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Efficacy of the health belief model on older adults' physical activity at a geriatric care home in Baghdad City

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Abstract---Background and objectives: Physical inactivity is responsible for 9% of all deaths worldwide. Furthermore, noncommunicable diseases may be the primary cause of older adults' deaths worldwide. According to the WHO report on the Eastern Mediterranean Region, nearly (2.3 million) deaths occur each year, almost certainly due to a lack of physical activity. The study aims to the efficacy of the Health Belief - based intervention on older adults' physical activity at a geriatric care home in Baghdad city. Design: A randomized controlled trial. Methods: A probability simple random sample of (N = 70) older adults from a homogeneous pool would be chosen. The study sample will be recruited from two geriatric care homes in Baghdad City. The sample will be randomly assigned into an experimental group (35 older adults) and a control group (35 older adults) and be evenly distributed with regard to their age and gender. Results: This finding indicated that prior to the intervention, the mean scores for all HBM concepts and physical activity were almost equal. However, following the intervention, the experimental group was statistically different from the control group, whereas the control group was not significantly different. The difference was higher between the intervention and control groups, and it was positive for all concepts. Conclusion: This study concluded that the health belief model-based health intervention enhanced participants' perceived susceptibility, perceived severity, perceived benefits, cues to action, self-efficacy, and physical activity. On the other hand, it minimized the perceived barriers. Recommendations: homes and providing the necessary resources and sports facilities to promote PA among older adults.

Keywords---Health Beliefs Model (HBM), Physical Activity (PA), Older Adults.

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Introduction

Older adults are a vulnerable demographic that requires special attention due to a number of problems that result in a reduction in the body's physical capabilities and physiological system (1). Globally, non-communicable diseases (NCDs) cause two-thirds of all global deaths. Yearly, around (30 million) people die each year from NCDs in countries with low and intermediate incomes. Lifestyle plays a role in non-communicable diseases. Physical inactivity is responsible for 9% of all deaths worldwide (2). Furthermore, non-communicable diseases may be the primary cause of older adults' deaths worldwide. According to the WHO report on the Eastern Mediterranean Region, nearly (2.3 million) deaths occur each year as a result of four major diseases: cancer; diabetic mellitus (DM); chronic respiratory; and cardiac diseases, which are the leading most common causes of death in the majority of countries in the area, almost certainly due to a lack of physical activity (3). In a nursing home, residents may spend up to 92% of their waking hours sitting or lying down (4).

Conversely, physical activity is a wide term that encompasses a range of complex human behaviors that refer to activity undertaken in a variety of contexts. The phrases "physical activity" and "exercise" are frequently used interchangeably, and are associated with physical fitness (5). To put it another way, physical activity can be defined as any type of body movement that is generated by the contraction of skeletal muscles and results in an increase in energy consumption. Physical activity includes a wide range of activities, from low-intensity exercise to high-intensity exercise, and everything in between. Thus, physical activity encompasses not only exercises like walking, running, and cycling, but also includes work-related tasks (like lifting), domestic tasks (like cleaning), and recreational activities (like gardening or sports))6).

PA provides considerable benefits for all older people. Physical activity is crucial to avoiding and controlling chronic disease. Other advantages include reducing the risk of dementia, subjective quality of life, as well as reducing symptoms of anxiety and depression. These benefits can be reaped throughout life when doing regular PA. Nevertheless, it's never too late for older adults to begin engaging in physical activities (7).

Although some older adults are aware that physical activity can help prevent and minimize disease, and they are also aware of health promotion, they do not modify their behavior or do not have the intention of changing their behavior (8). In order for change behaviors to occur, understanding older people's health beliefs and attitudes toward certain health problems is crucial to bringing about positive change in health. According to studies on health-related behaviors, older adults are less likely to seek a diagnosis, protection, or treatment for an illness if they have the lowest levels of concerning health motivation and information. In addition, these people must be at risk, aware of the severity of their position, and persuaded of the usefulness of health intervention (9).

To implement a successful and useful intervention in physical activity, the proper use of an appropriate behavior change model is necessary. Various studies have revealed that the most effective educational programs are those that are based on

selection of the most appropriate model or theory is the first step in the planning of interventional programs (10). It has been demonstrated that HBM is an important theoretical framework for explaining and interpreting preventative behaviors, making it one of the most essential frameworks available. The health behavior model (HBM) is one of the most extensively utilized psychological models of health behavior. It includes six components: perceived susceptibility and severity, self-efficacy, cues to action, physical, psychological, and fiscal barriers, benefits, and costs, as well as psychological willingness and normative or environmental factors that affect health behavior. It provides knowledge of people's attitudes, behaviors, and educational needs. HBM is the best explanation for regular PA or exercise in both healthy and chronic conditions (11,12).

theoretical approaches that are rooted in behavior modification models. The

Methodology

An experimental design using the randomized controlled trials approach was conducted to determine the to the efficacy of the Health Belief - based intervention on older adults' physical activity at a geriatric care home in Baghdad city. A probability simple random sample of (N = 70) older adults from a homogeneous pool would be chosen. The study sample will be recruited from two geriatric care homes in Baghdad City. The sample will be randomly assigned into an experimental group (35 older adults) and a control group (35 older adults) and be evenly distributed with regard to their age and gender.

