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Investigating the prevalence of chronic diseases in the elderly and the factors affecting them in urban and rural centers of the cities covered by Ahvaz Jundishapur University of Medical Sciences

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ABSTRACT

Background and Purpose: The present study investigated the prevalence of chronic diseases in the elderly and the factors affecting them.

Methods: The sample size of the present study was 418 people selected among all elderly who were aged over 60 years, eligible for the research population, and were living in urban and rural centers of the cities covered by Ahvaz Jundishapur University of Medical Sciences. The research instrument was a researcher-made questionnaire with the necessary validity and reliability. The research design was descriptive-analytical (cross-sectional). Statistical models, including the Chi-square test, were used to analyze the data. The data were analyzed in SPSS-16 software.

Results: In this study, chronic diseases in the elderly were 90.19%. The four most common chronic diseases in this study were: vision problems with 57.2%, musculoskeletal diseases with 51.3%, digestive diseases with 46%, and hypertension with 45%.

Conclusion: The study revealed a significant relationship between age, ethnicity, physical activity, and the prevalence of chronic diseases. There was no statistically significant relationship between the prevalence of chronic diseases in the elderly and factors such as gender, education, job, nutrition, body mass index, smoking, and drug use.

Keywords: *Elderly, Chronic diseases, Health status*

1. INTRODUCTION

Disability and mortality caused by chronic diseases in the elderly are higher than acute diseases with the changing demographic structure and aging of the population (1-2). The probability of developing chronic diseases increases significantly with increasing age (3). Recent studies suggest that 80% of the elderly suffer from at least one chronic disease, putting them at greater risk of disability and death than others (4-5). Moreover, the quality of life of the elderly has decreased due to lack of mobility and physical activity, leading to a higher incidence of obesity and weight gain among the elderly, and an increased risk of cardiovascular diseases and increased insulin resistance.

Improving the health of the elderly in society is one of the important issues in health. Early identification of chronic diseases in the elderly is crucial for improving the health of the elderly and contributing to the economy of the society. Chronic diseases and disabilities increase with increasing people's age. In the United States, 80% of people aged over 60 years have one or more chronic diseases (6). Hypertension, heart disease, stroke, diabetes, cancer, respiratory diseases, urinary incontinence, vision and hearing disorders, mental disorders, and oral and dental problems are among the most important age-related changes and diseases (7).

Moreover, decreased self-confidence, motor impairment, loss of loved ones, and chronic diseases predispose to mental illnesses, especially anxiety (8). In a survey in Amirkola, Babol in Mazandaran Province in 2007, 83% of the elderly aged over 60 years had at least one chronic disease (9).

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A few elderly people do not suffer from some kind of movement disorder. About 36-50% of the elderly suffer from movement disorders. Additionally, 68% of the elderly aged over 65 years are predisposed to osteoarthritis (10). The factors that predispose the elderly to vulnerability to risks are age (especially after 85 years), which in Iran is of course from about 70 years, inactivity (increased risk of falling), poor nutrition (risk of malnutrition), hormonal disorders (menopause and osteoporosis), medications (multiple medications and risk of side effects), events (death of spouse and loneliness), and inadequate social welfare (purchasing power, insurance, and housing). The reduction in mortality due to infectious and cardiovascular diseases is strong evidence for the hypothesis that preventive interventions can significantly reduce disease and mortality. Chronic diseases seen in the elderly population have replaced infectious diseases as the leading cause of mortality and disability. Useful statistics from epidemiological studies and smoking cessation, blood pressure, and cholesterol have decreased. There is a solid and advancing scientific basis for preventive medicine and health promotion in clinical medicine (11).

In a study conducted in Amirkola City of Mazandaran province among the elderly over 60 years of age, 83% had at least one disease and 44.4% had more than two chronic diseases simultaneously, and the number of diseases per person in this study was 2.6 ± 2.2 (12). A study by Aghdak et al. in 2014 in Isfahan revealed that underlying variables including age, gender, literacy, and job showed a significant relationship with obesity and underweight in the elderly. A significant negative correlation was also reported between age and BMI in the elderly. A significant relationship was also found between smoking and hours of television watching with obesity and underweight in the elderly.

Using the BMI profile, 12% of males and 28.9% of females were obese, 5.9% of males and 4.1% of females were underweight. Using the WHR profile, 45% of males and 87.1% of females were obese. Using the WHTR profile, 75.3% of males and 83% of females were obese (13).

