

Assess the Effect of Exercises program on balance and prevention of recurrent falling among Elderly People

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Abstract

Background: Aging is associated with the loss of balance and increase risk for falling. Gerontological nurse play an essential role in reducing falling and its related injuries through providing safety measures, environmental modification, eliminating risk factors and improving the balance through exercise training. **Aim of the study:** This study aimed to assess the effect of exercise program on balance and prevention of recurrent falling among elderly People. **Research design:** Quasi-experimental research design was utilized in the current study. **Subjects:** The study sample including 80 elderly clients male and female. **Setting:** This study was carried out at three geriatric homes in Minia city (Dar Omar Bn El- khatab- Dar El- Qedesa Hena- Dar El- rae el saleh). **Tools of data collection:** Two tools were utilized in collecting data; **tool I:** Interview structured questionnaire; **tool II:** Berg Balance Scale, the data were collected through one year. **Methods:** The researcher design booklet in Arabic language and give exercises training program for elderly clients. **Results:** The current study findings revealed that there was a highly Statistical significant difference in satisfaction of elderly knowledge that show the percent of satisfaction were (85%) after intervention. And also the finding revealed that there was a highly statistical significant difference improvement of elderly balance reported by (80%) and minimizes risk for falling at the end of intervention. **Conclusion:** The study findings concluded that the regular performing exercises enhances balance and reduces risk for falling for elderly people. **Recommendations:** We have to spot the light on elderly people to be a part of the education and exercises training program in geriatric homes and community also improve awareness of family members and health care givers about environmental hazards and how avoid it to prevent recurrent falling.

Keywords: Elderly, Exercises program, Prevention of recurrent fall.

Introduction

Population ageing is widespread phenomenon across the world. According to the U.S. Census Bureau, the proportion of adults ages 65 years and older is projected to grow from 15 % in 2015 to 24 % of the population in 2060. (He, 2016). Also, Egypt is expected to have the largest number of old (23.7 million) and oldest old (3.1 million) populations in the region in 2050. (Sweed, 2016).

Age-related reduction in muscle mass (sarcopenia) and strength is associated with muscle weakness and physical disability. Maintaining an optimal level of muscle mass and muscle strength (balance) is necessary to prevent falls and disability throughout a lifetime.

Falls are defined as “inadvertently coming to rest on the ground, floor or other lower level, excluding intentional change in position to rest (on) furniture, walls or other objects” (Ambrose, et al., 2013).

Falls are the leading causes of death in elderly persons. Falls are responsible for 20%–30% of injuries among the elderly age group. They are also responsible for 50% of injury-related hospitalization among people of 65 years and above. (Sirohi, et al., 2017). Falls can also associated with reduced physical activity, deconditioning, functional decline, impaired ability to perform daily activities, social isolation, reduced quality of life, depression, increased risk of subsequent falls, and institutionalization. (Clemson, et al., 2019).

Evidence studies identified that balance training exercises as well as stretching exercises are more effective preventing falls and the percent of dependent elderly decreased. (Liu, & Fielding, 2011).

Exercise for older people can increases balance, which may reduce the risk of falls or reduce the severity of a

fall. Improves body composition (decreases fat, increases muscle mass). Decreases risk of injury and enhances immune function, and increases mobility and gait. (Physical Activity Guidelines Advisory Committee Scientific Report, 2018)

Gerontological nurse play an essential role in reducing falling and its related injuries through providing safety measures, environmental modification, eliminating risk factors and improving the balance through exercise training. (Morilla, et al., 2016).

Significance of the study

Falls are the second leading cause of mortality worldwide, and it is estimated that 80% of the falls occurring in low- and middle-income countries, of which South East Asia account for 60% of fall-related mortalities. (Joseph, Kumar, & Bagavandas, 2019).

In Egypt, according to the Central Agency for Public Mobilization and Statistics (CAPMAS) nearly 55% of the accidents occurring to the residents of the elderly homes resulted from falling and fractures Central Agency for Public Mobilization and Statistics. Arab Republic of Egypt. (Khodeir, & Abdelsalam, 2016).

Aim of the study:

Assess the effect of Exercises program on balance and prevention of recurrent falling among Elderly People.