The intervention program has been designed and developed based on the results of the older adults' assessment needs for HBM in enhancing the beliefs related to physical activity behaviors. The program's content was assessed by a group of experts. The program consists of three sessions at each selected geriatric home. Each session is prepared and scheduled for at least 90 minutes, and it deals with older adults' health belief models regarding physical activity. All sessions are held in a special hall at the Geriatric Care Home (Al-Rashad and Al-Sulaikh) in Baghdad City. The researcher used audio-visual aids such as a power point presentation, data show device, figures, videos, and images, in addition to discussions of the opinions between the researcher and older adults about physical activity in each session.

The data was collected for this study by a questionnaire consisting of three parts: the first part includes the socio-demographic characteristics of older adults. The second part involves the use of a scale to measure older adults' beliefs toward physical activity, developed by dependent on (13, 14). This scale was developed on the basis of the health belief model and included six major subscales: (1) "the perceived susceptibility subscale" (5 items), (2) "the perceived severity subscale" (6 items), (3) "the perceived benefits subscale" (9 items), (4) "the perceived barrier subscale" (7 items), (5) "the perceived cue to action" (3 items), and (6) "the perceived self-efficacy" (6 items). The overall scale consisted of 36 items measured in 5-point The Likert scale is distributed among the six subscales to measure the changes in the health belief models of older adults. The response for these items ranged between 1 (strongly disagree) and 5 (strongly agree), with a higher score indicating higher agreement with the beliefs. The third part is related to physical activity behavior and assesses the physical activity behavior of older adults. The

descriptive statistical measures of frequency and percentage were used. The mean, standard deviation, and chi-square were also used. The repeated measures analysis of variance (RMANOVA) was also used.



The sampling process and distribution

Results

The table(1) shows that the study participants were 70 older adults between 60 - 77 years old, and the mean age for participants in the experimental group was 69.94 \pm 4.61; and that most of the study sample was aged (60–64) years and (66-71) years (n = 13; 37.1%) for each of them. Regarding the body mass index (BMI), less than half of the participants in the experimental group are overweight (n = 17; 48.6%). For the control group, more than a third is overweight (n = 13; 37.1%). Regarding other demographic characteristics, most of participants for the experimental group were male (n = 24; 68.6%) single (n = 13; 37.1%) and elementary school graduates (n = 17; 48.6%). For the control group most of participants were male (n = 22; 62.9.4%) singles (n = 14; 40.0%) with elementary

school graduates (n = 15; 42.9%). There were no statistically significant differences in the baseline sociodemographic characteristics between the groups. The results of the table demonstrated that prior to the intervention, the mean scores for all HBM concepts and physical activity were almost equal. However, following the intervention, the experimental group was statistically different from the control group, whereas the control group was not significantly different. The difference was higher between the intervention and control groups, and it was positive for all concepts table (2).

Table 1
Participants' Sociodemographic Characteristics Between Experimental and
Control Groups

Characteristics	Exper (N	rimental = 35)	Control (N = 35)		x2
	F	%	F	%	
Age (Years) 60-65 66-71 72-77	13 13 9	37.1 37.1 25.8	14 15 6	40.0 42.9 17.1	.780
Mean (SD)	69.94 ± 4.61		67.45 ± 4.33		
BMI Class Underweight Within Normal Overweight Obesity Class I Obesity Class II	0 11 17 6 1	0.0 31.4 48.6 17.1 2.9	4 11 13 6 1	*% 11.4 31.4 37.1 17.1 2.9	4.533
Gender Male Female	24 11	68.6 31.4	22 13	62.9 37.1	.254
Marital Status Single Married Divorced Widow/Widower Separated	13 2 5 8 7	37.1 5.7 14.3 22.9 20.0	14 1 5 7 8	40.0 2.8 14.3 20.0 22.9	.504
Level of Education Unable to read and write Read and write Elementary school graduate Intermediate school graduate High school graduate Institute graduate College graduate	5 2 17 4 6 1 0	14.3 5.7 48.6 11.4 17.1 2.9 0	5 2 15 6 4 1 2	14.3 5.7 42.9 17.1 11.4 2.9 5.7	2.925

Table 2Descriptive Statistics Measuring Change in Health Belief Model Concepts and PA
Behavior Across Study Groups and Over Time by RMANOVA

