Predictors of Knowledge Regarding physical Exercise among Elderly in Rural Areas

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abstract

Background: Physical exercise plays a survival role in healthy aging by preventing and managing diseases. Therefore, increasing elderly knowledge is essential to help them stay active and independent.

The aim of the study was to assess knowledge regarding physical exercise among elderly in rural areas.

Subjects and Methods: **Research design:** Descriptive design was adopted to carry out this study. **Setting:** The study was conducted at Mobasher Village, Sharkia Governorate, Egypt.

Subjects: Purposive sample of 80 elderly who fulfilled the study inclusion criteria

Tools for data collection: A structured interview questionnaire was used for data collection. It was composed of three parts. (Part I) elderly demographic characteristics, (Part II) medical history and (Part III) elderly knowledge about exercise questionnaire.

Results: The current study revealed that the highly reported knowledge domains were the general health benefits of exercise (61%), followed by awareness of suitable groups for exercise and its role in promoting sleep (57%). Moderate knowledge was observed regarding exercise duration and its role in reducing chronic disease risk (45–49%), while the lowest knowledge levels were in identifying exercise types, suitable clothing, and examples of light to vigorous activities (30–46%). Also, the study shows a statistically significant relation between total knowledge of the studied elderly and their age and level of education. The person with whom they live, income, and social class.

Conclusion: Participants demonstrated overall unsatisfactory knowledge regarding physical exercise.

Recommendations: Develop structured educational programs and community-based interventions to enhance elderly knowledge about safe and effective physical activity.

Keywords: Elderly, Knowledge, Physical Exercise, Rural areas

Introduction:

The process of aging brings about several intricate changes in the body, including a steady decline in organ, tissue, and systemic functionality as well as the emergence of numerous age-related diseases and an elevated risk of mortality.

age related loss of skeletal muscle mass and functioning. Sarcopenia, one of the most essential markers of aging, is associated with a decline in physical performance (endurance) and muscular strength, as well as a drop in insulin sensitivity and the muscle tissue's capacity to metabolize fats and carbs. Aging affects the musculoskeletal system, Sensorimotor system, reduces mental and physical function and decreases the ability to perform activities of daily living (Furrer & Handschin, 2023).

Physical exercise, healthy nutrition, and restorative sleep are essential pillars of health promotion. While performing resistance training is considered part of physical exercise, it deserves consideration as its own domain for health promotion. This is so for a few reasons. First, it is quite natural to take mobility and musculoskeletal functioning for granted. As a result, attention to musculoskeletal health is often ignored until clinical problems emerge. Second, performance of aerobic activities is relatively straightforward, and it generally requires acquired knowledge to understand the proper techniques for performing muscle strengthening correctly. Third, the benefits of strength training are profound and synergistic to the benefits afforded by aerobic exercise and thus deserve to be emphasized (D'Onofrio et al., 2023).

It is important to increase the knowledge and ability of the elderly to be able to maintain their health, therefore providing education on the importance of physical activity (PA) training for the elderly is essential. Participation in PA and exercise can contribute to maintaining quality of life, health, and physical function and reducing falls among older people in general and older people with morbidities in particular (Langhammer et al., 2018).

Nursing interventions encompass comprehensive assessments, personalized care plans, patient education and advocacy efforts aimed at reducing fall risks and enhancing safety. By addressing intrinsic and extrinsic factors contributing to falls, nurses contribute significantly to improving the quality of life for older adults and reducing the economic burden associated with fall-related injuries. Gerontological nurse may have the greatest impact on reducing older adults fall. Due to their 24hr presence, nurses have the most consistent contact with older adults and continually monitor for conditional changes. Gerontological nurses should describe primary strategies used to prevent falls through identifying older adults at risk through comprehensive geriatric assessment (Horta, 2024).

Significance of the study:

The elderly are weak people who have many diseases at the same time. They go through many physical, psychological, and social changes related to age, which can affect balance, leading to the risk of falling and affecting their quality of life. In addition, elderly people do not have enough information about physical exercise or good exercising habits may be due to a lack of health education sources, low education level in rural areas, exercise plays a critical role in the promotion of health and prevention of disease as well as control most common diseases among elderly such as diabetes mellitus and hypertension, Hence, the present study was be designed to assess knowledge regarding physical exercise among elderly in rural areas, Sharkia Governorate.