A study by Azizi et al. in 2003 reported that the number of females who had 2 or more cardiovascular risk factors was significantly higher than males (74% vs. 53%). Additionally, 55% of males and 25% of females had high serum cholesterol levels (equal to or higher than 240 mg/dL), and the prevalence of diabetes and impaired glucose tolerance was 26.2% and 20.8%, respectively. The prevalence of obesity (body mass index equal to or higher than 30 kg/m2) was 15% in males and 36% in females. Moreover, 55% of males and 94% of females had a high waist-to-hip ratio (WHR) (higher than 0.95 in males and 0.8 in females) (14). In a study by Peyman et al. on 121 elderly people, the mean body mass index was 25.25 ± 3.4 kg/m2. More than half of the females (59.1%) and 46.2% of the males were overweight or obese. The prevalence of cardiovascular disease, hypertension, and diabetes according to physician diagnosis was 53%, 36.8%, and 17.4%, respectively. A significant relationship was found between hypertension, chest pain, age groups, and the prevalence of heart disease (15).

In a study by Totoonchi et al. in 2004, on elderly people covered by the Relief Committee, 80% of the elderly had at least one chronic disease, 37.2% had chronic heart disease, 41.5% had hypertension, 15.6% had diabetes, 45.89% had ulcer disease, 21.5% had high blood lipids, 10.8% had asthma, 79.2% had arthritis, 44.19% had a history of cataract surgery, and 30.23% had a history of glaucoma surgery. Additionally, 42.64% were smokers, 75.81% wore eyeglasses, 34.7% used hearing aids, 30.23% used artificial limbs, 67.44% used mobility aids, and only 5.4% did not have dentures (6). In a study among the elderly in Amirkola City, Hosseini et al. (2006-2007) reported that cardiovascular disease (29.6%), digestive problems (28.5%), hypertension (23.9%), diabetes (23.4%), musculoskeletal problems (22%), kidney and urinary tract problems (16.6%), pulmonary problems (12.8%), stroke (4.9%), and other diseases were less prevalent (12).

In a study by Brian W. Ward et al. (2010) in the United States, it was found that 26% of adults over 18 years of age had multiple chronic diseases (MCD), indicating an increasing trend compared to 2001 when it was 21.8%. This percentage increased significantly with increasing age. The most common problems were arthritis, hypertension, and diabetes. In this regard, 49.3% of people over 65 years of age had arthritis and hypertension, 29.5% had diabetes and hypertension, 27.6% had cancer and hypertension, 24.8% had cardiovascular disease and hypertension, and 21.2% had arthritis and diabetes (16). In a study by Martin J Prince in 2010 in Santo Domingo on the elderly over 65 years of age, 73% of the elderly had hypertension, 35% had anemia, 17.5% had diabetes, 13.8% had depression, 11.7% had dementia, and 13.8% had the metabolic syndrome (17). In a study by Habibi in Kosovo in 2007, 42% of the elderly were unable to take care of themselves, and 83% had at least one chronic disease, of which 63% was cardiovascular disease. Additionally, 45% had at least 2 chronic diseases (18).

Melzer examined the disabilities of the elderly and reported that one-third of the elderly had cognitive disabilities and more than 60% of them needed assistance in performing activities of daily living (19). Based on Minden et al., these disabilities reduced the income level of the elderly and increased their need for assistance in daily living. In this regard, 85% of the elderly in his study needed assistance in daily activities and 40% needed assistance in household activities (20). The rate of disability has been reported to be different in different countries and social systems. A study on the prevalence of disability in the elderly revealed that the prevalence of physical function limitations in Egyptian elderly was 71% in males and 88% in females. The same limitations were 50% and 76% for Tunisian males and females, respectively (21). Some studies have reported an increase in the incidence of aging and related disabilities in developing countries. However, others have reported a decline in the rate of geriatric disabilities in Western countries. For example, a study by Manton et al. showed that the prevalence of disability in the elderly in the United States decreased from about 25% in 1982 to 21% in 1994 (22).

Other reports have also indicated that the causes and extent of disability vary in different age and gender groups (23). For example, one study revealed that age, gender, low literacy, and low income were associated with disability (24). Some reports also indicate that the perceived disability of the elderly is more important than their actual disability in terms of their health status and quality of life (25). Studies have reported that physical condition and the level of social support affect the health status, quality of life, and ability to perform activities of daily living (26). Based on studies conducted in Iran, limited physical activity, the need for support from family members in performing activities, not having enough time to express emotions, limited mobility, reduced income, and lack of financial independence are involved in reducing the level of quality of life in the elderly (27). If their population continues to increase at this rate until 1410 in Iran, the first step in achieving a healthy and active elderly society will be understanding the health status of the elderly (28). Moreover, achieving the process of active and healthy aging requires sufficient attention to all physical, psychological, social, and spiritual dimensions of a person. Comparing the status of the elderly in different parts of the country with each other will also be useful for large-scale planning to improve the health level of the elderly In addition to contributing to determining the health, treatment, and social needs of the elderly significantly and resolving problems based on their living environment (29).

