Effect of Matter of Balance program on improving balance and reducing fear of falls among community-dwelling older adults

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Abstract

Background: Fear of falling is widespread among the elderly living in the community. A Matter of Balance program aims to reduce the fear of falling in the elderly. **Aim:** Determine the effect of the Matter of Balance program on improving balance and reducing fear of falls among community-dwelling older adults. **Subjects and method**: A quasi-experimental research design was done on 50 older adults at El-Amal elderly club in Mansoura city. **Tools:** Demographic and clinical data, Katz and Akpom scale, Berge Balance Scale, and the Modified Falls Efficacy Scale (MFES) were used. **Results**: balance of the study subjects was improved, the elderly at moderate/high risk of falls according to the Berg Balance Scale was 80% in the pre-intervention this significantly decreased to 28% in immediate post-intervention and the difference is statistically significant. The mean fear of falls scores decreased significantly from 26.2 pre-intervention to 18.5 and 17.4 in immediate and late post-intervention. **Conclusions***:* After the implementation of the Matter of Balance program, the subjects' balance scores improved, and the mean of fear of falling decreased. **Recommendations**: Future studies on MOB may continue to demonstrate its effectiveness in improving balance and decreasing fear of falling within various settings for older adults.

Keywords: Balance; Fear of falls; Matter of Balance; Older Adults.

Introduction

Fear of falling (FOF) is the most dangerous fall complication, resulting in increased disability **(Scheffer et al., 2008)**. Fear of falling among the elderly extended from 12 to 65 % among those who had never fallen to 28 to 95 % among those who had already fallen in the United States **(Zhao et al., 2017)**. A study conducted in Dakahlia- Egypt, by **Saleh et al., (2018)** reported the overall prevalence of fear of falling in the elderly was 64.4%. While a study conducted in Alexandria, Egypt in 2008 found that the majority of participants in assisted living facilities (both public and private) have fear of falling from moderate to severe **(Sharaf and Ibrahim, 2008)**.

Fear of falling is defined as a persistent fear of falling, and it can force people to avoid activity even if possible **(Tinetti and Powell, 1993)**. According to **Delbaere et al., (2010)**, moderate fear of falls helps older people become more aware of the risk of falls. The fear of falls is found in the elderly, whether or not they have fallen **(Tinetti et al., 1990; Tinetti et al., 1994)**.

Several consequences were found to be associated with FOF including a decrease in quality of life, decreased social contact mobility, functional decline, falls and institutionalization **(Cumming et al., 2000; Friedman et al., 2002)**.

Fear of falling (FOF) is one of the most common health problems faced by the elderly **(Balash et al., 2007)**. So, it is very important to use different measures and interventions to decrease the level of fear of falling and improve mobility, balance, and postural control among the elderly **(Chen et al., 2013)**. Matter of Balance (MOB) program is a group-based program that uses cognitive-behavioral therapy (CBT) it includes self-instructional techniques to promote simplification of skills learned during program sessions to reduce fear of falling and activity-related limitations **(Peterson, 2002; Scheffer et al., 2008; Haynes et al., 2014)**.

A Matter of Balance: Managing Concerns about Falls (AMOB) is an evidence-based program for older adults that focuses on teaching cognitive-behavioral strategies for managing fear related to falling and subsequent

activity restrictions **(Main Health, 2017)**. Several studies have reported participant outcomes associated with the implementation of the AMOB program **(Ory et al., 2010; Zijlstra et al., 2013)**. Results indicated a positive impact on FOF, activity avoidance/restriction, falls self-efficacy, balance confidence, and functional measures **(Zijlstra et al., 2009; Smith et al., 2011; Ullmann et al., 2012)**.

The main objective of this program is to decrease the fear of falling and increase participation in physical, social, and functional activities. To achieve these goals MOB works towards increasing an individual's self-efficacy and the belief that falls are controllable. Unfortunately, after reviewing the relevant literature, researchers found that MOB had not been tested in the field of gerontological nursing in Egypt.