Aim of the study:

The current study aimed to assess knowledge regarding physical exercise among elderly in rural areas, Sharkia Governorate.

Research Questions:

What is the level of knowledge regarding physical exercise among the elderly in rural areas, Sharkia Governorate?

Subjects and methods:

Research design:

A descriptive design was used to carry out this study

Study setting:

The current study was carried out at Mobasher Village, Sharkia governorate, Egypt.

Study subjects:

A purposive sample of 80 elderly aged 60 years or above. Able to perform the measurement and training without any aid (independent elderly), no experience in virtual reality gaming, agree to participate in the study and able to communicate was selected for the recruitment of this study.

Sample size calculation:

The sample size was calculated by using a statistical computer program (EPI-Info software version 6.04) at a power of 80% and a confidence limit of 95%. The estimated sample size was calculated to be 80 participants. In addition, 8 elderly for pilot study were excluded from the study sample.

Tools of data collection:

The following tool was used to collect the necessary data.

Tool: a structured interview questionnaire that consisted of three parts.

Part (1): Sociodemographic of the studied elderly modified after El-Gilany et al., (2012): this scale includes 6 domains with a total score of 84. Socioeconomic level classified into low, middle and high levels. These 6 domains are "Education and cultural domain, Occupation domain, Family domain, Economic domain, Home sanitation domain and Health care domain".

Scoring system:

- Score less than 50% was considered as low social class.
- Score from 50% to less than 75% was considered as middle social class.
- Score more than 75% was considered as a high social class.

Part (2): Medical history of the studied elderly: This part was intended for collecting information about the medical history of the studied elderly. It involved questions about the medical history of the studied elderly; it involved questions about chronic diseases and their duration, medications taken, suffering from imbalance or dizziness and their reason, physical condition and falling history.

Part (3): Elderly Knowledge about Exercise Questionnaire: This part was developed by the researcher guided by Cheng et al. (2024), Maduakolam et al. (2023) and Alali et al. (2023). It included sixteen questions that were used to test a broad range of exercise related knowledge among the elderly like: knowledge about target of physical exercise, Benefits and duration of practicing exercise, Degrees of exercise intensity, Importance of balance exercise for elderly, Types of exercise, Tips for practicing exercise in elderly, the importance of drinking enough water during exercise, what should you do if you feel tired while exercising, warming up before exercise and wearing comfortable clothes during exercise.

Scoring system:

For each question one correct answer scored "one" grade and "zero" for the wrong answer or don't know. The knowledge scores were depending on the numbers of grades the participant obtained regarding all questions. The total grade was computed out of sixteen (16) grades and knowledge was considered satisfactory if the percent score was 60% or more (≥ 10 grade) and inadequate if less than 60% (< 10 grade).

Content validity & Reliability:

Once prepared, the tool was presented to a panel of three experts in the field of Community Health Nursing, Faculty of Nursing, Zagazig University and Community medicine, Faculty of Medicine, Zagazig University. The panel reviewed the tool content for relevance, clarity, comprehensiveness and understandability. This constituted the content validation of tools. All recommended modifications were applied. The reliability of this tool was tested by measuring its internal consistency. In the current study, Cronbach α of the physical exercise knowledge questionnaire was 0.85.

Fieldwork

Once permission was granted to proceed with the study, the researcher started to prepare a schedule for collecting

the data. The fieldwork was carried out within the period of one month, the period started from 1/11/2023 to 1/12/2023; three days per week (Wednesday, Thursday, and Friday) from 3 pm to 6 pm. Each elderly was interviewed individually at the elderly's home considering the preventive and precaution measures to be protected from COVID-19.

Pilot study:

Before performing the main study, a pilot study was carried out on 8 elderly from the study setting, constituting about 10% of the calculated sample for the main study. They were selected randomly from the selected village and were later excluded from the main study sample of research work to assure stability of the answers. The purposes of the pilot were to test the questions for any obscurity and to assess the practicability and feasibility of using the structured interview questionnaire sheet for the elderly. It also helped the researcher to determine the time needed for filling out the forms, which turned out to be 20 to 30 minutes. The tools were finalized after doing necessary modifications according to the pilot study results.

