Effect of Non-Pharmacological Home Based Nursing Intervention on Depression among Elderly: combined Counseling and Physical Exercise

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ABSTRAC

Background: Depression is often misdiagnosed and treated late, and sometimes even neglected, especially in old age. Detecting and managing depression in older people through non-pharmacological nursing interventions is highlighted as a key role for nurses. **Aim:** This study aimed to evaluate the effect of a non-pharmacological home-based nursing intervention (combined counseling and physical exercise) on the management of depression among elderly people. **Design and setting:** A quasi-experimental research design with one group pretest-posttest was used to implement the current study at Kafr Tambedy village, Shebin Elkom district, Menofia governate, Egypt. **Subject:** A systematic random sample overall, 91 elderly with depression was selected after eligibility testing. **Tools for data collection:** I: interview questionnaire. Tool (II): The Geriatric Depression Scale (GDS) short form (III): Katz Index of Independence. **Results:** Studied elderly mean±SD age is 67.58±5.79. There was a statistically significant improvement in depression mean±SD score among elderly participants pre\post intervention (7.71±2.02 versus 5.17±2.08) with p=0.000, which supports the study hypothesis. A statistically significant improvement in depression levels among the elderly studied group is detected pre\post intervention at p= .000. **Conclusion:** The current study emphasizes that, non-pharmacological home-based nursing intervention (combined counseling and physical exercise) is an effective method for reducing mild to moderate depression among elderly participants. **Recommendation:** the findings of the current study indicate the need for the implementation of Non-pharmacological home-based nursing interventions (combined counseling and physical exercise) in different settings to confirm their effectiveness in the management of depression among elderly people.

Keywords: Elderly people, depression, Non-pharmacological home-based nursing intervention, exercise, and counseling.

Introduction:

The World Health Organization (WHO) appraised that the percentage of elderly people will nearly double to 22% between 2015 and 2050. Depression affects 7% of older people in general, and it is responsible for 5.7% of Living disabilities (YLDs) Yearly, so the World Health Organization (WHO) definite depression as a topic for World Health Day in 2017 **(World Health Organization, 2017a).** Depression can be defined as a condition that affects individual's thoughts, behavior, feelings, and sense of well-being. It is characterized by a low mood and aversion to action **(de Zwart et al., 2019).**

Depression is frequently not properly recognized, treated, or perhaps simply ignored. In addition, older adults with depression have worse functionality compared to those with other chronic medical illnesses **(World Health Organization, 2017b),** and use more medical services which raises the cost of treatment. Conversely, a diagnosis of some chronic diseases may result in symptoms of sadness, decreased life quality **(El Kady, & Ibrahim, 2018)**, discontent, social isolation, loneliness, cognitive decline **(McCall & Kintziger, 2013)**, and higher disability risk **(Mohammed et al., 2018).**

The WHO has identified several factors that may increase the risk of depression in the elderly, including hereditary factors, disabilities, pain, and chronic illnesses **(Prashanth et al., 2015; Mohammed et al., 2018).** Other socioeconomic factors such as older age, female gender, low education, being single or living alone, physical sickness, and

poor cognitive function have also been linked to depression and sub-threshold depression **(Vaccaro, et al., 2017).**

The crucial function of nurses in identifying and treating depression in older individuals is emphasized; as they offer more extensive interventions to manage depression in older persons **(Dreizler et al., 2014).** Non-pharmacological techniques are the primary and preferred nursing option for treating depression issues **(Holvast, et al., 2017).** Non-pharmacological nursing actions have no negative side effects and are generally easier, and cheaper. Non-pharmacological nursing interventions are chosen and implemented by nurses as independent nursing interventions **(Morimoto, et al., 2015; Ann N YAcad, et al., 2017).**

Additionally, there are several drawbacks to using antidepressants in older adults, including slow response times, side effects, a possible risk of dependence and tolerance, low compliance rates, and a high likelihood of drug interactions **(López-Torres Hidalgo & the DEP-EXERCISE Group, 2019; Toro Tobar, et al., 2019).**

According to **Sayied & Abd-Elaziz (2015)**, counseling sessions can help older adults feel less depressed and lonely. Also, research indicates that physical exercise can be advantageous for people with depression and may be comparable to antidepressant therapy. Physical exercise provides additional health benefits beyond a simple reduction in the symptoms of depression **(Morey, 2015).** There is a link between insufficient physical activity and older adults' experiences of anxiety and depression **(de Oliveira et al., 2019).** Consequently, it might be beneficial to take fewer medications and improve the disease as a whole **(Salazar et al., 2019).**

Significance of the study

Egyptians aged 60 and above are anticipated to increase from 7.2% to 10.9% by 2026 **(CAPMAS, 2015; El-Sherbiny, et al., 2016).** According to a recent study on the prevalence of depression among senior Egyptians, 62.7% of the sample was depressed **(Mohammed et al., 2018).** Generally, the topic

of depression has received little attention in the Arab world **(Ismail & Hussein, 2019).**

Depression is not only a significant global public health issue but has also emerged as a serious problem, particularly among the older population. To reduce depression in the elderly, additional studies are required to identify appropriate alternative interventions, and evaluate their effectiveness **(Pramesona, & Taneepanichskul, 2018).** Therefore, the present study aimed to evaluate the effect of non-pharmacological nursing interventions on depression management in older adults.

