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Effect of Aging Educational Program on Nursing Students' Knowledge, Ageism Attitude and Gerascophobia

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ABSTRACT

Background: Nursing students are a critical force in shaping the future where older adults thrive. Nursing students' limited aging knowledge, negative ageist attitudes and fear of aging are serious concerns which necessitates targeted interventions to attract future generations of geriatric care field. **Aim:** Evaluate the effect of aging educational program on nursing students' knowledge, ageism attitude and gerascophobia. **Method:** A Quasi-experimental (pre & post) research design was used. **Sample:** One hundred and five nursing students selected from the technical institute of nursing, Mansoura University, by cluster sampling technique. **Tools**: Four tools were used to collect the data. **Tool I:** Demographic Data Structured Questionnaire. **Tool II:** Nursing Students' Aging Knowledge Structured Questionnaire. **Tool III:** The Ageism Attitude Scale. **Tool IV:** Fear of Aging (Gerascophobia) Questionnaire. **Results:** A highly statistically significant difference in nursing students' aging knowledge, ageism attitude and gerascophobia after than before the implementation of the proposed program was observed. **Conclusion:** Aging educational program has a positive effect in improving nursing students aging knowledge, decreasing ageist attitude and reducing fear of aging. **Recommendations:** Designing aging educational programs for the students in other different specialties to enhance their aging knowledge to be capable of providing an efficient nursing care. Encouraging nursing students to attend training workshops and scientific events in gerontology to update their knowledge and maintain more positive attitudes. Distribution of the developed educational booklet on caregivers and other members of the multidisciplinary team to contribute to better quality of older adult's care.

***Keywords*:** Ageism, Aging Knowledge, Educational Program, Gerascophopia

Introduction:

Aging is the main issue that facing international health care systems currently. With increasing aged population, there is an increased likelihood of developing health problems which consequently increase the demand for health care resources. By 2050, the world's population of people aged 60 years and older will double (2.1 billion). The number of persons aged 80 years or older is expected to triple between 2020 and 2050 to reach 426 (Cristea, Noja, Stefea, & Sala, 2020).

As our population ages rapidly, societies unprepared to handle this shift grapple with negative attitudes towards older adults. Ageism, manifesting as stereotypes, prejudice, and discrimination, marginalizes and disregards their unique needs and contributions. The impact of ageism extends far beyond personal harm, affecting healthcare access, economic participation, and overall well-being. Ageism fuels negative attitudes toward older adults, manifesting as harmful stereotypes, prejudice, and exclusion, disregarding their diverse needs and contributions (World Health Organization,2022).

The World Health Organization survey of the World Values Survey has revealed the widespread prevalence of negative or ageist attitudes toward older adults However, a gap exists, the healthcare systems strive to meet the diverse needs of their patients, addressing the specific challenges of older adults' health concerns requires further focus and attention(Castro ,et al 2023).

Gerontological nursing is an evidence-based nursing specialty that focuses on caring for older adults and meeting the unique needs of an aging population. A particular skill set that includes knowledge regarding the physical and emotional needs unique to older adults is necessary. Additionally, gerontological nurses are proficient in supporting healthy aging and focus on the quality of life. As the older population grows, more gerontological nurses will be needed in a variety of practice settings (Slanec, 2023).

Nursing students, as one of the important members of professional nursing staff provide services for older adults in the future and play a significant role in the development of care services

of older individuals. Nursing students aging knowledge plays an important role in changing the negative attitudes and fear of aging. Adequate knowledge of the changes associated with aging could reduce the level of uncertainty and increase tolerance of those changes. Similarly, a higher level of aging knowledge could increase the predictability and perceived control over the potential threats associated with the aging process (Donizzetti, 2019). Nursing students' attitudes toward older adults will have an impact on both the quality of care they deliver and their willingness to participate in geriatric care. The quality of care provided to older adults can be directly impacted by nursing students' coexisting positive and negative attitudes on several aspects of caring for older adults, including their characteristics, care demands, and nurses' approaches to care (Wang, et al., 2021).

Ageism is a concept is strongly associated with the idea of segregation and stigmatization according to age. The fast and deep transformations that Western societies have undergone, and which have resulted in modernization processes, have represented considerable gains in terms of survival (Casanova, et al 2020). Unfortunately, Ageism attitudes is prevalent and often based on age-related prejudices, lack of productivity, a decrease of intellectual capacity and less physical attractiveness. These attitudes and behaviors lead to treating the elderly as a homogeneous category (Mohammed & Omar, 2019). The health care that provided to the older adult can be greatly impacted by ageism. Geriatric patients should get equal medical care from medical experts, and should never face discrimination on the basis of their age, sex, nationality, religion and ethnicity (Lee, et al., 2020). Gerascophobia is positively correlated with ageism, and negatively correlated with age (Donizzetti, 2019). Fear of aging is a rising phenomenon that affects the individual and leaves a huge mark on their existence (Ramsey-Soroghaye, et al 2023). Gerascophobia and ageism of young adults resulting in negative consequences physically and psychologically on older people. Ageism's ugly tentacles reach into every corner of society, twisting perceptions into harmful stereotypes, fueling prejudice, and leading to blatant discrimination. This systemic bias marginalizes older adults, ignoring their unique voices and erasing their valuable contributions. It's crucial to foster intergenerational connection and understanding through education and awareness campaigns. By dispelling these harmful stereotypes and recognizing the value and capabilities of older adults, more age-inclusive world, treated with respect and dignity (Moroianu, 2021).

