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Physical Inactivity among Ruralolder Adults and its Associated Factors

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Abstract: Elderly people represent the highest percentage of physical inactivity, compared to younger age groups. It is one of the most leading risk factors of morbidity and mortality throughout the world. This study aimed to assess physical inactivity among rural older adults and its associated factors. The study was carried out in two randomly selected village saffiliated to Mansoura district. 377 older adults' residents in rural areas were selected using a systemic random sample. Two tools were used: Socio demographic and clinical data structured interview schedule and International Physical Activity Questionnaire - Short Form. Results showed that physical inactivity is prevailing among 79.8% of the study subjects. Physical inactivity is higher among older adults with advanced age, females, who are illiterate, housewives and who with chronic disease. *Conclusion*: Physical inactivity was prevalent among older adults. *Recommendations*: Development of an educational program to elderly people to raise their awareness about the importance of physical exercises.

Key words: Physical Inactivity · Older Adults · Rural Areas · Associated Factors

INTRODUCTION

Physical inactivity contributes to the death of approximately 3.2 million people every year. It is ranked by World Health Organization as one of The most leading risk factors of morbidity and mortality throughout the world [1]. Physical inactivity is defined as"an activity level insufficient to meet present recommendations "or" as engaging in physical activity levels insufficient to reachthe current guidelines [2]. People that do not practice exercise have 20 to 30% greater risk of mortality than individuals who practice at least 30 minutes of physical activity on most days of the week [2].

Worldwide nearly one third of adults are considered inactive and older adults are at particular risk of inactivity [3]. Physically inactivity Is generally higher among older adults and the prevalence is greater than 70% [4]. A national survey in Germany reported that 72.8% of elderly female and 65.3% of elderly male (age 65 years and above) did not reach to the recommended time of at least 2.5 hours per week of moderate-intensity physical activity [5]. Another study done in a Brazil reported that elderly people represent the highest prevalence of physical inactivity [6]. Similar findings can be observed in several studies [7-9]. As a result of these high rates of insufficiently active older adults highlight the need to better understand the reasons for inactivity in this population [5]. In order to maintain the health of older adults it is recommended that they perform an average of 30 minutes of moderate-intensity activities on most days of the week [8]. In spite of these recommendations, many elderly individuals prefer to remain inactive. Psychological distress and depression, obesity, diabetes, cardiovascular disease, breast and colon cancers and shortens life expectancy are consequences of physical inactivity [10].

World wide it is estimated that physical in activity caused approximately 20% of the burden of disease from breast and colon cancers, 7%of type 2 diabetes and 6% of coronary disease [10]. There are several factors lead to lack of participation in physical activity among older adults including health status as chronic health problem and pain, weather, psychological issues as self-commitment, negative perception of exercise outcome, demographic background as education level, age, sex, income and support from family members, friends is also a significant factor in physical inactivity [8, 11].

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Identifying the factors associated with physical inactivity can help nurses take appropriate interventions. So, the gerontological nurse should assess these factors and help the elderly by giving specific physical activity advice. Therefore, this study was done to determine physical inactivity among rural older adults and its associated factors.

Aim of the Present Study: Assess physical inactivity among rural older adults and its associated factors.

Research Question: What is the prevalence of physical inactivity among rural older adults and its associated factors?

MATERIALS AND METHODS

Materials

Study Design: The study followed a cross -sectional descriptive research design.

Setting: The study was carried out in two randomly selected villages from 23 villages affiliated to Mansoura District, Egypt (El Baramoon and Badaway).

Subjects: 377 older adults selected from the previous settings, aged 60 years and above, able to comprehend and communicate effectively.

Sample size was calculated online: (http://www.raosoft.com/samplesize.html). Previous studies revealed that at least 55% of elderly were physically inactive [6], alpha error of 5%and study power 80% then sample size = 377. This sample was distributed proportionally according to the number of elderly registered in the local Family Medicine Centers between the two villages (182 from El Baramoon and 195 from Badaway) according to number of total population. Elders were selected using a systematic random sample from each village, from the family files.

Tools:

Tool I: Socio Demographic and Clinical Data Structured Interview Schedule

This tool was developed by the researcher based on relevant literature; it included two parts:

Part I: Socio demographic characteristics of the study subjects as age, sex, level of education, marital status, living condition, occupation before retirementand income.

Part II: It included presence of chronic illnesses and measuring elderly weight and height to calculate body mass index to assess presence of obesity and over weight.