Aim of the study:

The present study aimed to evaluate the effects of a non-pharmacological home-based nursing intervention (combined counseling and exercise) on the management of depression among the elderly.

Research hypotheses:

Non-pharmacological home-based nursing intervention (combined counseling and physical Exercise) will significantly decrease depression levels among elderly people post-intervention.

Operational definition: the researchers define depression as having a geriatric depression score (GDS-SF) of more than 4.

Subjects and Methods

Research design: A quasi-experimental research design among one group pretest-posttest was used.

Setting and sample recruitment: The study was conducted from March to December 2019 in Kafr Tambedy village, Shebin Elkom District, Menofia Governorate, Egypt. A multistage random sample technique was used according to the following phases:

First step, a simple random sampling technique was used to choose one district of nine from the Menoufia Governorate. Shebin Elkom was the selected district.

The second step is to select a village belonging to Shebin El-Koum using the simple random sampling technique. Kfar-Tambedy was the chosen village in this area.

Third step, based on the geographic division of the village into four areas (west, east, north, and south), two clusters were selected out of four. The west and east clusters were selected.

The fourth stage included screening to recruit the calculated sample size (91) from the selected two clusters. Recruiting elderly participants for the study took place by systematic random sampling of homes in the selected areas (every two houses). Homes without elderly were neglected. The researchers screened 202 elderly people to collect the needed sample size (91).

Sample size:

By using the sample size calculator to assess the effect of Non-pharmacological home-based nursing intervention on depression among elderly, according to **Sayied & Abd-Elaziz, 2015** who explored an improvement in depression status (72%) among elderly after nursing intervention (counseling session), at a power of the study 90%, alpha error 0.05 and according to the following formula:

$$N = \frac{Z_{1-\alpha}2\ P\ (1-P)}{D_2}$$

$Z_{1-\alpha} = 1.96$,

$P = 0.72$,

D (absolute error) = 0.05

The estimated sample size was 91 cases.

Sampling

A systematic random sample of 91 senior males and females were recruited in the current study after eligibility testing.

Inclusion criteria: included elderly people of both sexes who were 60 years or older, lived permanently in the selected village cluster, agreed to participate in the study, and had a pretest depression score of more than 4.

Exclusion criteria: elderly with dementia, Alzheimer's disease, and bedridden or elderly people on antidepressant medication.

Tools of data collection:

Tool I: An interview questionnaire adopted by the researchers based on an extensive literature review. It contained:

a) Socio-demographic data: such as age, gender, educational level, income, marital status, occupation, and living situation.

b) Clinical information as well as lifestyle factors such as physical illness, smoking status, alcohol intake, drug abuse, and physical activity.

Tool II: Short form Geriatric Depression Scale (GDS-SF): adopted in 1986 by **Sheikh & Yesavage**, serves as a fundamental depression screening tool. There were 15 questions in it, requiring "yes" or "no" answers. Of the 15 items, 5 specify the occurrence of depression when responded negatively (questions 1, 5, 7, 11, and 13), while the rest indicate depression when responded positively. The scale was translated into Arabic and validated in 2006 by **Wrobel & Farrag**. The scale validity and reliability have been supported by both clinical practice and research **(McKenzie, & Harvath, 2016; Chaaya et al., 2008).**

Scoring:

The total score is 15, normality is shown by a score of less than 5, while depression was confirmed by a score of 5 to 15 to varying degrees (a score of 5-8 suggests mild depression, a score of 9-11 shows moderate depression, and a score of 12-15 indicates severe depression) **(Mohammed et al. 2018).**

Tool III: Katz Index of Independence in Activities of Daily Living (ADL): **(Katz et al., 1970; Katz, 1983)** this is the best tool for determining a client's functional ability. The instrument helps identify issues with daily living tasks and plan care accordingly. The Index rates how well people achieve the six tasks of bathing, dressing, using the restroom, transferring, maintaining continence, and feeding. Participants are given a yes/no rating for their independence in each of the six functions.