Research hypothesis

To fulfill the aim of the study, It was hypothesized that the elderly people after performing exercises training program, will be decrease risk for falling and improve balance among elderly people.

Subjects and Methods

Research design

Quasi-experimental research design was utilized in the current study.

Subjects:

Purposive sample of 80 elderly clients male and female were collected through one year.

Inclusion criteria:

- Patients 60 years and older of both sex.
- Able to make exercises and perform Activity of daily living and balance.

Exclusion criteria:-

- Illiterate clients
- Bedridden elderly.
- Severely limiting arthritis.
- Severe psychiatric diseases
- Elderly have any health disorders are contraindicated for performing exercise.
- Elderly have any health disorders are affect the balance and movement.

Setting:-

The current study was carried out at three geriatric homes in minia city (Dar Omar Bn El khatab- Dar El Qedesa Hena- Dar El rae el saleh).

Study Duration:

The current study was conducted over aperiod of one year starting from August 2017 to August 2018.

Tools of data collection: - Two tools were used:

Tool I: Patient interview structured questionnaire. It covered two main parts:

- Part I; Socio- demographic data of the elderly which included (age, gender, level of education, and phone number.)
- Part II; Health history data included: medical history, presence of chronic diseases and medication used, and falling frequency.
- Part III; Data of client's knowledge about risk factor of falling, falling frequency, Define the word of falling, physiological changes lead to falling, Risk factor for falling (internal & external),What is the different kinds of sports can do it?, benefits of exercises, preventive measures before, during and after exercises, consequences of falling, environmental safety to prevent falling.

Scoring system: each item was observed, categorized, and scored into either done =1 or not done= 0 on all items of the checklist. These scores are further classified as unsatisfactory level (less than 60%), and satisfactory level more than 60%).

Tool II:: Berg balance scale (BBS):

Berg Balance scale was used to assess the balance of elderly persons (**Berg and Woo-Daphine, 1995**). This scale was used pre and post performing exercises. It consists of 14 items graded 0 - 4 scale, which includes: sitting to standing, standing unsupported, sitting with back unsupported but feet supported on floor, standing to sitting, transfers, standing unsupported with eyes closed, standing unsupported with feet together, reaching in foreword with outstretched arm while

standing, pick up object from the floor on standing position, turning to look behind over left and right shoulders while standing, turning 360 degree, placing alternate foot on step or stool while standing unsupported, standing unsupported in one foot on front, standing on one leg.

The total score is 56 and categorized as follows.

- 0 – 20 high fall risk.
- 21 – 40 medium fall risk.
- 41 - 56 low fall risk.

Tools validity:-

Content validity was done to identify the degree to which the used tools measure what was supposed to be measured. The developed tools were examined by a panel of five experts opinion in the field of the study {Minia University - faculty of nursing (Medical Surgical Nursing Department)} All jury members (100%) agreed that current study tools were valid and relevant with the aim of the study.

Tools reliability:-

Cronback's Alpha test was performed to check the stability of the internal consistency of instruments.

Pilot study:-

A pilot study was carried out on 10% (n = 8) of the total sample to test the clarity of tools and estimate the time required for fulfilling it. Based on results of the pilot study no modifications or refinements were done and the subjects included to the actual sample.

Ethical Considerations:-

An official permission to conduct the study was obtained from the Ethical committee in the Faculty of Nursing, and agreement from Egypt academic for research center and technology. to carry out this study. Subject's participation in this study was voluntary and each involved subject was informed about the purpose, procedure, benefits, and nature of the study, and that he/she had the right to withdraw from the study at any time without any rationale, then written consents were obtained. Confidentiality and anonymity of each subject were ensured through coding of all data and protecting the obtained data.

Procedure (Techniques for Data Collection):

The current study was conducted by preparing of different data collection tools, in addition to, obtaining formal paper agreement which was taken in duration one week before conducting the current study. The current study was conducted over aperiod of one year starting from August 2017 to August 2018. Then the researcher conduct the first interview with the elderly clients, and demonstrate with clients and care giver about (Definition of falls, incidence of falls., risk factors of falls, side effect of medication, the importance of follow up, consequences of falls, the environmental safety, and the benefits of exercises.

