Knowledge and Attitude of Older Adults Toward Common Cold, Influenza and Pneumococcal Vaccination

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1.ABSTRACT

Background: Influenza virus is still one of the top ten most prevalent global diseases in the twenty-first century. Between 9.3 to 45 million people experience symptoms of influenza annually. Elders are highly vulnerable due to ageing immune systems and co-morbidities, representing for 90% of influenza-related deaths. Acute respiratory infections are the fourth leading cause of death worldwide, and cause over 4.25 million deaths each year. **Aim**: Assess knowledge and attitude of older adults toward common cold, influenza and pneumococcal vaccination. **Method**: A descriptive, correlational research design was used with a convenient sample of 180 older adults. The study was carried out in the Geriatric outpatient clinics of Mansoura University specialized medical hospital and Mansoura specialized hospital and 3 tools were used to collect data, demographic data structured interview schedule, common cold, influenza and pneumococcal vaccination knowledge questionnaire and common cold, influenza and pneumococcal vaccination attitude questionnaire. **Results**: There was a significant positive correlation between knowledge, and attitude score (r= 0.196, p = <.05). **Conclusion:** The majority of the studied older adults had poor level of knowledge and negative attitude toward common cold, influenza and pneumococcal vaccination. **Recommendations:** Implementation of health educational program for older adults about the precaution of infection prevention for the influenza to improve their health status and the quality of life.

Keywords: *Knowledge, Attitude, Common Cold, Influenza Virus, Pneumococcal Vaccine, Older Adult*.

2.Introduction:

Worldwide, the common cold and influenza virus are one of the main contributors to the increased morbidity and mortality. Annual influenza epidemics attack 5 - 15% of the population causing 34,400 - 57,300 deaths. The World Health Organization reported that one billion cases of influenza annually. The most severe influenza pandemic was recorded in 2018 which causing between 250,000 and 500,000 deaths in 2018-2019 [1].

Aging population are more susceptible to infections and complications due to many reasons changes in respiratory system, immune aging, and having comorbidities as diabetes all plays a central role in the susceptibility to respiratory infection. All these changes worsen clinical outcomes after infection leading to longer hospitalization and higher rates of morbidity and mortality [2].

Common cold affects the upper respiratory tract through an acute viral self-limiting infection that affects nose, sinuses, pharynx, and larynx. Influenza is a contagious respiratory infection caused by influenza viruses, such as Hemagglutinin type 1, 3, and Neuraminidase type 1, 2, (H1N1), (H3N2), and coronaviruses. Because influenza can manifest as a mild respiratory illness with no fever and only a cough and fatigue, estimating the true burden of influenza is difficult [3].

Although the incubation period varies, the rhinovirus has an incubation period of just under two days. The most common symptoms of common cold and influenza are runny nose, mild fever, throat pain, cough, and headache. The severity and type of symptoms vary based on the infected mucosa, typically peak at 1-3 days and last 7-10 days, although can sometimes last for three weeks[4].

The influenza vaccine is usually available in early-middle October and can be vaccinated at any time, but the majority of peoples who decide to be vaccinated get the vaccine by the end of December to protect the health of the elderly[5]. The Arab region showed a prevalence of 7% of pneumococcal diseases among the elderly, which is expected to reach 19% by 2025. Pneumococcal pneumonia causes approximately 150,000 hospitalizations in the United States each year[6].

In the elderly, influenza-related pneumonia and cardiovascular complications are much more common[7]. There are two recommended pneumococcal vaccinations for older adults, namely pneumococcal conjugate vaccine (pcv13) and pneumococcal polysaccharide vaccine (ppsv23). It is recommended for high risked elderly as chronic lung disease, diabetes, weakened immune system, and smokers. Both vaccines are quite safe, with serious adverse effects being seldom encountered [4].

Vaccination programs are one of the most effective public health strategies for reducing the burden of communicable diseases. Although the effectiveness, safety, and efficacy of pneumococcal and influenza vaccines, vaccination coverage of high-risk adults even in developed countries, remains low[8]. Maintaining overall quality of life in an ageing population is becoming a major global public health challenge [9].