Scoring: The total score is 6. The subjects scored yes or no for independency in each

of the six tasks. A score of six denotes full function, a score of four specifies moderate functional impairment, and a score of two denotes severe functional impairment. The tool is successfully used with senior citizens in the community and in all care settings **(Badr & Shaheen, 2016; Greenberg & McCabe, 2018).** Cronbach's alpha for the valid Katz index in older Turkish people was = 0.83 **(Arik et al., 2015).**

Pilot Study: The study questionnaire was evaluated as a part of a pilot study to ensure clarity, reliability, and applicability. A pilot study was conducted on 10 % of the sample. The questionnaires were clear and relevant, and there weren't any modifications carried out on the questionnaires. Therefore, this pilot sample was involved in the study sample.

Content validity and reliability: the tools were submitted to a jury of two experts in geriatric nursing and one expert in psychiatric nursing to evaluate their content validity. Based on the scientific jury's opinions, the tools' format and consistency were valid. In terms of the reliability of the study tools, Cronbach's alpha coefficient for all tools was 0.89, the coefficient (Cronbach alpha) for (GDS-SF) was 0.88, and regarding Katz ADL, Cronbach's alpha reliability value was 0.87.

The Field of Work: The Ethical Committee, Faculty of Nursing, Menofia University, approved this study. Official Permission to conduct the study was obtained from the dean of the Faculty of Nursing and then the director of Kafer Tambedy's health unit before data collection. The study began from March to December 2019. The researchers assigned 91 elderly participants to the intervention program. At the time of the study, the Kafer Tambedy health unit nurses announced the research topic to maintain elderly clients' cooperation and facilitate home visits.

The study's aim was explained by the researcher to secure informed consent before collecting data. The schedule for data collection and program implementation was four days a week. The program implementation included five sessions, once per week for every elderly participant.

Phase 1: Assessment phase:

During this phase, informed consent was secured for completing data collection and recruiting in the intervention program after an explanation of the study's aim and objectives. All participants were interviewed at their homes. The researchers used the study tools to assess baseline data (pretest) for further comparisons of the effect of the intervention program on elderly' depression. The average time for the completion of each participant interview was around 30 minutes. The researchers schedule four days per week for data collection and program implementation. This phase took about eight weeks.

Phase 2: Planning phase

This phase aims to develop a home-based non-pharmacologic nursing intervention program (combined counseling and physical exercise). It was designed in the Arabic language with colored brochures based on relevant literature reviews. The contents of the intervention program include:

A) Counseling session on:

- Normal physiological and psychological changes associated with aging

• Depression in the elderly.

• Proper nutrition, adequate sleep, and smoking cessation.

• Stress management, coping strategies, problem-solving, and increasing the self-esteem of the elderly.

• Relationships within the family, social life, religious activities, and recreational activities.

2. Physical exercise.

Phase 3: Program Implementation:

The intervention was conducted over 5 sessions utilizing several educational techniques (lecture, discussion, role play, and demonstration) with photos, videos, and

guiding brochures that were developed in the planning phase.

The general objective of the program is to evaluate the effectiveness of a non-pharmacological nursing intervention program (combining counseling and physical exercise) in managing elderly depression.

A home-based non-pharmacologic nursing intervention (combined counseling and physical exercise) program: The implementation of the program was through personal sessions at participants homes once a week. Each session lasted about 40 minutes. Before sessions, suitable teaching aids were prepared specially for the program. In these sessions, researchers started by greeting the participating elderly and providing an overview of the session topic. At the end of every session, the researcher made a summary, answered the elderly questions, and took studied elderly feedback. The next session also started with greeting the participating elderly, summarizing the previous sessions, and assessing practice.

First session: This session aimed to promote the participants researchers relationship and provide a simple explanation of normal changes during the aging process. The researchers provided information about normal physiological and psychological changes of the elderly, and how to cope with common related problems.

Second session: This session aimed to provide the studied elderly with clear information about older adult depression. The session included the following: depression definition, symptoms, impact on health and immune system, quality of life and health-related problems, treatment options, and health services for depressed people. The researchers discussed with the participants the personal signs of depression and the management goal.

Third session: this session aimed to improve elderly people' physical health and lifestyle, including healthy nutrition, nutritional requirements, good sleep, and avoiding passive and active smoking.

The fourth session: aimed to facilitate expressing feelings, improving self-control, relaxation, promoting elderly self-esteem, and improving social life and life enjoyment through open discussion on a positive aspect of one's life with an appreciation of life achievement and teaching elderly clients problem-solving, coping strategies, meditation, and deep breathing. The researchers encouraged elderly participants to improve family and friend relations, recreational activities, religious activities, and social activities. Discuss the importance of relative and friend relationships, the dangers of loneliness on elderly psychological health, and how to promote social life.