Aim of the study

Was to determine the effect of the Matter of Balance program on improving balance and reducing fear of falls among community-dwelling older adults.

Research Hypotheses:

1. Older adults who receive the Matter of Balance (MOB) program, will report an improvement in balance

2. Older adults who receive the Matter of Balance (MOB) program, will report a decrease in the level of fear of falls.

Subjects and Method

Research Design: To achieve the study's aims, a quasi-experimental (pre-and post-intervention) study design was used. In terms of baseline characteristics, it identified a pre-group that is as similar to the post-group as possible. There were differences in outcomes between the pre-and post-groups **(Campbell and Stanley, 2015)**.

Setting: The study was carried out at El-Amal elderly club in Mansoura city, Dakahlia Governorate; it is a social club affiliated to the Ministry of Social Solidarity. The club operates seven days a week and provides many services for the elderly, whether educational or recreational.

Subjects: A convenient sample of 50 older adults out of 110 regular attendants of the elderly club were included, they were divided into small groups each group consisting of 3 to 5 older adults. Aged 60 and older, able to communicate and fallers or non-fallers. Older adults diagnosed with neurological disorders such as stroke, Alzheimer's disease, or mental illnesses and elders who are bedridden or dependent on a wheelchair were excluded from the study.

Tools:

Tool I: Structured Demographic and Clinical Data Interview Schedule: This tool was developed on the basis of related literature **(Balash et al., 2007; Sharaf and Ibrahim. 2008; Chen et al., 2013; Saleh et al., 2018)** to collect data related to the older adults' age, sex, marital status, education level, income, and place of residence. Also, it assessed their past history of falls and health history such as the presence of medical conditions.

Tool II: Katz and Akpom Scale (1976): This scale assesses the degree of dependence on carrying out activities of daily living (ADL). It has been translated into the Arabic language and validated by **Melis and El Shazly, (1999)**. Personal hygiene, toilet use, meals, changing clothes, bathing, and transportation are all included in the scale. The score for each dependency level was 1-3, and the overall score was 18. Independent elders will be given 6 points. Those who are partially dependent are given a score of 7 to 12, and those who are totally dependent are given a score of 13 to 18.

Tool III: Berge Balance scale (BBS): Berg and Woo-Daphine (1995), examine the balance of older people. Mohamed translated the scale into Arabic and assessed its content validity and reliability (r= 0.95) (2012). It includes 14 items graded on a 0 to 4 scale, such as standing and sitting, standing unsupported, sitting behind unsupported but with feet supported by the floor, standing for sitting, moving, closing eyes with unsupported standing, standing without supporting legs together, stretching arms while standing, reaching forward, picking up objects from the floor when standing, over left and right shoulders when standing backward, 360-degree rotation when standing, standing forward with

one foot without assistance, standing with one foot, alternating feet on steps or stools when standing without support. The total number of points is 56 and it is divided into the following categories: 41- 56 Low risk of falls, moderate risk of 21-40 falls, high risk of 0-20 falls.

Tool IV: The Modified Falls Efficacy Scale (MFES): Tinetti et al., (1990) developed this scale, which was later adapted by **Buchner et al., (1993)**. On the other hand, **Sharaf and Ibrahim, (2008)** translated the scale into Arabic and checked its reliability (r = 0.70). The scale measures fear of falling over ten daily activities; each question is rated on a scale of 1 (not at all concerned) to 4 (severely concerned). The total score ranges from 10 to 40 and is divided into; not at all concerned from 1 to 10, slightly concerned from 11 to 20 - moderately concerned from 21 to 30, and very concerned from 31 to 40.

Matter of Balance program (MOB):

In the 1990s, Boston University's Roybal Center created and evaluated a matter of balance (MOB) program for improving late-life function as a complete approach to optimizing activity engagement and function while lowering fall risks **(Howland J et al., 1998; Tennstedt et al., 1998)**. The core elements of A MOB are (a) cognitive restructuring and behavioral activation activities that promote the belief that falls and fear of falling are controllable; (b) enhancing fall self-efficacy and fall management by helping participants set realistic goals for increasing activity; (c) promoting changes in modifiable risk factors such as securing loose rugs in their home environment; and (d) promote changes in modifiable risk factors such as fixing loose carpets in their homes; and (E) teach exercises that reduce fall risk by increasing strength and balance **(Tennstedt and Peterson et al., 1998)**.