There are many barriers affecting the uptake of vaccination among elderly population including the incomplete knowledge, attitude and practice (KAP) and the lack of access to vaccine delivery which in turn affecting the immunization program [10]. So nursing assumes a vital role in prevention of common cold, and influenza by performing many roles which start from assessment of the elderly history, and performing physical examination to management.

2.1 Aim of the study

The study aimed to assess knowledge and attitude of older adults toward common cold, influenza and pneumococcal vaccination.

The aim was achieved through the following steps:

1. Assess the older adults' knowledge toward common cold, influenza and pneumococcal vaccination.
2. Assess the older adults' attitude toward common cold, influenza and pneumococcal vaccination.

2.2 Research Questions:

➤ What is the level of knowledge of older adults toward common cold, influenza and pneumococcal vaccination?

➤ What is the type of attitude of older adults toward common cold, influenza and pneumococcal vaccination?

3. Method:

3.1. Design:

A descriptive research design was used to conduct this study.

3.2. Setting:

The study was carried out at the Geriatric outpatient clinics of Mansoura specialized hospital, and Mansoura University specialized medical hospital.

3.3. Sample Size Calculation:

The size of the study's sample for studying" knowledge and attitude among elderly towards common cold & influenza and its prevention" was determined by DSS research (https://www.DSS research.com/calculating sample size using percentages). Correct answer for "why the get influenza vaccine" was 48.0% **(Andrew et al, 2019)**, and it is expected to be one third (33.3%) in our locality. With alpha error of 1% (significance 99.0%), B error 5.0% (study power of 95%), and estimated sample size is 174 older adults and we can add 5% for better data quality. Thus the calculated sample size is **180.**

3.4. Subjects:

The study included 180 older adults from the previously indicated setting, and selected according to the following criteria: aged 60 years and more, participating in the study voluntarily, able to comprehend and communicate, and available when the data were collected.

3.5. Tools of data collection:

Three tools were utilized for data collection relevant to the study.

Tool I: Demographic and Clinical Data structured interview Sheet: it was developed after reviewing relevant literature by the researcher, it was included two parts:

Part I: Demographic characteristics of the older adults included age, gender, marital status, educational level, income and living condition, etc.

Part II: Medical history of older adults as diagnosis, presence to comorbidities, pattern of periodic medical checkup and previous hospitalization, duration and types and history of pneumococcal vaccination if taken (numbers, duration, frequency).

Tool II: Common cold and influenza knowledge questionnaire sheet: This part assesses the studied older adults' knowledge on two responses (correct, incorrect). It has 20 questions, the total knowledge score ranged between 0 (all incorrect answers) to 20 and more points (all correct answers). A score of

lower than 50% indicates poor knowledge, from 50% to lower than 75% indicates fair knowledge and equal or more than 75% indicates good knowledge.

Tool III: Common cold and influenza attitude questionnaire sheet: This part assesses the studied older adults' attitude on three responses (disagree, I'm not sure, Agree). It contains 18 items, with disagree responses coded a 1 point score, I'm not sure responses coded a 2 point score, and agree responses coded a 3 point score. As a result, the total score ranged from (18 – 54), 18 (all disagrees), and 54 (all agree score). A score from 1to18 indicates a negative attitude, a score from 19 to 36 indicated neutral attitudes, and If the score from 37 to 54, it indicates a positive attitude.

3.6. Validity of the tools

Five experts in the fields of Community Health Nursing, Gerontological Nursing, and Medical-Surgical from Mansoura University were reviewed the study tools. The required modifications were done, and the final forms were used for data collection.

3.7. Reliability

The Cronbach's Alpha test was used to assess the reliability of tools II and III in this study, and the results were (0.78 and 0.85, respectively), indicating that the tools were reliable.