Fifth session: This session aimed to put the elderly on an exercise program at home to increase physical activity and improve the mood of studied elderly through at least 30 minutes of regular activity at moderate intensity 3 to 5 times per week, including flexibility and balance strengthening exercises and walking. The researcher explained the importance of regular exercise to elderly health and mood improvement, suitable exercises, how to perform them, a suitable time for exercise, how to warm up, and how to cool down and relax.

Phase 4: Evaluation of Home-based non-pharmacological nursing intervention (combined counseling and physical exercise) Program: A telephone call to all participants was made to encourage them to comply with the intervention program after 3 weeks of intervention. Evaluating the effect of the program on elderly participants' depression was 6 week post intervention. All elderly participants complied by the end of this phase, this phase took about five weeks.

Ethical considerations

• The Ethical Committee, Faculty of Nursing, Menofia University, approved this study. Official permission to conduct the study was obtained by the researchers from the dean of the Faculty of Nursing and the director of Kafer-Tambedy health unit before data collection.

• Elderly informed consent was obtained after clarification of the study's aim and the participation was voluntary.

• The study's withdrawal rights were safe guarded.

• The privacy of the participants was respected and data confidentiality was preserved.

• There were no risks to the participants in this study, and the confidentiality of any obtained information was guaranteed. Participating subjects were also assured of anonymity and that their data would only be used for research purposes.

Statistical Analysis:

All of the collected data were statistically analyzed using SPSS version 22.0 for Windows. Qualitative data were expressed using frequencies (numbers) and relative frequencies (%), whereas quantitative data were expressed using the mean and SD. The Chi-square test and paired t-test were used to compare the percentages of the different variables. Statistical significance was defined as having a P-value < 0.05.

Results

Table (1) illustrates that the mean±SD age of the studied group was 67.58± 5.79, and the highest percentage of them (61.5%) were females, widowed (60.4%), illiterate (68.1%), not exercising (96.7%), not working (69.2%), and lived with their families (95.6). The largest percentage (63.7%) of the studied sample stated that their income was enough. All of them said they were not addicted to drugs or alcohol. Regarding dependency level, 58.2 of them were totally independent.

Figure (1) shows that 60.4 % had mild depression and 39.6% had moderate depression.

Figure (2) reveals improvement in the studied elderly depression level post-intervention. As 48.40% of them turn to normality post-test, and 8.80 % had moderate depression post-test compared to 39.60% at the pretest

Table (2) reveals a decrease in depression mean±SD score among elderly studied group pre\post intervention (7.71±2.02 versus 5.17±2.08) with statistically significant improvement at p=0.000.

Figure (3) presents an improvement in practicing exercise among studied elderly post-intervention, whereas 67% of the elderly

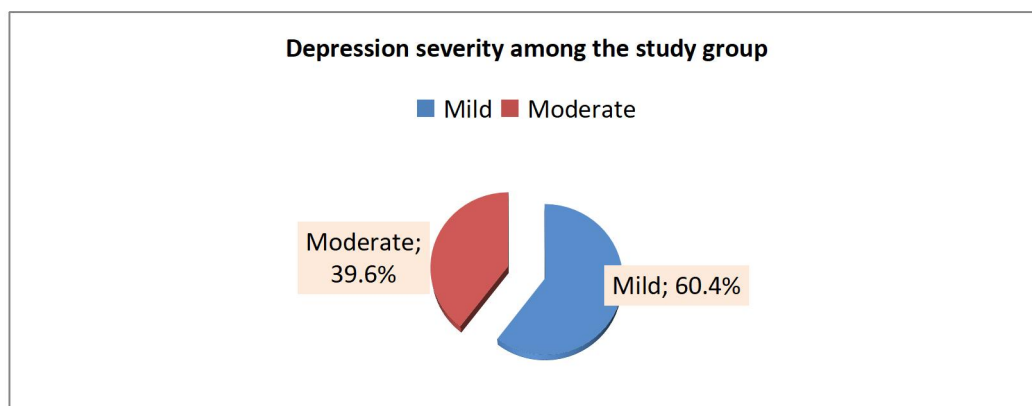participants practice regular exercise posttest compared to only 3.30% pretest.

Figure (4) shows an enhancement in physical function among studied elderly post-intervention, whereas 73.6% of the elderly participants located at full function strata post-test compared to 58.2% in the pretest.

Table (3) clarifies a statistically significant difference between depression levels regarding marital status, educational level, income, exercise practice, and functional level at p<0.05, p≤0.001, p≤0.001, and p<0.05, respectively. As regards marital status (the majority of elderly participants in mild and moderate depression strata were widowed (52.7%; 72.2%) respectively, education (illiterate participants were dominant in mild and moderate depression strata while secondary educated subjects were only present in mild depression strata (30.9%), income (most of the studied elderly had enough income in both strata but participants with insufficient income more prevalent in moderate strata (36.1%)), full function participants more prevalent in mild strata (69.1%)**.** Also, partial dependent participants were more prevalent in moderate depression strata (58.3%). Additionally, despite most of the elderly participants not practicing any exercises, meanwhile 8.3% of participants who practiced exercises located at moderate depression strata.