No study has been conducted so far on the prevalence of common chronic diseases in the elderly in the cities covered by Ahvaz University of Medical Sciences and Khuzestan Province. This province includes different ethnicities and, based on the results of previous studies, different numbers have been obtained in different parts of the country. Thus, the results of this study can be effective in developing future programs and effective interventions in providing health care for the elderly. Given what was stated, the basic question of the present study is: Will the results of this plan be useful in identifying some factors affecting the occurrence of chronic diseases in the elderly and presenting them to the relevant authorities to help with intervention planning and reducing and controlling the complications of chronic diseases in the elderly?

2. MATERIALS AND METHODS

The present study was a descriptive-analytical (cross-sectional) type. Its population included elderly people over 60 years of age living in selected urban and rural centers of the cities covered by Ahvaz Jundishapur University of Medical Sciences, including Andimeshk and Masjed Soleiman (north), Baghmalek and Izeh (east), Bavi and Karun (south), and Hoveyzeh and Dasht-e Azadegan cities (west). According to the census of the beginning of 2014, they had 74,731 elderly people over 60 years of age, of whom 418 were surveyed. Considering the permissible error rate d of 0.05 and the type I error level α of 0.05, and considering the results of previous studies that showed 80% of elderly people have at least one chronic disease, P = 0.8 was considered. The sample size was estimated to be 246 people. Thus, as the sampling method is a multi-stage cluster method, the final sample size was estimated to be 246×1.7=418 people by applying a design effect coefficient of 1.7.

Sampling was performed in several stages. In the first stage, sampling was performed to obtain information, examine the health status, and identify diseases of the elderly in 4 spatial classes of the north, south, east, and west of the 5 regions covered by the Jundishapur University of Ahvaz. Thus, considering the four geographical directions of north, south, east, and west, two cities were randomly selected from each including Andimeshk and Masjed Soleiman cities from the north, Baghmalek and Izeh from the east, Bavi and Karun from the south, and Hoveyzeh and Dasht-e Azadegan from the west. In the second stage, considering each rural and urban health center in the selected cities as a cluster, several clusters were randomly selected. In the third stage, several health centers were randomly selected from each selected cluster (rural). In the fourth

stage, the number of necessary samples from the selected urban centers and health centers was determined by determining the share of each center and health center in the total elderly population. Then, based on the household number or building number and according to systematic sampling corresponding to the same household or building number, the mentioned questionnaire was completed by the elderly present in that building or household by inviting the elderly to the health unit. If none of the family members were elderly in a household or building, the number of the adjacent household or building was selected.

A questionnaire was used as the data collection tool in this study. The content validity method was used to examine its validity. Accordingly, the researcher prepared and organized a questionnaire according to the study objectives after studying various books and publications. Then, he submitted it to 5 professors of the faculty. After applying their opinions and making the necessary modifications, considering 30 cases as a pilot study, the questionnaire "Investigating the prevalence of chronic diseases in the elderly" was completed for 30 elderly people and the questionnaire was reviewed and modified again. Finally, it was used to conduct the study. Its reliability was also calculated to be 0.7. The data were analyzed in SPSS software.

3. RESULTS

Table 1 presents the distribution of the frequency of chronic disease according to the type of chronic disease in the elderly in urban and rural health centers covered by Jundishapur University of Ahvaz in 2015 and their ranking.

Table 1: Ranking of chronic disease according to the type of chronic disease in the elderly

Disease name	Disease	%	Rank	Results
Chronic Headache	Yes	20.2	10	$X^2 = 722.646$ P=0.000*
Diabetes	Yes	21.7	9	
Hypertension	Yes	45	4	
Hyperglycemia	Yes	31	6	
Urinary Kidney	Yes	33	5	
Respiratory	Yes	18.3	10	
Musculoskeletal	Yes	51.3	2	
Osteoporosis	Yes	13.3	13	
Digestive diseases	Yes	46	3	
Cancer	Yes	0.5	14	
Vision problems	Yes	57.2	1	
Hearing problems	Yes	27	7	
Sleep Problems	Yes	26.4	8	
Anxiety	Yes	14.4	12	
Depression	Yes	15.9	11	

Friedman's nonparametric test was used to compare multiple dependent groups. Considering the chi-score value and the significance level of 0.00 < 0.05, the hypothesis is confirmed that the highest impact on prevalence is related to vision problems, musculoskeletal diseases, digestive diseases, and hypertension.