Statistical analysis:

Data entry and statistical analysis were done using SPSS 23.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations and medians for quantitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the developed scales through their internal consistency. Qualitative categorical variables were compared using the chi-square test. Whenever the expected values in one or more of the cells in a 2x2 tables was less than 5, Fisher exact test was used instead. In order to identify the independent predictors of the knowledge scores multiple linear regression analysis was used after testing for normality, and homoscedasticity, and an analysis of variance for the full regression models were done. Statistical significance was considered at p-value <0.05.

Results:

Part I. Socio- demographic characteristics of the studied elderly.

Among 80 elderly, the mean age was 67.41±5.12 years, 60% were males, 70% of the participants were married, 23.8% had secondary education, the lowest percentage (16.3%) were employees, monthly income was not enough as reported by 73.7% of elderly, ultimately, 47.5 depend on retirement salary as a source of monthly income.as shown in **(Table 1a**).

Table 1b elaborates the living conditions of the studied elderly. The table clarifies that 80% of elderly live with their families, 93.7% reside in homes with more than three family members, 57.5% own houses with fewer than four rooms. Moreover, healthcare access varies, where 42.5% rely on health insurance and 25% use government health services. Spouses (57.5%) and children (30%) are the primary caregivers, with 52.5% receiving care from someone in the same household.

Figure 1 depicts that 53.8% of the studied elderly belong to the middle social class, while 37.5% belong to the lower class.

Part II. Medical History of elderly

Table 2 highlights that 80% of the elderly suffer from chronic diseases, since 25.75±8.28 years. The most reported diseases are GIT diseases (53.1%), diabetes (32.8%) and hypertension (28.1%). Furthermore, dizziness affects 10%, mainly due to chronic diseases (100%) and sleep problems (37.5%). Moreover, reduced mobility in the last year was reported by 55% of participants, while 7.5% experienced falls that occur totally at home with frequency of one to two times.

Part III. **Elderly Knowledge about Exercise*:***

Table 3a illustrates knowledge of studied elderly about physical exercise. As the table reveals, the elderly held correct knowledge in terms of “target group of practicing exercise, importance, frequency,

duration, classification, and examples of intensity" (57%, 61%, 57%, 48%, 48%, 45%, 46%, 43%,49% and 40% respectively).

Table 3b elucidates knowledge of studied elderly about physical exercise. As the table reveals, the elderly held correct knowledge in terms of "importance, types, drinking water, taking rest, warm up, and selection of appropriate clothes (43%, 33%, 43%, 57%, 36%, and 30% respectively).

Figure 2 sketches the percentage distribution of the studied elderly based on their total knowledge about physical exercise. The results show (45.9%) of the studied elderly had satisfactory knowledge. While, (54.1%) had unsatisfactory knowledge.

Table 4 points to a statistically significant relation between total knowledge of the studied elderly and their age and level of education. The person with whom they live, income, and social class. It is obvious from the table that the total knowledge was satisfactory among the elderly within the age group 60-<66 years (59.5%). Those with secondary and university education, living alone, whose monthly income isn't enough and those belonged to middle social class (p=< 0.05).

Table 5 illustrates that age, education level, and total attitude are statistically significant independent positive predictors of total elderly knowledge score. The regression model explains 3.5% variation in change of this level as indicated by r-square value.

Discussion:

Physical activity, which is one of the determinants of successful aging, stands out as the main preventive method to protect physical functionality. While no physical activity can stop the aging process, regular exercise at moderate levels can minimize the physiological effects of a sedentary lifestyle and increase active life expectancy by limiting the development and progression of chronic disease and disability conditions (Erbas, 2021).

Concerning socio- demographic characteristics, it is clear from the results of the current study that the mean age of the studied elderly was 67.41±5.12 years and their age ranged between 60-80 yrs.; this might be due to increase life expectancy and increased the number of this age group sector in Egypt as confirmed by the central agency for public mobilization and statistics (CAPMAS, 2022) which estimated the number of elderly in Egypt reached 6.9 million according to population estimates on July 1st, 2022. This result is in agreement with Tawfik et al. (2024) in Egypt, who found that the average age of the studied elderly was 66.3±5.6.