Table (4) represents that there was a statistically significant difference between depression strata of the studied elderly post-intervention and marital status (married participants (22.5%)), Education (Secondary educated subjects (29.5%)), Exercise (participants practice regular exercise (81.8%) and income (enough income (77.3%)) are more dominant in normal strata at p≤0.001; p≤0.001; p<0.05; p≤0.001 respectively.

Table (1): Demographic characteristics of the studied elderly depressed group (N= 91)

Socio demo-graphic characteristic	N	%
Age: Mean ±SD	67.58± 5.79	
Sex:		
Male	35	38.5
Female	56	61.5
Marital status:		
Married	34	37.4%
Single	2	2.2
Widow	55	60.4%
Education:		
Illiterate	62	68.1
Preparatory	12	13.2
Secondary	17	18.7
Job:		
Working	28	30.8
Not Working	63	69.2
Living arrangement:		
Alone	4	4.4
With family	87	95.6
Income:		
Enough and Saved	19	20.9
Enough	58	63.7
Not enough	14	15.4
Chronic disease:		
Yes	83	91.2
No	8	8.8
Smoking:		
Yes	15	16.5
No	76	83.5
Drug abuse:		
Yes	0	0
No	91	100
Alcohol:		
Yes	0	0
No	91	100
Exercise:		
Yes	3	3.3
No	88	96.7
Dependency level:		
Full function	53	58.2
Partially dependent	38	41.8
Total	91	100.0

Figure (1): Severity of depression in the total elderly sample (n=91)

Depression levels pre-post intervention

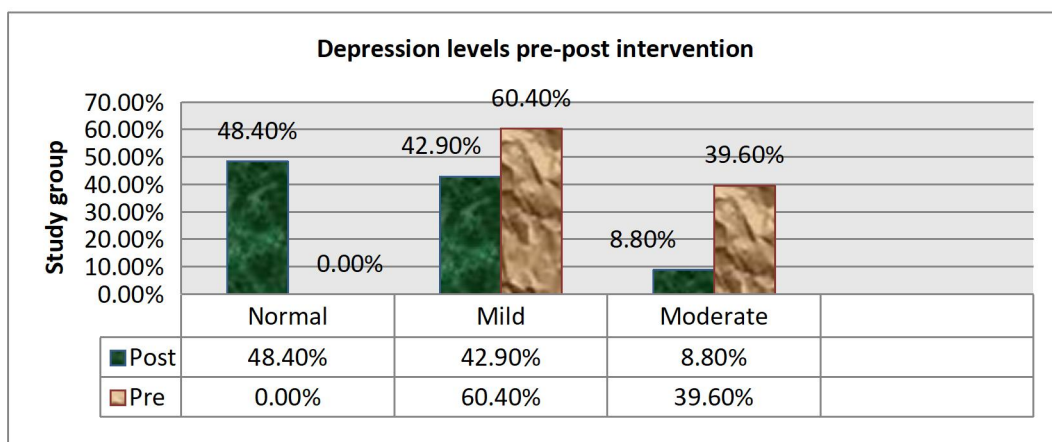|	Normal	Mild	Moderate
■ Post	48.40%	42.90%	8.80%
□ Pre	0.00%	60.40%	39.60%

Figure (2) Comparison regarding depression strata among elderly studied group pre\post intervention (n=91)

Table (2): Comparison between elderly studied group regarding depression mean and SD pre\post intervention (n=91).

Depression	Pre-test	Post-test	Paired t-test	P-value
Total score Mean ±SD	7.7143±2.029	5.1758±2.084	40.225	0.000**

Exercise practice pre - post intervention

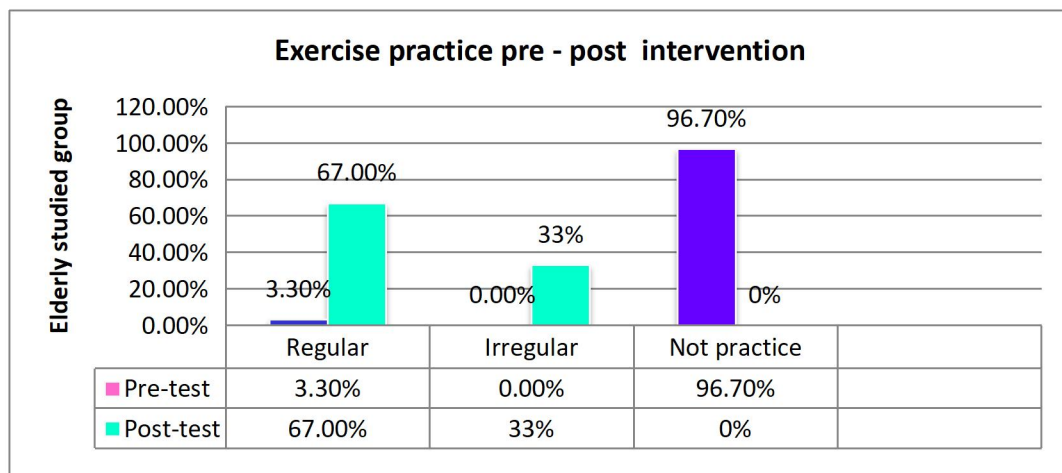|	Regular	Irregular	Not practice
■ Pre-test	3.30%	0.00%	96.70%
■ Post-test	67.00%	33%	0%