This program consisted of 8 sessions, 1 session weekly lasting 30–45 minutes, and in a group of 3–5 participants needed to complete all eight sessions.

Matter of Balance program includes:
Session 1: Introduction of MOB
Session 2: Exploring thoughts and concerns about falling

Session 3: Simple balance exercises are started in week 3 and last through week 8 including:
- Importance of practicing exercise to prevent falls.
- Practical training balance exercise (demonstration of balance exercise by researchers and redemonstration was done by the elderly).
Session 4: Assertiveness and falls prevention: develop a sense of self-awareness, and learn to be assertive about own needs to prevent falls.
Session 5: Coping with fall anxiety.
Session 6: Realizing Fall-ty Habits.
Session 7: Recognizing the risk of falls at home and in the community.
Session 8: Practicing No Fall-ty habits for fall prevention: Putting it all together.

Teaching Methods:
- PowerPoint presentation
- Videos
- Booklet (handout)
- Demonstration and redemonstration

Procedure

- The official letter was obtained from the Faculty of Nursing at Mansoura University and forwarded to the director of the El Amal elderly club for approval to carry out the study.

- The head of the elderly club was informed of the purpose of the study.

- Study tools were assured of their content validity by a jury of five experts in Gerontological nursing.

- The study used the Arabic versions of tools II, III, and V to assess elders' ability to perform ADLs, balance, and fear of falling.

- Survey all elders attending the elderly club for two weeks, and select elderly persons who fulfill the study criteria and agree to participate in the study.

- Educational booklet which contained information about fear of falling and balance exercise written in simple Arabic language developed by the researcher and given to each elder participated in the study.

- To test the clarity of the tool, a pilot study was conducted with 10 elders selected from

Talkha City's Elsaada elderly Club. Approximately the time required for the interview and the necessary modifications have been made.

- Researchers interviewed each elderly person individually (face – to face interview) to gather the necessary information using research tools. The time of the interview ranged from 30 to 45 minutes.

- Demonstration of balance exercise by the researchers to help the elderly learn how to practice balance exercises.

- The administrators working in the club were present with the researchers during the application of the program.

- Balance exercises have been re-demonstrated by the elderly under the instruction of the researchers.

- Researchers have followed precautionary measures during program application such as wearing a mask, using alcohol, and social distancing

- The data collected over a period of 9 months started from the first of September 2020 to the last of May 2021.

Evaluation of the program:

Evaluation of the program was done immediately after the implementation and the second reassessment of the program was done after 4 months.

Ethical Considerations:

Approval of Research Ethics Committee Faculty of Nursing Mansoura University was obtained. After the explanation of the study's purpose, verbal consent was obtained from elderly persons. Privacy, confidentiality, anonymity, and the right to withdraw at any time were assured.

Data processing and analysis:

Data were analyzed using Statistical Package for Social Sciences (SPSS) software version 23 (Armonk, NY: IBM Corp). Categorical variables were presented as numbers and percentages. Chi-squared test was used for comparison between groups. Numerical data were presented as mean and standard deviation. Repeated measure ANOVA with Bonferroni's post-hoc multiple comparisons were used to test significant changes in the post-intervention score in different follow-ups. For all statistical tests, a p-value <0.05 was considered significant.

Results:

Table 1 shows that the mean age of study participants was 69.8 ± 4.9 years, 56% are females, 60% are married, 74% had secondary education or more, 84% are of urban residence, 52% reported fall in the last year, 88% had one or more chronic disease and 42% needs assistance in performing activities of daily living.