Moreover, the current study findings revealed that the majority of the study sample were males. This might be attributed to that first, in certain rural communities, the participation of women in scientific research is often hindered by prevailing cultural norms and traditional beliefs that discourage and restrict their involvement in such activities. Also, the idea of women engaging in physical exercise is often considered unacceptable, particularly among older generations. This finding goes in the same line with Sayed et al. (2022) study which was conducted in rural areas in Beni Suef Governorate and mentioned that more than half of their study subjects were males. This is also in harmony with Eid et al., (2024) in Cairo, who found that more than two thirds of the study subjects were male.

Pertaining to marital status and educational level, the current study results showed that slightly less than three quarters of the studied elderly were married and slightly less than one fifth had secondary education. Being married; this could be due to traditions, norms and customs in the Muslim World, which dictate that men and women's relationships be legal through marriage. As to secondary education, this could be due to that the hight percentage of the current study subjects are males, also university education was not so common especially in rural areas in the remote

decades. This result is confirmed by study in Dakahlia governorate by Khalid et al. (2024) and in Assiut (Egypt) by Ibrahim et al. (2024a), who reported that most of study sample were married. Similarly, Ibrahim et al. (2024b) in Mansoura District (Egypt) and Inakov et al. (2020) in Tashkent (Capital of Uzbekistan), who found that the majority had Secondary education.

As regard occupation before retirement, almost half of them were craft workers and housewives, most people in rural areas are craft workers is mainly attributed to a combination of economic, educational, and cultural factors like: few modern job opportunities; “rural areas usually have fewer work opportunities (factories, offices, or companies) so people turn to traditional jobs like craft work to earn a living”. Local Skills and Traditions; “many rural families pass down craft skills like weaving, pottery, carpentry through generations, these skills are often the easiest way to make money regardless of education”. Low Cost to Start; “craft work doesn't need expensive machines or a lot of money, people can work from home using local tools and materials”. (Mikaelu & Ali, 2025), self-Employment: since formal jobs are limited, many people create and sell goods on their own, craft traditions are part of rural culture and identity. Housewife: this could be common in many rural cultures that women are expected to stay at home, take care of the family, cook, clean, and raise children especially in remote decades when those elderly were young. These roles are often deeply rooted and passed down through generations. As the current study focuses on the elderly in rural areas, this result is confirmed by a study in Holy Karbala City, Iraq by Abdulameer & Al-Abedi (2023) and Oishee et al. (2024) in Dhaka, Bangladesh.

According to the current study findings, approximately three quarters of the elderly had an insufficient income. This finding might be attributable to the fact that nearly half of them were dependent on pensions only as a source of income. Also, income is insufficient, which might be due to the rising cost of living and the current economic state, which has led to higher prices for services and necessities. At the same time, pensions and other benefits have decreased significantly beyond the salary they receive while working for the government.

This finding agrees with the results of the OECD (Organization for Economic Co-operation and Development) Economic Surveys of Egypt: Egypt 2024 report indicates that income inequality and poverty have increased over the past decade. The elderly, particularly those without alternative income sources beyond pensions, are among the groups most affected (Jin & Hofer, 2024). Similarly, a study in Egypt by Mousa et al. (2025) reported Inadequate Pension Benefits: A qualitative study on senior entrepreneurship in economically constrained contexts noted that pensions in Egypt are often insufficient to cover the rising cost of living. Many elderly individuals are compelled to seek additional income sources or rely on family support to make ends meet. As well, study in Port Said City by Abdelkhalik et al. (2023) concluded that over half of the elderly source of income were pensions and their income was not enough. In the same vein, study by Rezq et al. (2024) in Saudi Arabia mentioned that the majority of studied elderly had an insufficient income.

Furthermore, the majority of the studied elderly were still living with their family; It might be explained by the fact that most common type of family in Egyptian rural areas is the extended family; also, there are strong relationships between elderly people and their progeny in rural areas. Also being elderly means that he/ she has comorbidity, so he/ she is in need for caregiver which is mainly a family member. So, it is very normal for the family to have more than three members, as the current study reported that majority of studied elderly had more than three family members. The present finding is in agreement with the results of the study

carried out by Huang et al. (2024) in Taiwan reported that majority of the study samples lived with family members. Similarly, study by Dang et al. (2024) in Beijing, China declared that the majority of studied elderly were living with a spouse and had a better lifestyle than others.