And after that the researcher conducts the research tools:

- **Tool I:** (1st, 2nd, 3rd) part Was applied before starting the exercise program. And 3rd part was applied once after starting intervention.
- Berg balance scale (BBS), was applied before starting the exercise application, and after that was applied 6 times, once per month. (**Berg, Woo-Daphine, 1995**). And then was applied 3 times, once every two monthes.

- The researcher train the different exercises for each client (individualized sessions) 2 times weekly and train the caregiver to perform the exercise with the elderly clients. The clients were demonstrated and redemonstrated the exercises in front of the researcher to ensure the well performance.
- The duration of exercise was taken about 30-45 minutes and according to the ability of each client.
- The researcher was stopped the exercise when:
 - Occurrence of pain, discomfort in the chest, neck, jaw, arms.
 - Dizziness or syncope.
 - Ask the researcher to stop the exercises.
 - Palpitations or tachycardia.
- Balance exercises include:
 - Sideways walking exercise was repeated 5 times.
 - Simple grapevine exercise was repeated 5 times.
 - Heel to toe walk exercise was repeated 5 times.
 - Step up exercise was repeated 5 times.
 - Sit to stand exercise was repeated 5 times.
 - Each session included the balance exercises. exercises will take about 30-45 minutes.
- The client performs exercises 2 times weekly for 12 months.
- The researcher follows the clients once weekly to evaluate the performance of exercise for the clients and caregiver.
- The researcher design booklet in Arabic language, including exercises to improve the balance of elderly people. It was given to each elderly to guide and enrich his/her memory about activities performed in each session. The researcher gives instruction about the exercise to elderly and caregiver in geriatric homes.
- The session plan was designed according to physical ability and attention span. The exercises will be performing according to checklist.

Statistical analysis of data:

Statistical analysis was done by using Statistical Package for the Social Science (SPSS 20.0). Quality control was done at the stages of coding and data entry. Data were presented by using descriptive statistics in the form of frequencies and percentage for qualitative variables, and mean & standard deviation (SD) for quantitative variable. Chi square was used to test the association between two qualitative variables and the sample size large. Fisher's exact test used to test the association between two qualitative variables and the sample size is small. Graphs were done for data visualization using Microsoft Excel. Correlation coefficient test was also used between two variables and statistical significance was considered at $p \leq 0.05$.

Result

Table (1): Distribution Percentage of Study Regarding to Socio-demographic Data (n=80)

Demographic Data	Study (n=80)	
	No.	%
Age / years		
60:>75	70	87.5
75:>85	8	10
≤ 85	2	2.5
Mean ± SD	67.3 ± 6.4	
Gender		
Male	49	61.25
Female	31	38.75
Level of Education		
Basic	37	46.25
Secondary	27	33.75
Faculty	16	20

Table (1): Reveals distribution of the studied clients according to the Socio-demographic data. The table show that (87.5%) of the study group between (60:>75 years), Regarding to gender it was found that (61.25%) were male, In relation to education levels it was found that (46.25%) of study group were have basic education, While (20%) of study sample have Bachelor degree.

Table (2): Distribution Percentage of Study Group Regarding to Medical Data (n = 80)

Medical Data	Study (n=80)	
	No.	%
Presence of Chronic Illness		
None	46	57.5
Hypertension	22	27.5
Arthritis	2	2.5
Hypertension & Diabetes	10	12.5
Medication Used		
None	48	60
Anti-Hypertensive Medications	22	27.5
Anti-Hypertensive & Diabetic medication	10	12.5
Have you ever fallen in the last year?		
None	0	0
Once	46	57.5
Two Times	31	38.75
Three Times	3	3.75

Table (2) Shows that (55.5%) of study group were haven't chronic illness, while (27.5%) of them were having hypertension, and only (12.5%) of the elderly having Hypertension & Diabetes, regarding to medication used it was found that (60%) of the study group were not used any medication. And in the last it was found that the most of sample (57.5 %) fall one time in the last year.

Table (3)(A): Distribution Percentage of Study Group Regarding to Knowledge about Falling before and after Intervention (n = 80) (cont.)