Table 2 shows that the balance of the study subjects was improved, moderate and high risk of falls according to Berg Balance Scale was 80% in the pre-intervention, this significantly decreased to 28% in immediate post-intervention then increased to 52% in late post-intervention and the difference is statistically significant (**P1**= ≤0.001, **P2**= 0.007 and **P3**= 0.014; respectively). Regarding fear of falls, it was noticed that the moderate and severe fear of falls significantly decreased from 76% to 48% and 24% in pre, immediate, and late post-intervention; respectively and the difference is statistically significant (**P1**= 0.004, **P2** =≤ 0.001, and **P3**= 0.012; respectively).

Table 3 shows that the overall mean balance score increased significantly from 30.8 in the pre-intervention to 41.3 and 39.1 in immediate and late post-intervention (**P**= ≤ 0.001). This significant increase persists for most categories of the sociodemographic and clinical parameters studied.

Table 4 shows that the overall mean fear of fall score decreased significantly from 26.2 pre-intervention to 18.5 and 17.4 in immediate and late post-intervention (**P**= ≤ 0.001). The decrease in mean FOF score in late post-intervention is statistically not significant from the early post-intervention. This pattern persists in different categories of the study variables.

Table 1: Demographic and Clinical Data of the Study Population

Items	No (%) (n=50)
Age (years): <70	21(42)
70 & more	29(58)
Mean ± SD	**69.8±4.9**
Sex: Male	22(44)
Female	28(56)
Marital status: Married	30(60)
Widow	20(40)
Education: Read and write	13(26)
Secondary& more	37(74)
Income: Enough	19(38)
No enough	31(62)
Residence: Urban	42(84)
Rural	8(16)
Last year fall	26(52)
Chronic diseases	44(88)
ADL: Independent	29(58)
Need assistance	21(42)

ADL=activities of daily living

Table 2: Effect of Matter of Balance Program on Balance and Fear of Falls

Items	Pre N(%)	Post 1 N(%)	Post2 N(%)	P1	P2	P3
Berge Balance scale:						
Low risk of falls	10(20)	36(72)	24(48)	≤0.001	0.007	0.014
Moderate and high risk of falls	40(80)	14(28)	26(52)			
Fear of Falls (FOF):						
No and slight	12(24)	26(52)	38(76)	0.004	≤0.001	0.012
Moderate and severe	38(76)	24(48)	12(24)			

P1=pre vs. post1, P2= pre vs. post2, P3=post1 vs. post2

Table 3: Effect of Matter of Balance Program on Balance Score Using Berge Balance scale and Its Variation with Different Parameters

Items	Total (n=50)	BB score			
		Pre Mean ±SD	Post 1 Mean ±SD	Post 2 Mean ±SD	P*
Overall	50	30.8±8.0 [A,B]	41.3±7.5 [A,C]	39.1±7.6 [B,C]	≤0.001
Age (years): <70	21	32.3±8.9 [A,B]	42.3±6.3 [A]	40.4±7.6 [B]	≤0.001
70 & more	29	30.0±7.7 [A,B]	40.7±7.7 [A,C]	38.1±7.6 [B,C]	≤0.001
Sex: Male	22	32.2±8.1 [A,B]	42.7±8.1 [A,C]	40.3±8.0 [B,C]	≤0.001
Female	28	29.9±7.9 [A,B]	40.3±7.0 [A,C]	38.1±7.3 [B,C]	≤0.001
Marital status: Married	30	31.9±8.1 [A,B]	41.6±8.0 [A,C]	39.6±8.0 [B,C]	≤0.001
Widow	20	29.6±7.9 [A,B]	40.9±7.0 [A]	38.3±7.1 [B]	≤0.001
Education: : Read and write	13	27.5±8.2 [A,B]	37.9±6.8 [A]	34.7±7.0 [B]	≤0.001
Secondary& more	37	32.2±7.7 [A,B]	42.5±7.5 [A,C]	40.6±7.3 [B,C]	≤0.001
Income: Enough	19	31.9±7.4 [A,B]	43.4±8.2 [A,C]	40.7±8.3 [B,C]	≤0.001
No enough	31	30.4±8.4 [A,B]	40.1±6.9 [A,C]	38.1±7.1 [B,C]	≤0.001
Residence: Urban	42	31.5±7.3 [A,B]	42.1±7.4 [A,C]	39.4±7.7 [B,C]	≤0.001
Rural	8	27.8±11.1 [A,B]	37.4±7.6 [A]	37.3±7.6 [B]	≤0.001
Last year fall: Yes	26	27.8±7.3 [A,B]	38.1±7.8 [A,C]	35.8±6.7 [B,C]	≤0.001
No	24	34.3±7.5 [A,B]	44.8±5.6 [A]	42.7±7.0 [B]	≤0.001
Chronic diseases: Yes	44	30.6±8.2 [A,B]	40.7±7.6 [A,C]	38.5±7.8 [B,C]	≤0.001
No	6	33.7±6.2 [A,B]	46.3±4.4 [A,C]	43.3±5.1 [B,C]	≤0.001
ADL: Independent	29	35.2±5.4 [A,B]	45.2±4.2 [A,C]	43.3±4.9 [B,C]	≤0.001
Need assistance	21	25.1±7.4 [A,B]	36.0±7.9 [A,C]	33.2±6.9 [B,C]	≤0.001