Tool II:

International Physical Activity Questionnaire - Short Form (IPAQ-SF): This scale was developed by Craig [12]. It is originally designed to assess the physical activity. It was translated into Arabic language and validated by Awadalla [13]. These activities include walking, moderate-intensity activities and vigorous intensity activities; frequency (measured in days per week) and duration (time per day). These activities are collected separately for each specific type of activity. The items were designed to provide separate scores on walking; moderate and vigorous-intensity activity as well as a combined total score to describe overall level of activity. Computation of the total score requires summation of the duration (in minutes) and frequency (days) of walking, moderate- intensity and vigorous-intensity activity;

Three levels (categories) of physical activity are proposed:

Category 1: Low level of physical activity, include individuals who do not meet criteria for categories 2 or 3.

Category 2: Moderate level of physical activity: it includes any one of the following three criteria:

- 3 or more days of vigorous activity of at least 20 minutes per day.
- 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day.
- 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-min/week.

Category 3: High level of physical activity: It includes any one of the following two criteria:

- Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/ week.
- 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes/week.

Method:

- Permission to carry out the study was obtained from the directors of Family Medicine Center in each village.
- Study tools were reviewed by five experts in the field of gerontological nursing to test its content validity and feasibility and necessary modifications were done.
- Arabic version of tool II (International Physical Activity Questionnaire-Short Form) was used to assess physical activity for each elderly. It was tested for itsinternal consistency Cronbach's alpha = 0.82.
- A pilot study was carried out on (10% of the study sample, 37 elderly) selected from Awesh El-Hagar village, Mansoura, Dakahlia, to test and ascertain the clarity, feasibility, applicability of the study tools and the necessary modifications were done accordingly. The elders included in the pilot study were excluded from the study sample.
- Verbal consent was obtained after explanation of the study purpose.
- Each elderly was interviewed individually in his – her home by the researcher to collect the necessary data using study tools.
- The body mass index (BMI) was calculated using the following equation: BMI= weight (kg) / (height)^2(m). Body mass index categories <18.5 under weight, 18.5 to <25.0 desirable or normal weight, 25.0 to <30.0 overweight, = 30.0 obese [14].
- Data were collected over a period of three months started from first of June 2016 to the last of August 2016.

Ethical Considerations: Approval of the research ethics committee of the Faculty of Nursing, Mansoura University was obtained. Verbal consent was obtained from elderly persons. Confidentiality and privacy was assured.

Data Analysis: Data were analyzed using (SPSS) program version 16. Variables were presented as number and percent. Chi squarewas used to test the significance in bivariate analysis (as appropriate) and crude odds ratios (COR) and their 95% CI were calculated. Variables significantly associated with inactivity in bivariate analysis were entered into a multivariate logistic regression model using forward Wald method. Adjusted OR and their 95% CI were calculated. P≤0.05 was considered statistically significant.

RESULTS

It was observed from the Table (1) that the age of the study subjects ranged from 60 to 86 years with a mean of 67.16±5.77. The prevalence of physical inactivity is 79.8% among the study subjects. Physical inactivity is significantly higher in older age groups (COR=5.96), in female (COR=5.1), illiterate and just read and write elderly (COR=5.1), house wives (COR=3.5), those with not enough income (COR=4.5) and elderly living alone (COR=1.6).

Table 2 reveals that physical inactivity is significantly higher among elderly people with cardiac disease, those who have hypertension (COR= 5.4), musculoskeletal disorders (COR= 9.9) and diabetes mellitus (COR= 7.1). On the other hand there is no significance between physical inactivity and obesity.

Table 3 shows that the independent predictors of physical inactivity in order are having musculoskeletal disorders (AOR=13.8), being hypertensive (AOR=11.8) being diabetic(AOR=11.6), being female (AOR=3.7) and those who don't have enough income (AOR=3.7).

DISCUSSION

Sedentary lifestyles among elderly often create a vicious circle of disease and disability. Physical inactivity is a major public health problem and a major modifiable risk factor for the development of chronic non communicable diseases [15]. Therefore this study was conducted to assess physical inactivity among rural older adults and its associated factors.