Clients Knowledge about Falling	Before		After		t (P value)
	No.	%	No.	%	
Do you know the meaning of the word fall?					
No	23	28.75	0	0	15.9 (0.000**)
The person fall on the ground	56	70	8	10	
Fall of the elderly on the ground or fall on less than the level accompanied by loss or lack of awareness with the injury	0	0	20	25	
The two above	1	1.25	52	65	
Do you know the physiological changes associated with aging leading to the fall?					
No	24	30	0	0	8.4 (0.000**)
Changes in the motor system	20	25	8	10	
Decreased the strength of sight	0	0	7	8.75	
Decreased bone density	36	45	5	6.25	
The three above	0	0	60	75	

O.C (out of comparison) t (paired sample t test) ** highly Statistical significant (P ≤ 0.01)

Table (3)(A): Show that there was a highly Statistical significant differences in knowledge of elderly pre & post implementation that (70%) from study group define of falling incomplete definition, but (65%) of them select the two above after giving knowledge .The table also revealed that (45%)of elderly know that decreased bone density as physiological changes that leading to fall but after giving knowledge, but (75%) of them select the three above that mean improvement of their knowledge.

Table (3)(B):Distribution Percentage of Study Group Regarding to Knowledge about Falling before and after Intervention (n= 80)(cont.)

Clients Knowledge about Falling	Before		After		t (P value)
	No.	%	No.	%	
Do you know the risk factors that lead to fall?					
Yes	58	72.5	69	86.25	1.8
No	22	27.5	11	13.75	0.072
External Factors					
I don't know	22	27.5	0	0	13.2 0.000**
side effect of medication	44	55	8	10	
Take a large number of medications	0	0	7	8.75	
inadequate lightning	14	17.5	10	12.5	
Urgency	0	0	5	6.25	
All of previous	0	0	50	62.5	
Internal Factors					
I don't know	22	27.5	0	0	16.5 0.000**
decreased vision	28	35	6	7.5	
decreased concentration	30	37.5	9	11.25	
The presence of diseases may affect the balance and movement	0	0	5	6.25	
Weak arm muscle and leg	0	0	8	10	
All of previous	0	0	52	65	
Do you know the complications of falling?					
Do not know	12	15	0	0	13.7 0.000**
Fracture anywhere in the body	52	65	12	15	
Joint pain	16	20	8	10	
Psychological problems / fear of falling again	0	0	5	6.25	
All of previous	0	0	55	68.75	

t (paired sample t test) ** highly Statistical significant (P ≤ 0.01)

Table(3)(B):Shows that (27.5%) of clients didn't know the external risk factors that lead to fall before intervention, (62.5%) from study group their answer were right (All of previous) of external risk factors of falling after intervention. And also (65%) of elderly after intervention their answer were right about internal risk factors of falling.(65%) from study group answer the question of complications as (Fracture anywhere in the body) but (68.75%) of them select the right answer (All of previous) after intervention.

Table (3)(C):Distribution Percentage of Study Group Regarding to Knowledge about Exercise needed before and after Intervention (n = 80)

Clients Knowledge about Exercise	Before		After		t (P value)
	No.	%	No.	%	
Do you know what kinds of sports you should exercise?					
Do not know	19	23.75	0	0	13.8 0.000**
Walk	60	75	20	25	
Bend the knee.	1	1.25	0	0	
Pacing exercises on the stairs	0	0	0	0	
All of previous	0	0	60	75	
Do you know what reserves should be observed before or during exercise?					

Clients Knowledge about Exercise	Before		After		t (P value)
	No.	%	No.	%	
Do not know	42	52.5	0	0	15.9 0.000**
Choose the right time	2	2.5	5	6.25	
Stop the activity if you feel stress or difficulty breathing	36	45	17	21.25	
Rest and relaxation for ten minutes before and after the completion of the exercise	0	0	0	0	
All of previous	0	0	58	72.5	
Do you know what the benefits of exercises					
Do not know	20	25	0	0	17.2 0.000**
Improve joint movement	55	68.75	10	12.5	
Reduce the incidence of falling again	5	6.25	8	10	
Decreases depression associated with age	0	0	2	2.5	
All of previous	0	0	60	75	
Do you know what precautions you must follow to keep the environment safe					
Do not know	20	25	4	5	12 0.000**
Presence of adequate light in the house	60	75	15	18.75	
Arrange the foundation of the room and the house to find sufficient space for walking	0	0	8	10	
Having an arm or hand next to the toilet	0	0	4	5	
All of previous	0	0	49	61.25	

t (paired sample t test)