In terms of medical history, the current study results reported that most of study sample had chronic disease, with mean duration of 25.75±8.28 years and the most common comorbid diseases were GIT problems and diabetes mellitus. This could be attributed to the fact that ageing comes with an increase in disease burden and the decline in human organ and body functions (Chesnaye et al., 2024). Additionally, aging is a natural process defined by the gradual, time-dependent decline of biological and behavioral functions, for which individuals of the same chronological age show variability (Khodaee et al., 2025).

In this context, the present finding agrees with the results of study carried by Rezq et al. (2024) in Saudi Arabia who reported that a great proportion of the participants had at least one chronic condition (87.2%), among whom 43.3% had four conditions or more.

According to the current study results, more than half of the study sample reported mobility decline that could be due to natural aging processes compounded by health conditions and lifestyle factors like inactivity. Fear of falling can force elderly people to avoid movement, which worsens mobility. Also, about one tenth of the experienced falls, all occurred at home with frequency of one to two times that might be due to that most elderly people spending most of their time at home, especially those with limited mobility and home is often not prepared for safety.

In this stream, study in China by Wang et al. (2024) reported that about one fifth of the studied elderly had mobility limitations. Similarly, a study in Suez Governorate by Saad (2024) reported fall prevalence of 29%, among elderly individuals attending primary healthcare centers, with the majority of falls occurring indoors.

In connection with knowledge regarding physical exercise among the studied elderly. The present study demonstrated a major decline in elderly knowledge regarding exercise aspects; overall, more than half of studied elderly had unsatisfactory exercise regarding knowledge before the program. Which might be attributable to a variety of factors as the current study was carried out in rural area where there is a lack of health care services and health education sources.

In the same way, the results of study in the Ismailia, Egypt by Elhanfy et al. (2021) mentioned that the majority of the elderly had less knowledge about importance of physical activity and exercise. Similar results were reported among the elderly in Central Java, Province of Indonesia, by Syaukani et al. (2024), who showed that older adults in this rural Javanese setting lack understanding of formal exercise's health benefits and the majority of participants had limited knowledge about the importance of physical activity and its benefits.

This deficiency was found in the majority of knowledge categories examined, including target group of practicing exercise, importance of exercise, frequency of practicing exercise, duration, classification and examples of exercise. This aligns with the findings of Meredith et al. (2023), who concluded in a systematic review that many older adults lack detailed understanding of physical activity recommendations, contributing to lower participation and confidence. Similarly, study in Taipei City, Capital of Taiwan by Huang & Wu (2024) found that pre intervention awareness among older adults regarding exercise duration and structure was limited, especially in populations with lower health literacy.

Age: Therefore, the first indicator for exercise regarding knowledge was associated with age. In the current study, age a negatively correlated with exercise regarding knowledge score. Nearly half of

the studied elderly were in the 60-69 age groups, and this factor might play an important role in improving their exercise regarding knowledge in this group rather than the older group, who couldn't remember information as well as young group, Therefore, the lower the age, the higher the exercise regarding knowledge. In the same vein, study in Sweden by Nilstomt et al. (2024) revealed that younger elderly individuals possed greater capability and motivation for physical activity, which may be linked to better knowledge and understanding of exercise benefits As well, study by Meredith et al. (2023) found that younger elderly individuals were more likely to recognize the benefits of exercise and, consequently, had higher participation rates.

Educational level: The second indicator of exercise regarding knowledge was associated with educational level. Education occupies an important part in one's physical health since it influences one's ability to make trustworthy and informed exercise choices. In support of this, the multivariate analysis in the current study demonstrated that the educational level was statistically significant positive predictor of elderly's total knowledge. This means that low educational level is independent associated with low exercise knowledge score, "illiterate elderly had unsatisfactory exercise related knowledge". This finding is in harmony with the findings of study conducted by Maduakolam et al. (2023) in Enugu, Nigeria, who found that higher educational levels were significantly associated with better knowledge and engagement in physical exercise.

• Living alone and social class level other indicators of knowledge regarding exercise were living alone, reporting insufficient income, and belonging to the middle social class exhibited higher knowledge levels. These findings align with recent studies emphasizing the influence of socio-demographic factors on health knowledge. Similarly, Wang et al. (2023) and Li et al. (2024) in China reported that socio-economic factors, including income and social class, significantly impact physical activity levels and health outcomes in the elderly population. These studies collectively underscore the importance of considering socio-demographic variables when developing interventions aimed at improving health knowledge and behaviors among the elderly.