3.8. Field work

After receiving the required approval, the researcher started collecting data. The researcher visited each clinics 2 days per week. According to the schedule of the Geriatric outpatient clinics of Mansoura specialized hospital (Tuesday, and Thursday), and Geriatric outpatient clinic of Mansoura University specialized medical hospital (Saturday, and Wednesday). The interview process began with the researcher introducing herself to the elderly patients and briefly explaining the purpose of the study. Each elderly patient was then questioned one-on-one, and the necessary data were then collected using the study tools. The data collection started from August 2021 to January 2022.

3.9. Ethical considerations:

The Faculty of Nursing at Mansoura University's Research Ethics Committee granted ethical approval. Older adults who were admitted to an outpatient clinic expressed their verbal consent after being told of the study's objectives. The study's privacy and confidentiality were guaranteed, and the data were only used for the study. Each older adult is given the assurance that participation in the study is voluntary, that they have the right to leave at any time without penalty, and that the privacy of the data will be protected.

3.10 Pilot Study

Before data collection started, a pilot research was conducted on 18 older adults, 10% of the study respondents, to determine the applicability and clarity of the study tools. These participants would not be included in the study, and the necessary modifications were made.

3.11. Data analysis:

The statistical package of social science (Spss) version 22 was used to code, tabulate, and analyze the obtained data. The frequency, percentage, mean, standard deviation, and Cronbach's Alpha tests were used as descriptive appropriate statistical tests. Comparing categorical variables was done using Chi-square test (χ^2). The correlation coefficient (r) between two quantitative variables was calculated using Pearson's correlation. At P ≤ 0.05, the difference was considered significant.

4. Results

Table 1: Represents demographic characteristics of the studied older adults. The age of the studied older adults ranged from 60 to 70 years old and more, with a mean age of 64.16 ± 2.60 years. Study elders aged from 60 to less than 65 years represented 68.9 % of the studied older adults. Females were more prevalent compared to males represented 71.1%. As regard to place of residence, 62.2% were residing in rural areas. Concerning marital status, it was 70 % of the studied older adults were married. Regarding educational level, 52.2% of studied older adults were illiterate. As regard to current income, 88.3% of studied subjects were reported that they had insufficient income. Finally, 93.3% of studied elders were living with their families.

Table 2: Shows the distribution of studied older adults according to clinical data. The table showed that,79.4% had a periodic medical examination in a period less than 3 months. The majority of the studied older adults 91.1% weren't take a regular vaccination for elderly, 41.7% of them reported that they didn't have regular vaccination due to high cost. Only 3.9 % of the studied older adults were vaccinated with pneumococcal vaccine.

Figure 1: Shows the distribution of the studied elders according to presence of chronic diseases. It was observed that, 67.2% of the studied older adults had both diabetes and hypertension. On

other hand 17.2% of studied older adults had diabetes only.

Figure 2: Represents the distribution of the studied subjects according to level of knowledge toward common cold, influenza and pneumococcal vaccination. It was appeared that 39.4% of the studied older adults had poor knowledge.

Figure 3: Shows the distribution of the studied elders based on level of attitude toward common cold, influenza and pneumococcal vaccination. It was demonstrated that 65.6% of the studied older adults had negative attitude.

Table 3: Shows the relation between demographic characteristics and knowledge of the studied older adults toward common cold, influenza and pneumococcal vaccination. It was observed that, no relation found except age, sex, educational level, current work and current income was affect significantly on level of knowledge, (p<0.05), (p<0.05), (p<0.001), (p≤0.001) and (p<0.05) respectively.

Table 4: Represents the relation between demographic characteristics and attitude level of the studied older adults toward common cold, influenza and pneumococcal vaccination. It was observed from the table that, no relation found between demographic characteristics and level of attitude except age, (p<0.05).

Figure 4: Shows the correlation between total scores of knowledge and attitude of the studied subjects regarding common cold, influenza and pneumococcal vaccination. The figure shows that there is a positive significant correlation between total scores of knowledge and attitude (r= 0.196, p = <.05).