** highly Statistical significant (P ≤ 0.01)

Table (3)(C): show that (75%) of elderly clients before intervention know that only walking as a kind of sports they can do, but after intervention (75%) of them select the right answer (All of previous). And the table, also revealed that (72.5%) of study group had improvement in the point of what reserves should be observed before, during exercises and select correct answer (All the previous). Also (75%, 61.25%) respectively of study group had improvement in knowledge about benefits of exercises and the precautions to prevent falling with highly Statistical significant differences between the elderly knowledge before and after the intervention.

Table (4): Distribution of Study Group Regarding total Knowledge about Falling and exercises before and after Intervention (n = 80)

Knowledge Score	Before		After	
	No.	%	No.	%
Satisfactory	0	0	68	85
Unsatisfactory	80	100	12	15
P value	0.803		0.000**	

Paired samples t-test

** highly Statistical significant difference (P ≤ 0.01)

Table (4): Show highly Statistical significant differences regarding satisfaction of elderly knowledge before and after the intervention.

Table (5): Comparison between mean & SD 1st and last observation of Study Group Regarding to Berg balance scale (BBS) (n = 80)

Berg balance scale (BBS)		Study (n=80)	
		No.	%
1 st Observation	Low fall risk	12	15
	Medium fall risk	28	35
	High fall risk	40	50
10 th Observation	Low fall risk	64	80
	Medium fall risk	16	20
	High fall risk	0	0
t (P Value)		8.49(0.000)**	

t (paired sample t test)

** highly Statistical significant (P ≤ 0.01)

Table (5): Shows that highly Statistical significant (P ≤ 0.01) in difference between first and last observation in (BBS), that revealed improvement of Low risk of falling from (15%) in first observation to (80%) in last observation and decreased level of High fall risk from (50%) to (0%) in last observation, and also show (t) test value was (8.49)

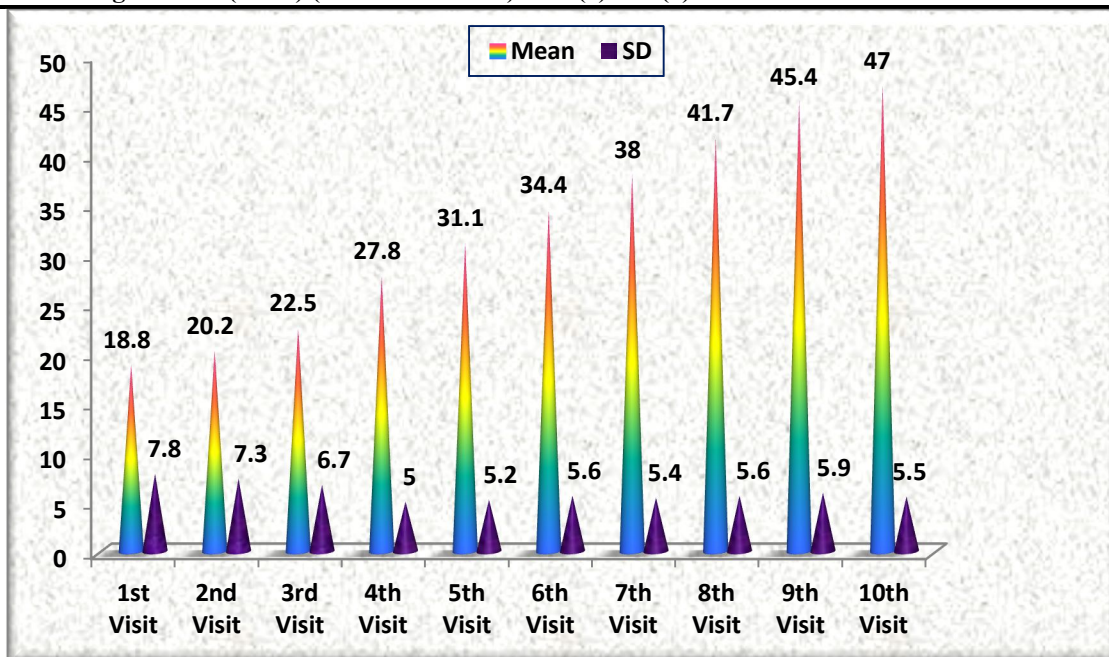


Figure (1): Distribution of mean & SD throughout the 10 observations of Study Group Regarding to Berg balance scale (BBS) (n = 80)