Significance of the Study:

The proper relationship between healthcare providers and older people is important in achieving the goals of the care plan. Nurses, compared to other members of the healthcare team, spend more time interacting with older adult patients. Therefore, it is especially important to train them in developing positive trust relationships. So, Empathy and person-centered care improve the quality of care, patients' outcomes, satisfaction and reduced their distress (Gholamzadeh, et al 2018).

Scientific research illustrated that there is a lack in educational programs focusing on geriatric nursing care for all categories of nursing students who will deal with older people and the given healthcare will be severely threatened by the negative stereotypic attitudes and misconceptions of nurses (Faronbi, et al 2017). Developing a nursing workforce specialized in gerontological nursing will be challenging since there is already a shortage of skilled healthcare professionals globally. Failure to recruit and retain health care professionals in gerontological nursing is attributed to their negative attitudes towards aging and working with older adults. Fortunately. Education on aging was shown to decrease ageist attitudes and increase interest in working with older adults (Ghimire, et al 2019). Thus, the purpose of this study is to change ageism attitude and reduce fear from aging among nursing students and provide a proper intervention through educational program to change such negative attitudes and their consequences on the behavior of the nursing students towards older adult,

Aim of the study

The current study aimed to evaluate the effect of aging educational program on nursing students' aging knowledge, ageism attitude and gerascophobia.

Research hypotheses:

H^1: Nursing students who participated in the proposed educational program will exhibit higher aging knowledge compared to their pre-training aging knowledge level.

H^2: Nursing students who participated in the proposed educational program will exhibit positive ageist attitude compared to their pre-training ageist attitude level.

H^3: Nursing students who participated in the proposed educational program will exhibit less gerascophobia compared to their pre-training gerascophobia level.

Subject and Method

Study design:

A quasi-experimental research design using a one-group pretest-posttest approach was utilized to evaluate the effectiveness of the aging training program on nursing students aging knowledge, ageist attitude and gerascophobia.

Study setting:

The study was conducted in the technical institute of nursing, Mansoura University. The technical institute of nursing applies two years courses followed by six months internship training. It provides standard education and clinical training in all different branches of nursing such as medical surgical nursing, pediatric nursing, gerontological nursing, psychiatric nursing, community health nursing, in addition to six months internship in the hospitals of Mansoura University. Eventually, the nursing students will carry a diploma degree in nursing after graduation.

Sampling:

Based on data from literature (Lytle and Levy, 2019), considering level of significance of 5%, and power of study of 80%, and based on data from literature, the sample size can be calculated using the following formula:

$$n = \frac{\left(Z1 - \frac{\alpha}{2}\right)^2 . SD^2}{d^2}$$

Where,

Z1-α/2 = is the standard normal variate,

at 5% type 1 error it is 1.96,

SD = standard deviation of variable and d = absolute error or precision. So,

$$n = \frac{(1.96)^2 . (1.62)^2}{(0.31)^2} = 104.9$$

Based on the above formula, the sample size required for the study is 105.

Sampling technique:

Cluster sampling technique was used to conduct this study and the clusters were selected by using simple random technique.

Tools of data collection:

Four tools were used to collect the necessary data.

Tool I: Demographic Data Structured Questionnaire:

This tool was developed by the researcher after reviewing the relevant literature. It included two parts:

Part I: **Personal data** such as name, age, sex, marital status, academic semester, place of residence.

Part II:**Previous training in the field of geriatric care,** previous dealing with older adults, source of nursing students' knowledge.

ToolII. Nursing Students' Aging Knowledge Structured Questionnaire:

Self-answered questionnaire was developed by Kaur et al., (2014). It was used to identify student's level of aging knowledge. It consisted of 28 multiple choice questions with one correct answer represented in five domains; physiological changes knowledge domain: 8Q, psychosocial changes knowledge domain 7Q, older adults health needs knowledge domain: 3Q, older adults balance knowledge domain: 4Q and older adults health problems knowledge domain: 6Q. This tool was translated by Mohammed & Omar, 2019 into Arabic language. It was tested by the researcher for its reliability by using test retest. Total score was classified as satisfactory and unsatisfactory level of aging knowledge according to students' responses (60% and more of right answers was considered satisfactory knowledge).