5.Discussion

Seasonal influenza affects millions of people each year. It represents a year-round disease burden. elders represent 70–90% of seasonal influenza-related deaths, and 50–70% of influenza-related hospitalizations[11]. Pneumonia vaccination is recommended for older adults as it has shown remarkable development in the treatment and prevention. Although the effectiveness, safety, and efficacy of pneumococcal vaccines, vaccination coverage of high-risk older adults remains low and these may be due to misinformation about vaccinations[6]. Therefore, this study was performed in order to assess the level of knowledge and attitude of older adults regarding common cold, influenza and pneumococcal vaccination.

Demographic characteristics of the present study showed that, the age of the older adults ranged between 60 to 82 years old. Most of the

studied subjects were young old. This may be justified by the physical ability of these age group help them to go to hospital for monthly treatment at the expense of the state. This is in line with study done in Tunisia by **Kharroubi et al., (2021)[12],** and a study done in Canada by **Andrew, Gilca, Waite, & Pereira, (2019)[5],** who found that who found that most of participants were aged 60–69 years old.

The current study revealed that, most of the studied older adults were females. This may be explained by the number of females were more than males in the study sample. These finding is in agreement with study done in Egypt by **Waheed, Waheeb, Hassan, & Fahim (2020)[13],** revealed that most of participants were females. Contradictory, to a study held in Saudi Arabia by **Alqarzai et al., (2022)[14]**, who found that most of the studied sample were males. Regarding place of residence, most of the studied older adults were living in rural areas. This may be justified by there is no adequate health care or medical services in rural areas so the patients come to Mansoura geriatric outpatient clinics for seeking treatment. This result is supported by a study done in Poland by **Kałucka, głowacka, Dziankowska-Zaborszczyk, & Grzegorczyk-Karolak (2021)[15]**, who found that, most of the studied sample lived in rural areas.

The present study revealed that, most of the studied older adults were married. These finding is in line with studies performed in Egypt by **Ahmed, Ramadan, Refay, & Khashbah (2021)[16]**, who found that most of elders were married. According to level of education, most of the studied older adults were illiterate. This is in line with a study done in Egypt by **Elsehry & Elbialy (2021)[17],** found that most of the elderly were illiterate. Contradictory with a study performed in Saudi Arabia by **Sales, Syed, Almutairi, & al Ruthia (2021)[18],** who found that high percent of the sample were highly educated.

According to current work, most of the studied older adults didn't currently work. This is in accordance with a study performed in Tunisia by **Kharroubi et al., (2021)[13],** who reported that most of the studied subjects didn't currently work. The current study revealed that, majority of elderly were living with their families and had insufficient income. This may be explained as the families in in rural areas still live in extended family so, they can help elders to get all required needs of health care. This is in agreement with study done in Saudi Arabia by **Majrashi, Majrashi, Osman, & Al-Saleem (2021)[19],** who reported that majority of elder life with their spouse and had insufficient income.

Regarding the chronic diseases, most of the studied older adult had hypertension and diabetes. This may be as the majority of older adults have a family history of diabetes and hypertension. These is in line with a study held in Tunisia by **Kharroubi et al., (2021)[13]**, revealed that most of participants were diabetic and had hypertension. The current study revealed that, the majority of the studied subjects were performing follow up periodically in duration less than three months. This may be attributed to hospital provides the required periodic checkup with examination at a low cost for elders monthly. This is in agreement with a study performed in Italy by **Bertoldo et al., (2019)[20]**, who reported that majority of elders follow a health checkup.

Regarding regular vaccination, the current study showed that majority of elders not take vaccination. This may be result of the high cost and insufficient information about vaccination. Furthermore, this finding conflicts with in Serbia by **Gazibara et al., (2019)[21]**, who found that minority of participants were immunized regularly. As regard of being vaccinated with pneumococcal vaccine, the present study showed that the majority of the studied older adults not previously vaccinated. This may be due to lack of health education about the importance of vaccination. This is in accordance with a study performed in Germany by **Perniciaro & van der linden, (2021)[22]**, who reported that majority of the participants not receiving pneumococcal vaccination.