Conclusion:

It is apparent from this study that extremely poor exercise knowledge was experienced by most of the elderly.

Recommendations:

Given the study findings, the following recommendations are proposed:

1- Develop structured educational programs and community-based interventions to enhance elderly knowledge about safe and effective physical activity.

2- Further studies are needed to evaluate the effect of an exercise program on knowledge and balance among the elderly.

Table 1a: Percentage distribution of the studied elderly according to their socio demographic characteristics (n=80).

Demographic characteristics	N	%
Age (years)		
60-<66	42	52.5
66-<70	30	37.5
70 or more	8	10
Mean± SD= 67.41±5.12		
Gender		
Male	48	60
Female	32	40
Marital status		
Married	56	70.0
Divorced	21	26.2
Widow	3	3.8
Educational level		
Illiterate	7	8.7
Read and write	9	11.3
Primary education	14	17.5
Preparatory education	18	22.5
Secondary education	19	23.8
University / post-graduate education	13	16.2
Job before retirement		
Craft worker	19	23.7
Farmer	15	18.8
Businessman	14	17.5
Employee	13	16.3
Housewife	19	23.7
Monthly income		
Not enough	59	73.7
Enough	19	23.7
Enough and save	2	2.6
Source of the current income		
Retirement salary	38	47.5
Sons' support	11	13.7
Still working	22	27.5
Assets	9	11.3

Table 1b: Percentage distribution of the studied elderly according to their socio demographic characteristics (n=80).

Demographic characteristics	N	%
Live with		
Family	64	80.0
Alone	16	20.0
Number of family members		
2-3	5	6.3
>3	75	93.7
Number of rooms in house		
1-2	37	46.3
>2	43	53.7
Crowding index		
1-2 member per room	45	56.2
>2 members per room	35	43.8
Home type		
Own with more than 4 rooms	12	15.0
Own with less than 4 rooms	46	57.5
Rent with more than 4 rooms	3	3.8
Rent with less than 4 rooms	17	21.2
No place for residence	2	2.5
Receiving health care from		
Private clinics	10	12.5
Health insurance	34	42.5
Governmental health organizations	20	25.0
More than one source	16	20.0
Care giver		
Son/daughter	24	30.0
Brother / sister	5	6.3
Husband / wife	46	57.5
Neighbor	5	6.2
The care giver live in		
The same home	42	52.5
The same street	21	26.2
The same village	14	17.5
Outside the village	3	3.8

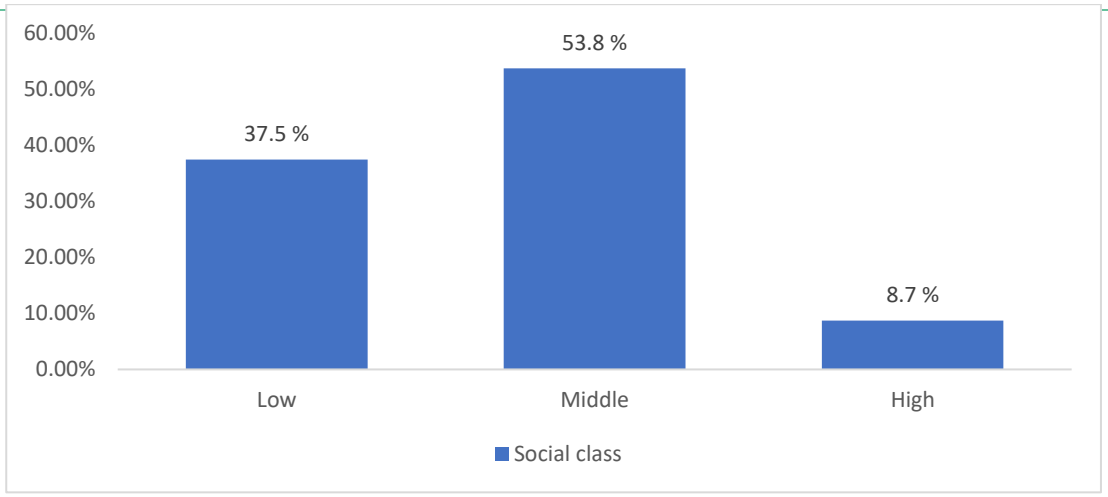

Figure 1: Percentage distribution of the studied elderly according to their social class (n=80).