* Repeated measure ANOVA   A,B,C significant differences by Bonferroni post-hoc multiple comparisons

Table 4: Effect of Matter of Balance Program on FOF Score and Its Variation with Different Parameters

Items	Total (n=50)	FOF score			
		Pre Mean ±SD	Post 1 Mean ±SD	Post 2 Mean ±SD	P*
Overall	50	26.2±5.6 [A,B]	18.5±6.1 [A]	17.4±5.6 [B]	≤0.001
Age (years): <70	21	25.1±5.5 [A,B]	16.9±5.6 [A]	15.6±5.4 [B]	≤0.001
70 & more	29	26.9±5.7 [A,B]	19.6±6.2 [A]	18.8±5.5 [B]	≤0.001
Sex: Male	22	24.5±5.6 [A,B]	16.5±6.9 [A]	15.7±6.2 [B]	≤0.001
Female	28	27.4±5.5 [A,B]	20.0±4.9 [A]	18.8±4.9 [B]	≤0.001
Marital status: Married	30	25.2±5.1 [A]	17.2±6.2 [A]	16.6±5.9 [B]	≤0.001
Widow	20	27.6±6.2 [A,B]	20.4±5.4 [A,C]	18.7±5.0 [B,C]	≤0.001
Education: : Read and write	13	27.3±4.3 [A,B]	20.3±4.6 [A]	19.7±5.2 [B]	≤0.001
Secondary& more	37	25.8±6.0 [A,B]	17.8±6.4 [A]	16.6±5.6 [B]	≤0.001
Income: Enough	19	24.5±5.8 [A,B]	17.3±6.2 [A]	16.5±5.7 [B]	≤0.001
No enough	31	27.2±5.3 [A,B]	19.2±5.9 [A]	18.0±5.6 [B]	≤0.001
Residence: Urban	42	26.4±5.4 [A,B]	18.5±6.5 [A]	17.6±5.8 [B]	≤0.001
Rural	8	24.9±6.9 [A,B]	18.3±3.6 [A]	16.4±5.0 [B]	≤0.001
Last year fall: Yes	26	29.4±3.6 [A,B]	22.3±4.4 [A,C]	20.7±4.6 [B,C]	≤0.001
No	24	22.6±5.3 [A,B]	14.3±4.6 [A]	13.9±4.4 [B]	≤0.001
Chronic diseases: Yes	44	26.3±5.5 [A,B]	18.5±6.2 [A]	17.4±5.7 [B]	≤0.001
No	6	25.3±6.9 [A,B]	17.5±5.2 [A]	17.5±5.9 [B]	≤0.001
ADL: Independent	29	24.2±5.9 [A,B]	16.00±5.6 [A]	15.9±5.5 [B]	≤0.001
Need assistance	21	28.9±4.0 [A,B]	21.8±5.0 [A,C]	19.5±5.2 [B,C]	≤0.001