Knowledge is a mix of experiences and related information which is applied for the development of humankind and gradually changing the personal and social intelligent performance[23]. According to the current study, it was showed that most of the studied older adults had poor level of knowledge toward common cold, influenza and pneumococcal vaccination. This may be justified by, the majority of the studied older adults take traditional influenza treatment without any prescription also, most of the studied subjects were illiterate and lived in rural areas which have poor awareness of vaccinations and health care. This result is supported by a study performed in Saudi Arabia by **Alharbi et al., (2022)[24]**, showed that the most of participants had poor level of knowledge regarding pneumococcal vaccine.

According to the relationship between knowledge level and the demographic characteristics of the studied older adults regarding common cold, influenza and pneumococcal vaccine, the difference was statistically significant for age, sex, level of education, current work and current income. This may be related to the majority of the study subjects included in the study were being female and from rural areas. This is in line with studies performed in Saudi Arabia done by **Alharbi et al., (2022)[25], and Faisal Khaled & Alasmari, (2019)[26],** revealed that the statistically significant difference was found between knowledge and age, sex, work, educational level and monthly income.

The attitude is influenced by many factors as social factors, family, personal experience, media, religious and educational level. Thus improve and increase the level of knowledge will positively affect the attitude of older adults towards the common cold, influenza, and pneumococcal [27]. Regarding the level of attitude in the current study, it was showed that, most of the studied subjects had negative attitude regarding common cold, influenza and pneumococcal vaccine. This may be attributed to most of the studied older adults prefer the folk remedy for influenza from the pharmacy and natural recipes instead of going to the doctor. In accordance with this study, studies done in Saudi Arabia by **AL Yazidi et al., (2020)[28],** and **Alhatim, Al-Bashaireh, & Alqudah, (2022)[29],** showed that the most of the elderly had negative attitude toward seasonal flu and pneumococcal vaccination.

According to relationship between attitude level and the demographic characteristics of the studied older adults regarding common cold, influenza and pneumococcal vaccine, the difference was statistically significant only for age. In agreement with this study, a study *performed in china by **jiang et al., (2021)[30],** reported that* there was a significant association between attitude level with age.

The current study showed that there is a significance positive correlation was found between total score of knowledge and attitude of the studied elders. This finding could be explained by the most of the studied subjects have some false believes to follow the traditional ways in dealing with influenza without going to doctor. This result is in accordance with a study done in Saudi Arabia by **Alhomayani Almalki, Alqahtani, & Almalki, (2019)[31]** . Thus, based on the findings of the current study, it was obvious that, there is a significant knowledge gap regarding dealing with influenza. So dealing with the lack of knowledge among the elderly will stimulate a positive attitude which will have a positive effect on the public health and the quality of life.

6.Conclusion

Based on the findings of the present study, it was concluded that the majority of the studied older adults were young old, female, and lived with their families. Additionally, the majority of the studied elders didn't receive either the regular vaccination for elderly or the pneumococcal vaccination. In general, the majority of studied older adults had a poor level of knowledge and a negative attitude toward common cold, influenza and pneumococcal vaccination. Additionally, a significant positive correlation between total score of knowledge and attitude of the studied elders toward common cold, influenza and pneumococcal vaccination.

7.Recommendations

1. Increasing the awareness of elderly people about vaccination in both hospitals and outpatient clinics by distribution of media as posters, reminders for patients, electronic medical records, short films, and service providers as newspapers, brochures, and mobile messages.

2. Designing training program for older adults about vaccination in outpatient clinics to improve their knowledge and attitude regarding pneumococcal vaccinations.

3. Implementation of health educational program for older adults about the precaution of infection prevention for the influenza virus to improve the health status and the quality of life.

8. Acknowledgment

9. Conflict of interest

I have no competing interests.