The prevalence of physical inactivity is increased significantly with aging. The current study results reported a high prevalence of physical inactivity among the study subjects (79.8 %). This result is in agreement with a study done in Brazil 2016 by Ribeiro *et al.* [16] who reported that the prevalence of physical inactivity was 70.1%. Also, this result is supported by other studies [7, 8, 17]. Similar study done in Malaysia by Kaur*et al.* [16] 2015 which stated that physical inactivity among the elderly was (88.0%). In contrast, a study was donein Germany by Moschny, 2011 which reported low prevalence of physical inactivity among their participants (17%) .Furthermore, a study done in Swedish by Sjors, [19] 2014, reported that 36.0% of the study sample was physically inactive. This contradiction may be related to that the contradicted study was conducted on general population and the elderly was considered a sector of its sample.

Table 1: Prevalence of physical inactivity and itsvariation with socio-demographiccharacteristics of the study subjects.

	Total	Physical Inactivity N (%)	P	COR(95% CI)
	377	301(79.8)		(75.8-83.9)
Age (years):				
60-	145	102(70.3)	0.09	1(r)
65-	126	100(79.4)	≤0.001	1.6(0.9-2.8)
70 -86	106	99(93.4)		5.96(2.6-13.9)
Mean± SD		67.16±5.77		
Gender:				
Male	202	140(69.3)	≤0.001	1(r)
Female	175	161(92.0)		5.1(2.7-9..5)
Marital status:				
Married	228	174(76.3)	0.035	1(r)
Widow/divorced/single	149	127(85.2)		1.8(1.04-3.1)
Education:				
Illiterate/read & write	130	118(90.8)	≤0.001	5.1(2.5-10.5)
Less than secondary	69	54(78.3)	0.1	1.9(0.9-3.8)
Secondary	70	58(82.9)	0.3	1.4(0.8-2.7)
University	108	71(65.7)		1(r)
Occupation:				
Employees	236	180(76.3)	≤0.001	1(r)
House wives	99	91(91.9)	0.5	3.5(1.6-7.7)
Farmer/Manual workers	42	30(71.4)		0.8(0.4-1.6)
Income:				
Enough	255	188(73.7)	≤0.001	1(r)
Not enough	122	113(92.6)		4.5(2.1-9.3)
Living condition:				
With family	236	182(77.1)	0.09	1(r)
Alone/others	141	119(84.4)		1.6(0.9-2.8)

COR=crude odds ratio CI=Confidence interval

Table 2: Physical inactivity and its variation with associated morbidity of the study subjects

	Total	Physical Inactivity N(%)	P	COR(95% CI)
Cardiac disorders:				
Yes	40	40(100.0)	≤0.001	Undefined
No	337	261(77.4)		1(r)
Hypertension:				
Yes	155	144(92.9)	≤0.001	5.4(2.8-10.7)
No	222	157(70.7)		1(r)
Respiratory disorders:				
Yes	15	15(100.0)	0.047	Undefined
No	362	286(79.0)		1(r)
Renal disorders:				
Yes	16	16(100.0)	0.04	Undefined
No	361	285(78.9)		1(r)
Hepatic disorders:				
Yes	40	34(85.0)	0.4	1.5(0.6-3.7)
No	337	267(79.2)		1(r)
Musculoskeletal disorders:				
Yes	158	151(95.6)	≤0.001	9.9(4.4-22.3)
No	219	150(68.5)		1(r)
Diabetes mellitus:				
Yes	89	85(95.5)	≤0.001	7.1(2.5-19.99)
No	288	216(75.0)		1(r)
Over weight/obesity:				
Yes	174	139(46..2)	0.98	1(r)
No	203	162(53.8)		1.1(0.6-1.6)

COR=crude odds ratio CI=Confidence interval

Table 3: Multivariate logistic regression analysis of independent predictors of physical inactivity

	B	P	AOR(95% CI)
Gender:			
Male	-	≤0.001	1(r)
Female	1.3		3.7(1.8-7.6)
Income:			
Enough	-	0.002	1(r)
Not enough	1.3		3.7(1.6-8.4)
Hypertension:			
Yes	2.3	0.006	11.8(4.6-30.2)
No	-		1(r)
Musculoskeletal disorders:			
Yes	2.6	≤0.001	13.8(5.7-33.5)
No	-		1(r)
Diabetes Mellitus:			
Yes	2.5	≤0.001	11.6(3.8-35.7)
No	-		1(r)
Constant	-0.81		
Model χ^2	131.5, P≤0.001		
Per cent correctly predicted	86.7		

The present study revealed that physical inactivity is more prevalent among older adults compared to young elderly, this result may be due to the effect of ageing process and lack of energy, that inhibit the ability of older adults to perform physical activity. This finding is in agreement with a study done in Brazil by Ribeiro, 2016 [16] who stated that the prevalence of physical inactivity increased among elderly aged 80 year and older. Also, this result is supported by other studies [18, 20, 21]. On the other hand a study done in Putrajaya by Ng, 2014 [22] reportedthat age was not significantly associated with the perceived barrier of exercise.