Fig.(1): shows that highly Statistical significant difference between the mean and SD of 1st and last observation at ($P \leq 0.01$).

Table (5): Correlation between Socio-demographic and Clinical Data regard to Berg Scale Score before and after exercise program (n=80)

Variables		Berg Scale			
		Before Intervention		After Intervention	
		R	P	R	P
Age		-0.062	0.611	-0.131	0.280
Gender	Male	0.175	0.381	0.408	0.408
	Female	-0.160	0.301	-0.033	0.830
Level of Education		0.046	0.704	0.333	0.005**
Medication Used		-0.312	0.009	-0.225	0.061

* Statistical significant difference ($P \leq 0.05$) ** highly Statistical significant difference ($P \leq 0.01$)

Table (5) Illustrated a weak negative correlation between (age and medication used) and Berg Scale Score before and after intervention, documented by r value ($r = -0.062$ & -0.131), (-0.312 & -0.225) respectively. On the other hand, there were positive correlation between male gender and Berg Scale Score after intervention among the study group, documented by r value (0.408). Moreover, there were a positive correlation between level of education and Berg Scale Score before and after intervention among study groups, documented by r value (0.046 & 0.333) respectively. While, there was a highly statistical significant positive correlation between (level of education) and Berg Scale Score after intervention documented by p value (0.005) respectively.

Discussion

Based on the result of the current study, it has been noticed that the mean & SD of age was (67.3 ± 6.4 years) with age group ranged from $60 \leq 85$ years old.

Findings of the present study was compatible with (El-Gilany, et al., 2013), that reported in their study titled "Prevention of recurrent falls in elderly: a pre-post intervention study in a rural community, Egypt", that the majority of study group with the mean age was 69.6 ± 6.2 years. and agree also with (Ubolwan, 2013), who carried out a study about "An Exploration Of The Relationships Among Demographics, Risk Factors, Perceived Self-Efficacy, And Fall Prevention Behaviors In Community-Dwelling Thai Older Adults", and reported that the study sample ranged in age from 60 - 79 years old.

The present study illustrated that about more than half of the study group were male that may be due to most of residents in geriatric homes were males because of their needs to care and attention more than females especially after the death of their wives.

This result is in the same line with the study by (Kalu, et al., 2019), who reported in a study about "

Knowledge about risk factors for falls and practice about fall prevention in older adults among physiotherapists in Nigeria", that the most of study group were male. and disagree with (Bilik, et al., 2017), who found that more than two thirds of the studied clients were female.

In relation to educational levels it was found that about less than half of study group were have a basic education. This may be rationalized as in the past there was no interest in high education so, that leads to lack of health awareness about fitness and exercises among elderly people. This finding agrees with (Bilik, et al., 2017), who stated that, about less than half of study group have a Primary education. And also supported by (Ubolwan, 2013), who reported that, the majority of participants indicated their educational level was primary education.

And also our results shows that more than half of study group had fallen once time in the last year, this due to aging process, physiological changes that affect on elderly balance that lead to falling, that in the same line with (Maneeprom, et al., 2019) whose reported that the most of study group have at least one fall experience in the past 12 months.

In the present study, it has been noticed that there were highly statistical significance differences between the knowledge satisfactions of the elderly pre and post the intervention, that due to improvement of elderly knowledge about falling after intervention. These results were in accordance with, (Maneeprom, et al., 2019), who said that there were improvement of elderly knowledge immediately after intervention.

The present result supported with (Ott, 2018). Who carried out a study about "The impact of implementing a fall prevention educational session for community-dwelling physical therapy patients?" Who reported an increase in fall risk knowledge after fall prevention educational sessions?