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Table 1: Distribution of studied older adults according to their demographic characteristics

Items	N =180	%
Age (In Years):		
60<65	124	68.9
65<70	48	26.7
70 And More	8	4.4
Sex:		
Female	128	71.1
Male	52	28.9
Place of residence:		
Rural	112	62.2
Urban	68	37.8
Marital status:		
Married	126	70.0
Widowed	53	29.4
Single	1	0.6
Educational level:		
Illiterate	94	52.2
Read and Write	66	36.7
Technical Institutes	18	10.0
University Graduate	2	1.1
Current income:		
Not Sufficient	159	88.3
Sufficient	21	11.7
Living system:		
With Family	168	93.3
Alone	12	6.7

Table 2: Distribution of the studied older adults according to clinical data

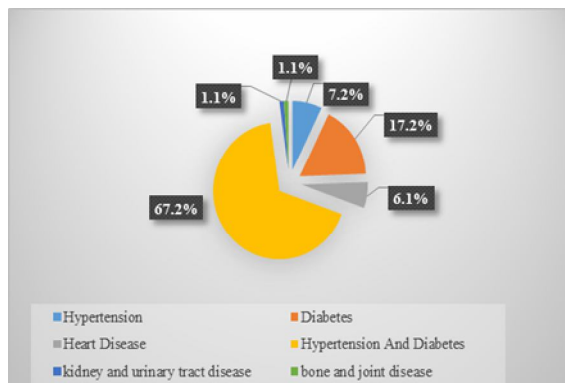| Items	N =180	%
Periodic medical examination:		
<3 Months	143	79.4
3-6 Months	33	18.3
Not follow periodic medical examination	4	2.3
Regular vaccination:		
No	164	91.1
Yes	16	8.9
Reasons for not taking vaccinations :		
High Cost	75	41.7
Negative Attitude	54	30.0
Not have enough knowledge	35	19.4
Other reasons	16	8.9
Vaccination with pneumococcal vaccine:		
No	173	96.1
Yes	7	3.9

Figure 1: Distribution of the studied older adults according to presence of chronic disease to presence of chronic disease
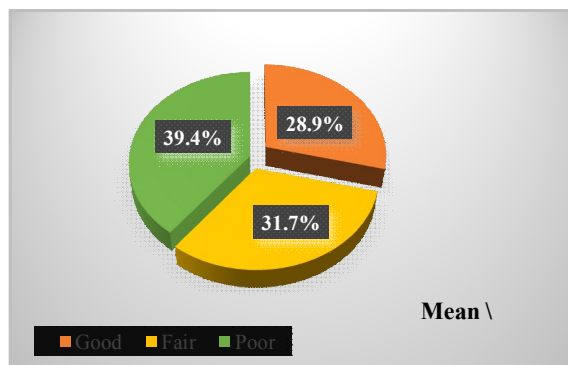

Figure 2: Distribution of the studied older adults according to level of knowledge toward common cold, influenza and pneumococcal vaccination.
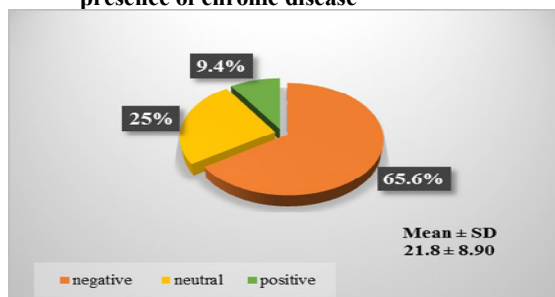

Figure 3: Distribution of the studied older adults according to level of attitude toward common cold, influenza and pneumococcal vaccination
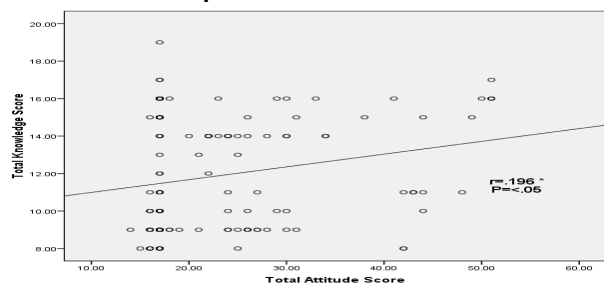