HBM Concepts			M (SD)	Tests of Within-Subjects Effects **	
TIBM Concepts	Groups	(T 0)	(T 1)	(T 2)	
Perceived Susceptibility	Ex	14.79 (2.21)	19.31(1.84)	19.22(1.80)	F (1.809, 61.505) = 111.353, p = 0.01 , η2= 0.766
	Со	14.74(2.96)	14.60(2.78)	14.42(2.58)	
Perceived Severity	Ex	19.05(2.05)	23.88(1.85)	23.42 (1.37)	(F (1.836, 62.412) = 104.427, p = 0.01 , η2= 0.754
	Co	18.65(3.15)	18.80 (2.89)	18.82 (2.88)	
Perceived Benefits	Ex	26.28(2.93)	34.20 (1.79)	33.31 (2.11)	(F (1.641, 55.789) = 171.409, p = 0.0 1, η2= 0.834
	Co	26.25(3.89)	26.22 (4.02)	26.65 (3.78)	
Perceived Barriers	Ex	26.37(3.05)	18.34 (2.54)	19.37(2.63)	(F (1.984, 67.473) = 125.250, p = 0.01 , η2= 0.787
	Со	25.85(2.68)	25.37 (2.76)	25.17 (2.73)	
Cues-to-Action	Ex	9.51(1.35)	11.77(1.19)	11.54 (1.03)	(F (1.912, 65.006) = 67.277, p = 0.01 , η2= 0.664
	Co	9.42(1.65)	9.20 (1.65)	9.37 (1.59)	
Self-Efficacy	Ex	15.85(2.41)	21.20 (1.58)	21.17 (1.82)	
	Co	15.54(4.33)	15.22 (4.20)	14.88(3.84)	(F (1.760, 59.829) = 87.947, p = 0.01 , η2= 0.721
Physical Activity	Ex	220.4(45.31)	174.34 (32.22)	281.37 (59.06)	(F (1.589, 54.041) = 152.343, p = 0.01 , η2= 0.818
	Co	214.42(41.46	212.71 (41.03)	205.28 (37.68)	

*HBM: Health Belief Model, Ex: Experimental group (n = 35), Co: Control group (n = 35), M: mean, SD: Standard Deviation, ** Greenhouse-Geisser (Experimental group)*

Discussion

This study aimed to determine the efficacy of the Health Belief-based intervention on older adults' physical activity at a geriatric care home in Baghdad City. People's beliefs can be affected by demographic variables as well as previous social and medical experiences, according to the health belief model (15). In general, the results showed that some of the socio-demographical characteristics were consistent with the study that was conducted in nursing homes in the city of Baghdad (2019). The results found that the average age of the older adults was (66.40 \pm 8.57) and most of the participants were overweight. About 59.8% were males, and 51.54% had never smoked and had a history of hypertension, respectively (16). 6184

The findings showed, the values of perceived susceptibility, perceived severity, perceived benefits, cues to action, self-efficacy, and PA behavior have increased with time, whereas the value of perceived barriers has decreased. Based on the findings, there were no significant differences in the mean scores of health beliefs (perceived susceptibility, severity, benefits, cues to action, and self-efficacy) before the intervention of the study and control groups, but there was a substantial difference after the experiment, which indicates that health education has a positive effect on older adults' health beliefs about physical activity and reduces perceived barriers to engaging in physical activity behavior. This research is consistent with the findings of studies that stated that after educational intervention in the experimental group, there was a substantial increase in the mean scores of the health belief model constructs, but no change was observed in the control group (17,18). Liu and Hu showed that older adults who received the intervention had significantly higher scores on physical activity and perceived benefits and barriers to physical activity. This reflects the effectiveness of education programs to enhance physical activity among nursing home residents (19). In addition, the findings of this study are consistent with the findings of the study by Davudi and colleagues, who showed that after the application of intervention, awareness and behavior of physical activity of the older adults increased significantly, as well as the most HBM structures, which reflects the effectiveness of interventions to enhance awareness and behavior of physical activity among the older adults. (20,21,22,23).

Ultimately, according to the findings of this study, determining the efficacy of an HBM-based intervention in modifying or enhancing the health beliefs of older adults regarding physical activity at geriatric care homes is a way to raise awareness and result in behavior change. Furthermore, our study showed that there was a clear change between (T0, T1 and T2) as a result of the interventional program used among older adults. This means that older adults have realized how serious physical inactivity is. It also shows that older people's beliefs about the effectiveness of different ways to engage in physical activity were enhanced until they were fully intent on changing their attitudes and then their behavior in a positive direction.

Conclusion

The results indicated that the health belief model-based health intervention enhanced participants' perceived susceptibility, perceived severity, perceived benefits, cues to action, self-efficacy, and physical activity. On the other hand, it minimized the perceived barriers.

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