67)	18	45	40	66.7	8	44.4	1	14.3		
	Low (36)	2	5	18	30	10	55.6	6	85.7		

***Significant at p ‹ 0.05. **highly significant at p ‹ 0.01.**

Table (8): Correlation between the studied variables.

Items	Total geriatric depression scale	Total social network score
Total nutrition status score	r = - 0.409 P = .000**	r = 0.391 P = .000**
Total geriatric depression scale		r = - 0.422 P = .000**

(*) Statistically significant at p<0.05--(**) highly significant at p<0.01

Table (9): Multiple Linear regression model for nutrition status

	Unstandardized Coefficients		standardized Coefficients	T	P. value
	B		β		
Age	.317		.334	4.180	.004**
Gender	.141		.132	1.807	0.091
Marital status	.173		.189	2.705	.013*
Educational level	.384		.371	4.730	.001**
Current working	.206		.221	3.082	0.011*
Monthly income	.308		.328	4.801	.000**
Living condition	.169		.178	2.017	.024*
Crowding index	.118		.121	1.427	.112
Total geriatric depression	.842		.902	6.124	.000**
Total social network	.917		.941	7.101	.000**
ANOVA					
Model	**Df.**		**F**	**P. value**	
Regression	10		12.059	.000**	

a. Dependent Variable: Nutrition status

b. Predictors: (constant) **Age, Gender, Marital status, educational level, Current working, Monthly income, Living condition, Crowding index, Total geriatric depression and Total social network.**

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