As for sex, the current study results revealed that physical inactivity is more prevalent in elderly females than elderly males. This can be explained by the fact that most women in rural areas do not shop outside and men do so instead of them. This finding is consistent with a study done in Brazil by Kaur [18], reported that increased prevalence of physical inactivity among females than males. Also, a study done in Iran by Murtagh [20], reported that elderly females were over twice as likely to be inactive than elderly male. The same results are reported by some studies [23, 24]. On the other hand, another studies done by Sallinen *et al.* [25] and Hoare *et al* [26] found no difference in the prevalence of physical inactivity between the genders.

Regarding the level of education this study results revealed that physical inactivity was more prevalent among illiterate elderly people, this may explained by the fact that illiterate people haven't any information about the importance of physical activity. This result is in the same line with a study done in Brazil by Kaur [18] who reported increased prevalence of physical inactivity among elderly who were less educated. The same finding was reported by other studies [16, 20, 26, 27]. Also, this result is supported by a study done in Malaysia, 2013 by Ibrahim, reported that elderly with lower educational level were more likely to perceive more barriers to physical activities than elderlywith higher educational level [28]. On the other hand, a research done in Japan, 2008 found out that highly educated Japanese people perceived more barriers compared to less educate one [29]. While, a study done in Putrajaya, 2014 by Ng, reported no significant relation between educational level and perceived barrier on exercise [22].

Regarding living condition, occupation, income and marital status the results of this study revealed that, there was a significant relation between physical inactivity and elderly who are single, widow, house wife, who don't have enough income and elders living alone. This result may contribute to absence of encouragement from others and lack of social activity participation.This result is supported by a study done in Brazil bySouza, 2016 who reported that physical in activity was significantly prevalent among older persons, those with lower income, no longer married, being unemployed and who living alone [27]. Also, a study conducted in Brazil by Zaitune [30] during 2010 reported the same results.

In the present study physical inactivity is significantly higher among elderly with cardiac disease, those who have hypertension, musculoskeletal disorders and diabetes mellitus. This result is in agreement with other studies were done by Blair 2012 and Brawner, 2016, reported significant correlation between presence of chronic disease among the elderly and increase level of physical inactivity [31, 32]. Also, a study done by Ng, 2014, reported a significant association between the current health status with perceived barriers to exercise [22]. The same finding was reported by Kaur [18] and Craike [33] who reported that older people with chronic illnesses have decreased level of physical activity. Additionally, the same results were reported by Brawner [32]. On contrary, a study was done by Ribeiro, 2016 found no significant relation between chronic diseases and physical inactivity [16]. This may be attributed to that the contradicted study was done on young age sample and some older adults with chronic conditions are successful at overcoming disease-associated activity obstacles, but others are not.

The results of the present study revealed that no significant difference was found between physical inactivity and obese/over weight elders. This results are explained by the fact that the culture of the Egyptian people about exercise has a significant impact more than obesity for non-practicing of physical activity. This result is in the same line with the study done in Brazil by Ribeiro [16] who reported that physical inactivity were reported by 69% of none obese elderly, compared to 66.5% of obese elderlyand the same result was reported by Zhau [34]. On the other hand a study done in German, by Sorkin [35] and another study done in California by Schneider and Becker [36] showed that overweight people were significantly less likely to engage in physical activity.

Multiple regression analysis revealed that the independent factors positively associated with physical inactivity among the study subjects were female gender, low income and presence of musculoskeletal disease, diabetes and hypertension. This is congruent with the result of some studies [16, 18, 27].

CONCLUSIONS

It can be concluded from the present study results that physical inactivity was prevalent among elderly with advanced age, females, who are illiterate, housewives and elderly with chronic disease.

Recommendations: Based on study results the following recommendations are suggested:

- Development of an educational program to elderly people to raise their awareness about the importance of physical exercises.
- In-service training program to all care providers about the importance and benefits of physical activity for elderly person.

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