Table 2: Age * Prevalence Crosstabulation

	Prevalence of chronic diseases		Total	X2
	No	Yes		P

Age	60-75	Count	31	239	140	X2=
		% within age3	11.1%	88.5%	100.0%	P=0.000*
	76<	Count	10	138	148	X2=
		% within age3	6.8%	93.2%	100.0%	P=0.000*
Total		Count	41	377	418	
		% within age3	9.8%	90.2%	100.0%	

Based on the P-value obtained in Table (2), there is a significant relationship between age and the prevalence of chronic diseases in this study in age groups. In other words, the prevalence of chronic diseases has increased in both age groups with increasing age.

Table 3: Gender * Prevalence Crosstabulation

			Prevalence of chronic diseases		
			No	Yes	
Gender	Female	Count	17	215	232
		% within gender	7.3%	92.7%	100.0%
	Male	Count	24	162	186
		% within gender	12.9%	87.1%	100.0%
Total		Count	41	377	418
		% within gender	9.8%	90.2%	100.0%

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.628a	1	.057		
Continuity Correctionb	3.025	1	.082		

Based on the P-value obtained in Table (3), there is no significant relationship between gender and the prevalence of chronic diseases in this study. This means that being male or female does not affect the prevalence of chronic diseases.

Table 4: Ethnicity * Prevalence Crosstabulation

			Prevalence of chronic diseases		Total
			No	Yes	
ethnicity	Persian	Count	3	16	19
		% within ethnicity	15.8%	84.2%	100.0%
	Bakhtiari	Count	11	208	219
		% within ethnicity	5.0%	95.0%	100.0%
	Arab	Count	26	152	178
		% within ethnicity	14.6%	85.4%	100.0%

	Others	Count	1	1	2
		% within ethnicity	50.0%	50.0%	100.0%
Total		Count	41	377	418
		% within ethnicity	9.8%	90.2%	100.0%

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.722a	3	.002
N of Valid Cases	418		

Based on the P-value obtained in Table (4), there is a significant relationship between ethnicity and the prevalence of chronic diseases in this study. In other words, the prevalence of chronic diseases in the elderly is different in the studied ethnicities.

Table 5: Job * Prevalence Crosstabulation

			Prevalence of chronic diseases		Total
			No	Yes	
Job	Employee	Count	0	2	2
		% within Job	0.0%	100.0%	100.0%
	Self-employed	Count	2	18	20
		% within Job	10.0%	90.0%	100.0%
	Farmer	Count	1	40	41
		% within Job	2.4%	97.6%	100.0%
	Retired	Count	11	65	76
		% within Job	14.5%	85.5%	100.0%
	Home-based income-generating job	Count	0	6	6
		% within Job	0.0%	100.0%	100.0%
	Unemployed	Count	27	246	273
		% within Job	9.9%	90.1%	100.0%
Total		Count	41	377	418
		% within Job	9.8%	90.2%	100.0%

Based on the P-value obtained (0.385) in Table (5), there is no significant relationship between job and the prevalence of chronic diseases in this study.

Table 6: Education * Prevalence Crosstabulation

			Prevalence of chronic diseases		Total
			No	Yes	
Education	Illiterate	Count	30	308	338
		% within Education	8.9%	91.1%	100.0%
	Elementary	Count	10	51	61
		% within Education	16.4%	83.6%	100.0%
	Secondary	Count	1	11	12
		% within Education	8.3%	91.7%	100.0%
	High school	Count	0	6	6
		% within Education	0.0%	100.0%	100.0%
	Academic	Count	0	1	1
		% within Education	0.0%	100.0%	100.0%
Total		Count	41	377	418
		% within Education	9.8%	90.2%	100.0%

Based on the P-value obtained (0.391) in Table (6), there is no significant relationship between education and the prevalence of chronic diseases in this study.

Table 7: Body mass index * Prevalence Crosstabulation

			Prevalence of chronic diseases		Total
			No	Yes	
BMI	Below 22	Count	9	52	61
		% within BMI 12	14.8%	85.2%	100.0%
	22-25	Count	8	97	105
		% within BMI 12	7.6%	92.4%	100.0%
	25-29.9	Count	16	145	161
		% within BMI 12	9.9%	90.1%	100.0%
	30 and above	Count	8	83	91
		% within BMI 12	8.8%	91.2%	100.0%
Total		Count	41	377	418
		% within BMI 12	9.8%	90.2%	100.0%

Based on the P-value obtained (0.5) in Table (7), there is no significant relationship between BMI and the prevalence of chronic diseases in this study.