Figure (3) Distribution of the elderly studied group regarding exercise pre\post intervention (n=91).
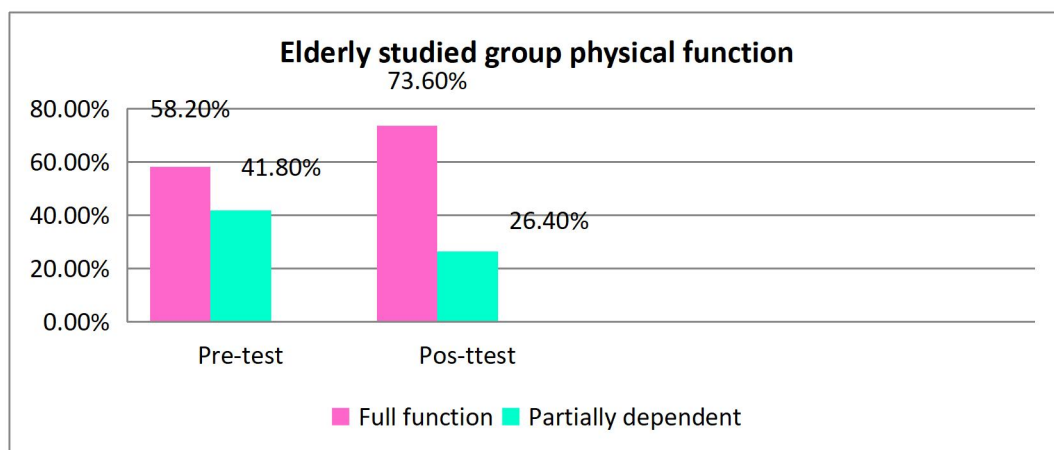
Figure (4) Distribution of the elderly studied group regarding physical function pre\post intervention (n=91).

Table (3): Relationship between Pre-test depression and Socio-Demographic characteristics among studied elderly (n=91).

Socio demo-graphic characters	Depression level		P-value
	Mild (n =55)	**Moderate (n=36)**	
Age:	Mean ±SD	67.58± 5.79	
60-69	38 (69.1%)	18 (50.0%)	
70-79	16 (29.1%)	17 (47.2%)	x²=3.35
80+	1 (1.8%)	1 (2.8%)	p>0.05
Sex:			x²=0.66
Male	23 (41.8%)	12 (33.3%)	p>0.05
Female	32 (58.2%)	24 (66.7%)	
Marital status:		8 (22.2%)	x²=8.078
Married	26 (47.3%)	2 (5.6%)	p<0.05*
Single	0 (0.0%)	26 (72.2%)	
Widow	29 (52.7%)		
Education:			x²=20.89
Illiterate	36 (65.5%)	26 (72.2%)	p≤0.001**
Preparatory	2 (3.6%)	10 (27.8%)	
Secondary	17 (30.9%)	0 (0.0%)	
Job:			x²=0.250
Working	18 (32.7%)	10 (27.8%)	p>0.05
Not Working	37 (67.3%)	26 (72.2%)	
Living arrangement:			x²=2.198
Alone	1 (1.8%)	3 (8.3%)	p>0.05
With family	54 (98.2%)	33 (91.7%)	
Income:			
Enough and Saved	14 (25.5%)	5 (13.9%)	x²=19.789
Enough	40 (72.7%)	18 (50%)	p≤0.001**
Not enough	1 (1.8%)	13(36.1%)	
Chronic disease:			x²=0.016
Yes	50 (90.9)	33 (91.7)	p>0.05
No	5 (9.1)	3 (8.3)	
Smoking:			x²= 2.874
Yes	12(21.8%)	3(8.3%)	p>0.05
No	43(78.2%)	33 (91.7%)	
Exercise:			x²=4.74
Regular	0 (0.0%)	3 (8.3%)	p<0.05*
Irregular	0 (0.0%)	0 (0.0%)	
No practice	55 (100.0%)	33 (91.7%)	
Dependency according to (Katz ADL):			x²=6.728
	38 (69.1%)	15 (41.7%)	p<0.05*
Full function	17 (30.9%)	21 (58.3%)	
partially dependent			