* Repeated measure ANOVA   A,B,C significant differences by Bonferroni post-hoc multiple comparisons

Discussion

One of the challenges facing either fallers or non- fallers' older adults is fear of falling and restriction of mobility which increased risks for recurrent falls and poor quality of life. A Matter of Balance (AMOB), is a group-based program that decreases fear of falling and improves balance and associated activity restrictions **(Haynes et al., 2014)**. Therefore, the aim of this study was to determine the effect of the "Matter of Balance" (MOB) program on improving balance and reducing fear of falls among Community-dwelling older adults.

The present study proved the hypothesis that A Matter of Balance Program can reduce fear of falls and increase balance confidence among older adults. It was observed that the balance score increased significantly in two months follow up than pre-intervention and then slightly decreased in late post-intervention however; the difference is still statistically significant. The reason for the decrease could be that after the 8-week group program, the participants did not maintain their regular exercise routine. While fear of falls reduced significantly in two months and four months follow up after the intervention than pre-intervention and the difference is statistically significant (Table 2). These findings can be justified by that elderly people support extended use of this program to reduce fear of falling and the physical risk of falling, which reduced both avoidance behaviors caused by FOF and concerns about falling through an approach that combines education and exercise. In this respect, this result is in a parallel line with other studies done by **Chen et al., (2013) and Reynolds et al., (2019)** who reported significant improvements in their physical risk of falling as a result of the Matter of Balance Program's impact on falls and physical risk of falls. Thus, the potential of the MOB program to scale back fear of falls and physical risk factors of falling among the elderly is notable. Also, these findings were parallel with **Glittenberg et al., (2018)**. Additionally**, kuptniratsaikul et al., (2011)** reported that performing simply-designed balancing exercises, can increase balance abilities and decrease fear of fall rates in the elderly with a history of previous falls.

Tendencies to fall increase with age and differ between men and women. The findings of the present study revealed that balance score has improved and fear of falls score decreased more among study participants who were less than 70 years old than in those who were 70 years old and more, and in males than in females and the difference is statistically significant (Table 3,4). This may be attributed to that the younger age group and males are more willing to participate in

the MOB program, also males are more engaged in physical exercises than females. These findings are in the same line as **Chen and Tuo (2013) and Huang et al., (2016)** who reported that practicing balance and strength exercises were significantly affected by age. Also, the elderly males had a higher mean score in practicing the MOB program than the elderly females.

Concerning the marital status of the studied subjects, the current study illustrated that there is a significant improvement in balance score in two months follow up than pre-intervention and then slightly decreased in late post-intervention in married older adults than those who are either unmarried. While fear of falls scores decreased in married older adults than in those who are either unmarried two months after the implementation of the MOB program which decreased again in late post-intervention and is still statistically significant during follow-up periods (Table 3,4). This may be explained that the elderly who have social support groups, especially a life partner make the participants more motivated and interested to engage in the MOB program. This is in accordance with other studies done by **Sharaf and Ibrahim, (2008) and Schwarzbach et al., (2014)**, which noticed that social support plays an important role in eliminating the depressive syndrome and helps relieve the fear of falls during practicing daily living activities.

The level of education can be considered a determinant factor in the effectiveness of the MOB. A significant improvement was noticed in balance score in two months follow up than pre-intervention and then slightly decreased in late post-intervention in older adults who have a higher level of education than those with lower educational level. While fear of falls scores decreased in older adults who have a higher level of education than those with lower educational level two months after the implementation of the MOB program which decreased again in late post-intervention and is still statistically significant during follow-up periods (Table 3,4). This may be explained by the more educated older adults having a better ability to relate the possible mechanisms regarding the effect of balance and cognitive restructuring through learning and to convert negative thinking into positive patterns using cognitive-behavioral therapy during the 8 weeks of the program. This result is in agreement with **Chen and Tuo (2013)**

who commented that the highest levels of education have an advantage in terms of greater understanding and help the elderly to view their abilities and acquire a sense of control over the problem. Also, **Palmer and Mercer (2019)** reported that the more educated elders have a better ability to get process, and comprehend basic health information and services needed to make appropriate health decisions.