This result was in consistent with, (Kalu, et al., 2019), who mentioned that the majority of study sample have high level of knowledge about preventing falls among older adults.

In relation to elderly balance & (BBS), our findings indicated that there were statistical significant difference in the result of Berg Balance Scale that show the effect of exercise training program for decrease level of risk for falling, that found in the end of exercise training program the improvement of balance and decrease level of falling risk between elderly that observed the value of the majority became low risk for falling in the last observation, while there wasn't any one have high risk for falling, and at the end of intervention Mean \pm SD BBS score was (47 \pm 5.5). This may be due to continuity on performing exercises for long period reflecting to muscle strength and gait balance among elderly people.

These result agrees with (Prata & Scheicher, 2012), they mentioned that the Mean \pm SD of BBS score for the elderly individuals studied was (50.9 \pm 4.1). We believe that inclusion of balance training in care and rehabilitation programs for the elderly would be useful in assisting elderly people to maintain their functional independence.

Our finding agrees with (Maneeprom, et al., 2019) who reported that the intervention group revealed statistically significant improvement in BBS after 6 months of intervention was performed. (Khot & Hande, 2017), in whose study about " Effect of conventional balance exercises and electronic balance board on elderly individuals, International Journal of Multidisciplinary Research and Development" also approved significant improvement balance of elderly and reduction in risk of fall.

Finally, As regard the Correlation between Socio-demographic and Clinical Data regard to Berg Scale Score, in our study we found that there were negative correlation between age, and Berg Scale Score before and after intervention, documented by r value (r= -0.062 & -0.131), and also negative correlation between BBS and female gender. This due to physiological changes that occur during aging process and mainly affect on hormones of female gender after menopause lead to many diseases as osteoporosis and osteoarthritis that cause gait imbalance.

The current study agrees with (Al Saif, et al., 2012) in whose study about " The prediction of falls among older people in Saudi Arabia" showed that the age strongly negative correlated with the Berg Balance Score, that he reported that a strong negative correlation between age and risk of fall, which explains that the risk of falling increases with age.

Our result compatible with (Landi, et al., 2012), whose study about "Sarcopenia as a risk factor for falls in elderly individuals: results from the IISIRENTE study", that

there were negative correlation between BBS and female gender, that females are more likely to experience falls than males, and with advancing age, the prevalence of falls increases. Such a higher prevalence of falls in females may be a consequence of the decline in their bone mass that occurs faster than that of males especially after menopause.

But (Greenberg, et al., 2016), whose study about "Perceived Fall Risk and Functional Decline: Gender Differences in Patient's Willingness to Discuss Fall Risk, Fall History, or to Have a Home Safety Evaluation", disagree with the current study that show no difference in correlation was observed between males and females in risk for falling.

Our findings show that there was a highly statistically significant & positive correlation between level of education and Berg Scale Score after intervention. This may be rationalized as improvement in educational level reflects on elderly awareness about falling knowledge that lead to improve in balance.

This result is consistent with (Freeland KN., et al., 2012), whom mentioned in their study about " Medication use and associated risk of falling in a geriatric outpatient population", that illiterate elderly suffered more falls and the incidence of falls seems to decrease as the education level increase.

Our findings show that there was negative correlation between BBS and number of medications used that reported before and after intervention r= (-0.312 & -0.225). That elderly people suffer from drowsiness due to side effect of some medications. These result agrees with (Prata, & Scheicher, 2012), whose found that a negative relationship between the number of medications taken and the BBS scores

Conclusion & Recommendations

- Based on current study findings, it can be concluded that the elderly exercise program in the form of Balance exercises, induce significant improvement in reducing the risk of falling and improve elderly balance. Finally, the present study has demonstrated that the regular performing exercises for long period reduce risk for falling and improve balance among elderly.
- The mass media should be used more effectively to improve awareness of the public specially the older adults and their care giver about importance of sports and exercises.
- Further researches to prevent falls among community-dwelling older individuals recommend continuous exercise-programs for groups or individuals, including balance exercises training.

Acknowledgment

The researchers would like to acknowledge the contribution of all participants who kindly agreed to take part in the study. They generously gave their time and attention to conduct this study. This study would have been impossible without their generosity.

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