Table 2: Percentage distribution of the studied elderly according to their medical history (n=80).**History**	**N**	**%**
Suffering from chronic diseases	64	80.0
*** The diseases are (no= 64)**		
GIT diseases	34	53.1
Diabetes	21	32.8
Hypertension	18	28.1
Kidney diseases	4	6.3
Liver diseases	5	7.8
Diseases duration		
Mean± S.D= 25.75±8.28		
Receiving any medications	64	80.0
***The medications are (no. 64)**		
GIT diseases	30	46.2
Diabetes	25	38.0
Hypertension	16	25.0
Kidney diseases	15	23.0
Analgesic	7	10.8
Liver diseases	5	7.8
Suffering from dizziness or physical imbalance	8	10.0
***The reason is (no. 8)**		
Chronic disease	8	100.0
Problems with sleeping	3	37.5
Physical condition lead to walking less during the last year	44	55.0
Falling last year	6	7.5
In case of fall (no. 6)		
Frequency of fall (1-2)	6	100.0
Place of fall (at home)	6	100.0

Table 3a: Comparison between the studied elderly regarding their physical exercise's knowledge (n=80).

Items	Correct		Incorrect	
	N	%	N	%
Groups which can practice physical exercise **(Young and old adult alike)**	46	57	34	43
Regular practice of physical exercise helps in **(Promoting general health and psychological health)**	49	61	31	39
Practice of physical exercise leads to **(promoting sleep)**	46	57	34	43
Required time for regular practice of physical exercise is **(30 minutes three days a week)**	38	48	42	52
Doing more than an hour of physical activity every day (such as brisk walking, cycling, swimming...) can be harmful to health? **(No)**	38	48	42	52
Can exercise reduce the risk of high blood pressure and diabetes? **(Yes)**	36	45	44	55
Exercises and sports activities are classified into light-intensity exercises - moderate-intensity exercises -vigorous-intensity exercises. **(Yes)**	37	46	43	54
Examples of light-intensity activities include: **(slow walking)**	34	43	46	57
Examples of moderate or moderate intensity activities include: **(Swimming)**	39	49	41	51
Examples of vigorous-intensity activities include: **(Running)**	32	40	48	60

Table 3b: Comparison between the studied elderly regarding their physical exercise's knowledge (n=80).

Items	Correct		Incorrect	
	N	%	N	%
Balance exercises are one of the best types of exercise for the elderly because they reduce the risk of falling. **(Yes)**	34	43	46	57
Exercise is divided into two types: aerobic exercise and anaerobic exercise. **(Yes)**	26	33	54	67
It is necessary to be careful to drink sufficient amounts of water when exercising. **(Yes)**	34	43	46	57
When feeling tired while exercising, stop and take a rest. **(Yes)**	46	57	34	43
It is not necessary to do a warm-up before exercising. **(No)**	29	36	51	64

When exercising, it is necessary to choose appropriate and comfortable clothing, such as cotton clothing. **(Yes)**	24	30	56	70