Table (4): Relationship between post-test depression and Socio-Demographic characteristics among the studied elderly depressed group (n=91)

Socio demo-graphic characters	Depression strata post-intervention			P-value
	Normal	**Mild**	**Moderate**	
	N %	N %	N %	
Age **60-69** **70-79** **80+**	31 (70.5%) 13 (29.5%) 0 (0.0%)	19 (48.7%) 18 (46.2%) 2 (5.1%)	6 (75.0%) 2 (25.0%) 0 (0.0%)	x^2= 6.39 p>0.05
Sex: Male Female	19 (43.2%) 25 (56.8%)	13 (33.3%) 26 (66.7%)	3 (37.5%) 5 (62.5%)	x^2= .851 p>0.05
Marital status: Married Single Widow	22 (50.0%) 0 (0.0%) 22 (50.0%)	11 (28.2%) 1(2.6%) 27 (69.2%)	1 (12.5%) 1 (12.5%) 6 (75.0%)	x^2= 10.507 p<0.05*
Education: Illiterate Preparatory Secondary	30 (68.2%) 1 (2.3%) 13 (29.5%)	24 (61.5%) 11 (28.2%) 4 (10.3%)	8(100.0%) 0 (0.0%) 0(0.0%)	x^2= 18.89 p≤0.001**
Job: Working Not Working	12 (27.3%) 32 (72.7%)	15 (38.5%) 24 (61.5%)	1 (12.5%) 7 (87.5%)	x^2= 2.58 p>0.05
Living arrangement: Alone With family	0 (0.0%) 44(100.0%)	3 (7.7%) 36 (92.3%)	1 (12.5%) 7 (87.5%)	x^2= 4.28 p>0.05
Income: Enough and Saved Enough Not enough	10 (22.7%) 34 (77.3%) 0 (0.0%)	9 (23.1%) 20 (51.3%) 10 (25.6%)	0 (0.0%) 4 (50%) 4 (50%)	x^2= 19.950 p≤0.001**
Chronic disease: Yes No	40 (90.9%) 4 (9.1%)	35 (89.7%) 4 (10.3%)	8 (100.0%) 0 (0.0%)	x^2= .880 p>0.05
Smoking: Yes No	7 (15.9%) 37 (84.1%)	8 (20.5%) 31 (79.5%)	0 (0.0%) 8 (100.0%)	x^2= 2.04 p>0.05
Exercise: Regular Irregular	36 (81.8%) 8 (18.2%)	25 (64.1%) 14 (35.9%)	0 (0.0%) 8 (100.0%)	x^2= 20.77 p≤0.001**
Dependency level (Katz ADL): Full function partially dependent	36 (81.8%) 8 (18.2%)	25 (64.1%) 14 (35.9%)	6(75.0%) 2(25.0%)	x^2= 3.36 p>0.05

Discussion:

According to **Apostolo et al., (2016)**, depression is one of the major dangers to the mental health of older people and most frequently coexists with chronic somatic illnesses. Non-pharmacological treatments are crucial since antidepressants can lead to poly-pharmacy in elderly people and may interfere with other medications **(Holvast et al., 2017)**. The present study aims to appraise the effect of a non-pharmacological home-based nursing intervention (combined counseling and exercise) on the management of depression among the elderly.

Regarding demographic characteristics of the study group (n = 91), the mean±SD age is 67.58±5.79, and about two-thirds of the studied elderly were female, widowed, illiterate, had enough income, and the majority of the studied sample did not practice any exercise. Congruent with **Sayied & Abd-Elaziz, (2015)**, the intervention group's mean ± SD age was 66.3±4.8, more than two third of them were widows. In our opinion widowhood is a predictor of depression. **Table 1**;

The current findings are indicate that mild depression represents a higher proportion (two-thirds) than moderate depression, which are more than one-third, and severe depression

is not a factor. **Mohammed et al., (2018)** supported this finding and found that, in Sohag Governorate, mild depression was more prevalent among elderly participants. **Figure 1**;

The present study reveals that non-pharmacological home-based nursing intervention (counseling and exercise) decreased depression among elderly participants. Nearly half of the sample turned to normal, and moderate depression decreased to less than one-quarter post-test versus more than one-third pretest, with a statistically significant improvement in depression mean±SD score among the elderly studied group post-intervention (7.71±2.02 versus 5.17±2.08) at p = 0.000, which supports the hypothesis of the present study. In agreement with **Huang et al., (2015)**, who studied "the impact of physical fitness on elderly depression in Taiwan" and found that participants in the physical exercise group had decreased depression post-intervention. Similarly, **Sayied & Abd-Elaziz (2015)** studied "the impact of counseling on managing depression among elderly Egyptians" and reported improvement in depression strata pre-post-intervention with an increase in normal strata post-intervention. They add that counseling helped elderly people express their feelings and gave them constant confidence. Also, **Anvar et al., (2014),** confirmed that counseling reduced depression in elderly women with a significant level of (P<0.01). **Figure 2; Table 2;**