Table 8: Nutrition* Prevalence Crosstabulation

			Prevalence of chronic diseases		Total
			No	Yes	
Nutrition	Desirable	Count	30	222	252
		% within nutrition	11.9%	88.1%	100.0%
	Undesirable	Count	11	155	166
		% within nutrition	6.6%	93.4%	100.0%
Total		Count	41	377	418
		% within nutrition	9.8%	90.2%	100.0%

Based on the P-value obtained (0.76), there is no significant relationship between nutrition and the prevalence of chronic diseases in this study.

Table 9: Physical activity * Prevalence Crosstabulation

			Prevalence of chronic diseases		Total
			No	Yes	
Physical activity	Desirable	Count	7	152	159
		% within Physical activity	4.4%	95.6%	100. %
	Undesirable	Count	34	225	259
		% within Physical activity	13.1%	86.9%	100. %
Total		Count	41	377	418
		% within Physical activity	9.8%	90.2%	100%

Based on the P-value obtained (0.004) in Table (9), there is a significant relationship between physical activity and the prevalence of chronic diseases in this study.

Table 10: Cigarette smoking * Prevalence Crosstabulation

			Prevalence of chronic diseases		Total
			No	Yes	
History of smoking	No	Count	32	333	365
		% within History of smoking	8.8%	91.2%	100.0%
	Yes	Count	9	44	53
		% within History of smoking	17.0%	83.0%	100.0%
Total		Count	41	377	418
		% within History of smoking	9.8%	90.2%	100.0%

According to the P-value obtained (0.52), there is no significant relationship between the history of drug use and the prevalence of chronic diseases in this study.

Table 11: Drug use * Prevalence Crosstabulation

			Prevalence of chronic diseases		
			No	Yes	
History of drug use	0	Count	0	1	1
		% within history of drug use	0.0%	100.0%	100 %
	No	Count	39	368	407
		% within History of drug use	9.6%	90.4%	100. %
	Yes	Count	2	8	10
		% within History of drug use	20.0%	80.0%	100. %
Total		Count	41	377	418
		% within History of drug use	9.8%	90.2%	100. %

According to the P-value obtained (0.52) in Table (11), there is no significant relationship between the history of drug use and the prevalence of chronic diseases in this study.

4. DISCUSSION

The results revealed that chronic diseases in the elderly were 90.19%. However, it was reported 79.22% in the study by Totoonchi et al. in Tehran, and 93.9% in the study by Arab Ameri in 2014 in Golestan. The 4 common chronic diseases in this study were vision problems with 57.2%, musculoskeletal diseases with 51.3%, digestive diseases with 46%, and hypertension with 45%. In the study by Joghataei et al. in Kashan, musculoskeletal diseases 41.7%, cardiovascular problems 41.7%, digestive diseases 13.3%, and neurological diseases with 12.5% were reported as the 4 common causes of problems in the elderly, respectively.

In the study by Totoonchi et al. (2004), 72.8% had joint disease (30), which was higher than the present study. In the present study, 57.3% had visual problems, and in the study by Totoonchi, 36.9% had visual problems, which was lower than our study. Based on the present study, digestive problems were identified as the third most common disease among the elderly with a prevalence of 46%. In the study by Sattari et al. (2007) in Yazd, digestive disease was 27.5% (31), in the study by Habibi et al. (2008), it was 26.8% (32), and in the study by Esmaeili (2005), it was 19.3% (33), which were lower than the present study. The present study revealed a statistically significant relationship between age and the prevalence of chronic diseases in the separated age groups. The present study reported a significant relationship between ethnicity and the prevalence of chronic diseases. Based on the results, the prevalence of chronic diseases was higher among the Bakhtiari ethnic group than others. Additionally, being overweight, obesity and abdominal obesity were more common among the Bakhtiari than others, and physical activity was lower among them. However, in the study by Habibi (2008), non-communicable diseases were higher in the Persian ethnic group (34).

Physical activity showed a significant relationship with the prevalence of chronic diseases in the elderly in the present study. Based on the study by Haji Jafari (2007), the status of physical activity can be an influential factor in the incidence of gastrointestinal diseases (35). In the study by Ahmadi (2004), the prevalence of hypertension and heart disease was lower in people who had regular physical activity (36). In the present study, no statistically significant relationship was observed between the prevalence of chronic diseases in the elderly and factors such as gender, education, job, nutrition, body mass index, smoking, and drug use. Due to the relationship between ethnicity and chronic diseases, more studies should be conducted on ethnicities and education to improve lifestyles, especially among the Bakhtiari ethnic group in this province. Given the role of physical activity in the prevalence of chronic diseases in the elderly, planners must consider the importance of physical activity from the pre-old age

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