Figure 4: Correlation between total scores of knowledge and attitude of the studied older adults toward common cold, influenza and pneumococcal vaccination

Table 3: Relation between demographic characteristics and knowledge of the studied older adults

Demographic Characteristics	Knowledge level						Test of significance	
	Poor		Fair		Good		x^2	p
	N	%	N	%	N	%		
Age (years)								
60<65	56	45.2%	37	29.8%	31	25.0%	9.622	.047*
65<70	15	31.2%	15	31.2%	18	37.6%		
70 and more	0	.0%	5	62.5%	3	37.5%		
Sex								
Female	55	43.0%	44	34.4%	29	22.6%	8.379	.015*
Male	16	30.8%	13	25.0%	23	44.2%		
Place of residence								
Rural	50	44.6%	31	27.7%	31	27.7%	3.671	.160
Urban	21	30.9%	26	38.2%	21	30.9%		
Marital status								
Married	43	34.1%	44	34.9%	39	31.0%	6.024	.197
Widowed	27	50.9%	13	24.6%	13	24.5%		
Single	1	100%	0	.0%	0	.0%		
Educational level								
Illiterate	53	56.4%	22	23.4%	19	20.2%	25.110	.000**
Read and write	16	24.2%	26	39.4%	24	36.4%		
Technical institutes	2	11.2%	8	44.4%	8	44.4%		
University graduate	0	.0%	1	50.0%	1	50.0%		
Current work								
Not Working	57	41.6%	48	35.0%	32	23.4%	8.809	.012*
Working	14	32.6%	9	20.9%	20	46.5%		
Current income								
Not sufficient	58	36.5%	54	34.0%	47	29.5%	5.521	.063*
sufficient	13	61.9%	3	14.3%	5	23.8%		
Living system								
With family	68	40.5%	53	31.5%	47	28.0%	1.418	.492
Alone	3	25.0%	4	33.3%	5	41.7%		

Table 4: Relation between demographic characteristics and attitude level of the studied older adults

Demographic Characteristics	Attitude level						Test of significance	
	Negative		Neutral		Positive			
	N	%	N	%	N	%	$\cdot$ 2	p
Age (years)								
60<65	82	66.1%	34	27.4%	8	6.5%	10.716	.030*
65<70	31	64.6%	11	22.9%	6	12.5%		
70 and more	5	62.5%	0	.0%	3	37.5%		
Sex								
Female	80	62.5%	36	28.1%	12	9.4%	2.364	.307
Male	38	73.1%	9	17.3%	5	9.6%		
Place of residence								
Rural	74	66.1%	27	24.1%	11	9.8%	.151	.927
Urban	44	64.7%	18	26.5%	6	8.8%		
Marital status								
Married	82	65.1%	32	25.4%	12	9.5%	.545	.969
Widowed	35	66.1%	13	24.5%	5	9.4%		
Single	1	100.0%	0	.0%	0	.0%		
Educational level								
Illiterate	68	72.3%	19	20.2%	7	7.5%	8.061	.234
Read and write	39	59.1%	20	30.3%	7	10.6%		
Technical institutes	10	55.6%	6	33.3%	2	11.1%		
University graduate	1	50.0%	0	.0%	1	50.0%		
Current work								
Not working	87	63.5%	34	24.8%	16	11.7%	3.408	.182
Working	31	72.1%	11	25.6%	1	2.3%		
Current income								
Not sufficient	100	62.9%	43	27.0%	16	10.1%	4.303	.116
sufficient	18	85.7%	2	9.5%	1	4.8%		
Living system								
With family	111	66.1%	42	25.0%	15	8.9%	.812	.666
Alone	7	58.3%	3	25.0%	2	16.7%		