The present study clarifies a positive improvement in practicing exercise among the elderly studied post-intervention, as most of them practiced regular exercise post-test compared to meanwhile 3.30% in the pretest. This indicates the adherence of the study group to exercises and the impact of counseling and exercise intervention on elderly exercise practice. Thus, the level of depression among the elderly decreased as a result of practicing regular exercise. This result is in line with **Sukhato et al., (2017)**, who revealed that, the mean depression score in the home-based exercise intervention group was lower than the mean depression score in the usual care group. **Figure (3);**

Regarding enhancement in physical function among the studied elderly post-intervention, most of the elderly participants located in the full function strata post-test compared to only two-thirds pretest. This is due to the impact of home-based no pharmacological interventions, including a home exercise program to increase physical activity in daily activities and physical fitness. In agreement with **Huang et al., (2015),** who reported that participants in the physical fitness program had significantly more distance in 6-min walk (p = 0.023). **Figure (4);**

The current study reveals that there is a statistically significant difference between elderly participants' pre-test mild and moderate depression regarding marital status, education, income, exercise, and dependency level at p<0.05, p≤0.001, p≤0.001, p<0.05, respectively. According to marital status, the majority of the studied elderly in the mild and moderate depression strata were widowed at p<0.05. This result is consistent with the findings of **El-Kady & Ibrahim (2013),** which discovered that Egyptian elderly widows were more likely to experience depression. This result could be explained as feelings of loneliness may be a risk factor for grief and depression. In addition, **De Oliveira et al.'s (2019)** study also reported a correlation between depression symptoms among older residents of the Brazilian community and low levels of physical activity. This can be explained as dependency, widowhood, and illiteracy as contributing factors to depression.

Moreover, a significant difference regarding the depression severity was observed with education (illiterate subjects were dominant in mild and moderate depression strata while one-third only of secondary-educated clients were present in mild depression strata) at p≤0.001. Also, secondary education was not a risk factor for geriatric depression, according to **Al-kholy et al., (2016).** Regarding income, most of the studied elderly had enough income in both strata, but clients with insufficient income are more prevalent in the moderate strata at p≤0.001. This was in agreement with **Abdo et al., (2011)** who reported that the elderly with insufficient income was significantly eight

times more likely to experience severe depression. This result can be ascribed to a low economic situation that leads to poor life satisfaction and unmet demands.

In the current study, partial-dependent participants are more dominant in moderate depression strata, while full-functioning are more dominant in mild depression strata, although the majority of older participants did not engage in any exercise. Along the same line, a clinical trial conducted by **Onishi et al., (2004)** revealed a positive correlation between functional impairment and depression. This result could be related to the fact that physical dependence causes feelings of sadness and weakness and may be a major factor in social isolation and elder abuse Also, the study of **Ahmed et al., (2014)** identified physical functionality as a significant predictor for depression. **Table 3;**

In the light of the current work, there is a statistically significant difference between the depression strata of the studied sample post-intervention regarding marital status, education, exercise, and income, as one-third of the married, secondary educated participants are present in normal strata, and the majority of elderly participants practice regular exercise and had enough income, all are more prevalent in normal strata at p≤0.001; p≤0.001; p<0.05; p≤0.001 respectively. This result can be interpreted as widow status and insufficient income increasing sadness and absence of support, which affect mood. Also, the educated subjects adhere to the intervention program. This was consistent with **López-Torres Hidalgo et al., (2019)** who stated that physical exercise had indubitable health benefits and could be applied to definite health complications, such as depression, which had significant socioeconomic importance and a substantial impact on older adults' quality of life. **Table 4**

Study limitation:

- Some of the elderly people did not cooperate with the researchers and this was overcome with the help of health unit staff by announcing about the study topic.

- The difficulty of determining the appropriate time for the elderly home visit

was overcome by prior arrangements between the researchers and the elderly participants.

Conclusion

The current study emphasizes that non-pharmacological home-based nursing intervention (counseling and physical exercises) was effective in reducing mild to moderate depression among elderly people.

Recommendation

This study recommends the following as a result of its findings:

-Non-pharmacological home-based nursing interventions (counseling and physical exercises) are recommended as nursing interventions to reduce mild to moderate depression among elderly people.

-For future direction, implementing such studies in different settings for older people is recommended to confirm their effectiveness.

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