Regarding the effect of the MOB on factors surrounding the occurrence of falls, the findings of the present study revealed that older people who have fallen in the last year have significantly improved balance scores and less fear of falls than those who did not fall in two months after the implementation of the MOB program which increased again in late post-intervention and still statistically significant during follow-up periods (Table 3, 4). This may be due to those older adults who have a history of falls having bad experiences with falls, their consequences, and knowing how dangerous it is. Also, **Reynolds et al., (2019)** reported that MOB is an evidence-based program designed to help in decreasing the fear of falling among elderly who have a previous history of falls and increase activity in older adults and significant differences were found. Also, **Healy et al., (2008), Zijlstra et al., (2009), and Palmer and Mercer, (2019)** confirmed that the MOB program decreases the fear of falling in older adults. The cognitive-behavioral intervention promotes the FOF awareness and problem-solving ability of participants, thus promoting their help-seeking behaviors for avoiding falls, which in turn decreased fear of falls.

Multiple co-morbidities in older adults, like heart diseases, elevated blood pressure, and osteoporosis play a considerable role in the increased risk of frequent falls and fear of falling, resulting in older adults being less physically active (**Immonen et al., 2020**). In this regard, the current study highlighted a significant relationship between the presence of multiple co-morbidities and decreased balance, and increased fear of falling among older adults pre-intervention. On the other hand, the study findings revealed a significant improvement in balance score in two months follow up than pre-intervention and then slightly decreased in late post-intervention in older adults who haven't multiple co-morbidities than those who have and

still statistically significant during follow-up periods. Also, the study findings revealed that fear of falls scores decreased in older adults who haven't multiple co-morbidities than those who have two months follow up than pre-intervention (Table 3,4). The proper explanation of these findings could be due to the older adults who haven't multiple co-morbidities have more ability to maintain practicing exercise also, the combined intervention which includes the effect of exercise and cognitive restructuring through learning, can increase mobility and improve balance and thus decreased fear of falling. In this respect, these results are in a parallel line with other studies done by **Chen and Tuo (2013), Mohamed (2012), and Kader et al., (2016)**, which proposed that FOF and balance impairment are experienced more frequently among older adults who had chronic medical disorders.

Loss of independence through restrictions of daily activities, which leads to slower physical performance and greater disability, was associated with fear of falling **(Murphy et al., 2002)**. In this respect, the finding of the present study illustrated that the study participants became more physically active and were able to perform the activities of daily living better and the difference between activities of daily living and balance score and fear of falls score is statistically significant. This can be justified that when older adults use the MOB program, they tend to manage their FOF better so that they are able to return to their activity or engage in more activity, and practicing balance exercise improves balance which enhances older adults' physical capacities. These findings are congruent with the study performed by **Mohamed, (2012), Huang et al., (2005), and Chen et al., (2015)**. On the contrary, **Palmer and Mercer, (2019)** reported that no evidence was found that MOB participation increased physical activity. The MOB may not be appropriate for measuring activity levels.

Conclusion

Based on the findings of the present study, it can be concluded that, after implementation of the Matter of Balance program, the subjects' balance score improved, the mean score of fear of falling decreased, and were able to perform the activities of daily living better.

Recommendations

- The Matter of Balance training program is recommended for nurses and other health care workers in primary care offices and community clinics.

- Future studies on AMOB may continue to demonstrate its efficacy in improving balance and reducing fear of falling in a variety of settings for older adults.

Study' limitations

This study has some limitations, including a small sample size, in a single institution and that doesn't reflect the situation in the community.

Acknowledgments

Declarations

Ethical approval

The current study was approved by the Ethical Committee at the Faculty of Nursing Mansoura University NO P.0229

Guidelines

All methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflict of interest:

The authors declare that there are no conflicts of interest.

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