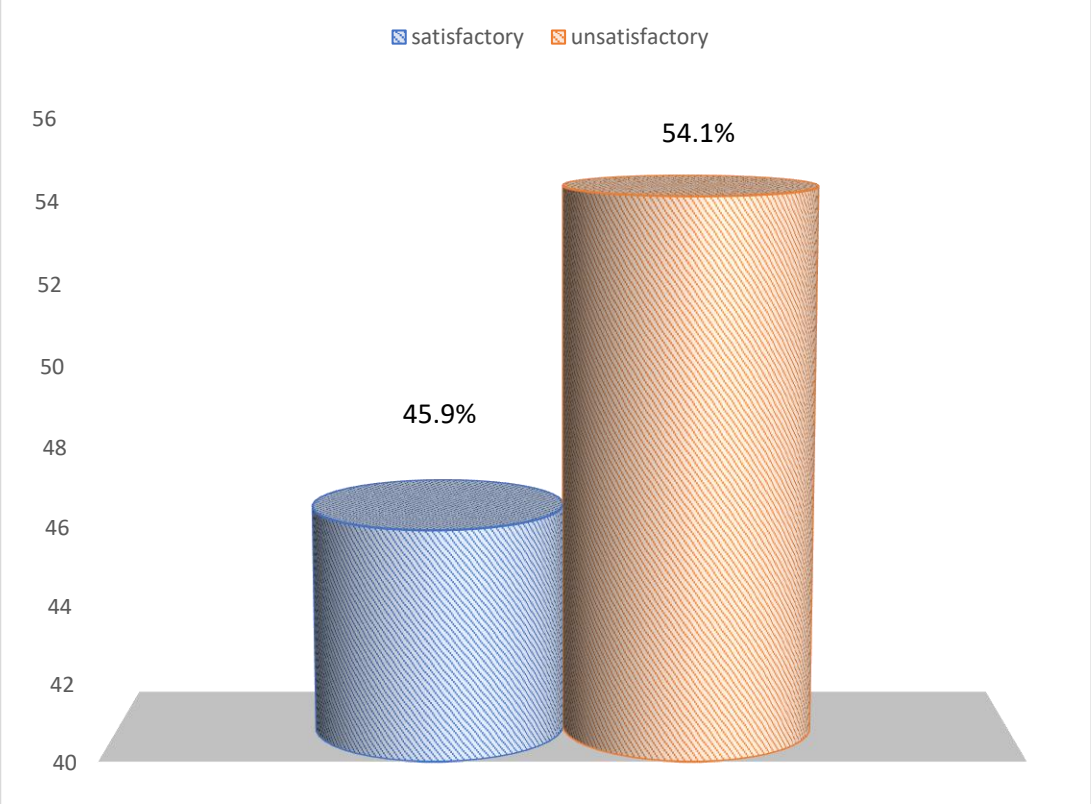

Figure 2: Percentage distribution of the studied elderly according to their total physical exercise's knowledge (n=80)

Table 4: Relationship between socio-demographic characteristics of studied elderly and their total knowledge (n=80).

Items		Total knowledge				X^2	P-Value
		Satisfactory N= 37		Unsatisfactory N= 43			
		N	%	N	%		
Age	60-<66	22	59.5	20	46.5	7.45	.042*
	66-<70	14	37.8	16	37.2		
	70 or more	1	2.7	7	16.3		

Gender	Male	22	59.5	26	60.5	1.32	.51
	Female	15	40.5	17	39.5		
Marital status	Married	26	70.3	30	69.8	.99	.72
	Divorced	10	27.0	11	25.5		
	Widow	1	2.7	2	4.7		
Educational level	Illiterate	0	0.0	7	16.3	14.65	.000**
	Read and write	2	5.4	7	16.3		
	Primary education	5	13.5	9	20.9		
	Preparatory education	9	24.4	9	20.9		
	Secondary education	11	29.7	8	18.6		
	Bachelor / post-graduation	10	27.0	3	7.0		
Job before retirement	Craft worker	9	24.3	10	23.3	2.35	.26
	Farmer	6	16.2	9	20.9		
	Businessman	7	18.9	7	16.3		
	Employer	6	16.2	7	16.3		
	Housewife	9	24.4	10	23.3		
Living with	Alone	23	62.2	36	83.7	7.68	.047*
	Family	13	35.1	6	14.0		
	Others	1	2.7	1	2.3		
Monthly income	Not enough	23	62.2	36	83.7	8.36	.021*
	Enough	12	32.4	7	16.3		
	Enough and saving	2	5.4	0	0.0		
Social class	High	6	16.2	1	2.3	7.117	.040*
	Moderate	26	70.3	17	39.5		
	Low	5	13.5	25	58.2		

***Significant at p ‹0.05. **Highly significant at p ‹0.01. Not significant at p>0.05**

Table 5: Multiple Linear regression model for the studied elderly` total knowledge.

	Unstandardized Coefficients		**Standardized Coefficients**	**T-test**	**P-value**	**95.0% Confidence Interval for B**	
	B	**Std. Error**	**Beta**			**Lower**	**Upper**
(Constant)	2.987	.230		3.987	.000	.199	.601
Age	1.965	.015	.372	2.715	.002	.031	.087
Educational level	2.039	.022	.456	3.104	.000	.046	.090

Total attitude	2.876	.027	.567	4.993	.000	.041	.093
Social class	0.662	.012	.101	1.676	.031	.022	.056

R Square = .352 Model ANOVA: F=7.940, p=0.000

Variable entered and removed: gender, marital status, job before retirement, monthly income, living with.

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