Tool III. The Ageism Attitude Scale (AAS):

The Ageism Attitude Scale (AAS) was developed by Vefikulucay and Terzioglu, (2011) to determine adults' attitude towards ageism. This tool was translated by Mohammed & Omar, 2019 into Arabic language. The scale contained 23 items which subdivided into three subscales; restricting life of elderly, positive ageism and negative ageism. Questions from 1 to 9 were measuring restricting life of elderly, questions from 10 to 17 were measuring positive attitude toward the older adults, questions from 11 to 23 were measuring negative attitude toward older adults. The scale items were scored on a 5-point Likert scale. Scoring system was 1 = totally disagree, 2 = disagree, 3 = not sure, 4= agree and 5= totally agree. The items including negative attitude sentences and restricting life of elderly were reversely coded. The highest score for the scale was 115 and the lowest was 23. It was tested for its reliability by using test

retest. Higher scores indicated positive attitudes towards older adults and lower scores indicated negative attitudes towards older adults.

Tool IV. Fear of Aging (Gerascophobia) Questionnaire:

It was developed by the researcher after reviewing the relevant literature Lasher & Faulkender (1993), Momtaz, Mahmoudi & Zanjari, (2021**).** It was including 16 questions concerning fear of aging. The questionnaire items scored on a 5-point Likert scale. Scoring system was 1= totally disagree, 2= disagree, 3= not sure, 4= agree and 5= totally agree. The total score of fear from aging was calculated by summing the scores of all items. This tool was tested for its reliability by using test retest. A higher score indicated greater degree of fear from aging process. The lowest score was 16 and the higher score was 80.

Validity of the study tools:

The researcher designed the study tools after conducting a thorough analysis of existing research; the study tools underwent a rigorous evaluation by five experts from the fields of Gerontological Nursing, community health Nursing, and psychiatric Nursing to test face and content validity. This was done to ensure that the tools were clear, relevant, applicable, and comprehensive. The researchers made the recommended modifications based on the feedback received from the experts. Furthermore, the final English version of the tools was translated into Arabic, which is the native language of the study participants.

Reliability of the study tools:

The internal consistency of the study tools was tested using Cronbach's alpha for tool II ($r_{=}0.894$), tool III ($r_{=}0.903$) and tool IV ($r_{=}0.900$), indicating good consistency of the designed tools.

Pilot study

A preliminary study to gain initial insights was conducted on 10% of the overall sample size, which included (11) nursing students, to evaluate the clarity, feasibility, and effectiveness of the study tool, besides estimating the time needed to fill out the questionnaire. Necessary modifications were made based on the feedback obtained from the participants before data collection. It is worth noting that the nursing students who participated in the pilot study were excluded from the total sample of the study.

Data collection:

The study was conducted over a period of four months during the 1st semester of the academic year 2022, which started from the middle September 2022 to the end of December 2022. The framework of this study follows the phases of the nursing process, as follows:

Phase I: Assessment phase:

- Approvals were obtained from the dean of the Faculty of Nursing, Mansoura University and director of the technical institute of nursing to permit the researcher to carry out the study and were informed about the purpose of the study and the duration and time of data collection.
- Ethical approval was obtained from the Research Scientific Ethical Committee.
- Confidentiality was ensured by the researchers, who confirmed that the data would be used only for scientific research purposes. Oral and written consent was obtained from each nursing student who agreed to participate in the study.
- The researchers proceeded to interview the nursing student who agreed to participate in the study. These interviews were conducted in the teaching classes at the technical institute of nursing, where the researchers explained the research objectives and potential benefits of the current study to nurses.

Phase II: Planning phase:

- Tool I (Demographic Data Structured Interview Questionnaire) was developed by the researcher based on review of related literature.
- Tool IV (Fear of Aging (Gerascophobia) Questionnaire) was developed by the researcher.
- The researchers developed the goal, objectives, content, teaching methods, and media. The main goal of the program is to empower nursing student who participate in the program with valuable aging knowledge; to raise their awareness regarding aging process and its concern, change their attitude toward older adults and alleviate their gerascophobia level.
- The proposed aging educational program was designed based on the findings of baseline assessment data (pre-test), knowledge gap, and recent literature review (Walston, 2020); (United Nation, 2020); (Robinson, 2018); (National Institute on Aging, 2021).

- The proposed aging educational program covered valuable aging knowledge in the related topics of aging physiological and psychosocial changes, common health needs of older adults, common disorders and diseases among older adults, nursing care of aging general health problems, myths and facts about aging based on intensive literature review for relevant recent literature.
- An educational booklet was prepared in a simple Arabic form with suitable-sized fonts and colored images to be distributed to the studied nursing students during the implementation phase.

Phase II: Implementation phase:

- The questionnaires were distributed on the studied nursing students, and they were requested to answer each question using four the study tools (pretest) It took around 20-30 minutes to fill out the questionnaire.
- The researcher dividing into 5 groups with 21 nursing students in each group.
- The proposed training program was conducted in a group basis over a period of two weeks, with two sessions per week. The program consisted of four consecutive sessions; each session took 30-45 minutes.
- The sessions of the educational program were conducted once every week for each group at 2 pm. The sessions of the educational program were:
  a. **1st Session:** covered common physiological and psychosocial changes associated with aging.
  b. **2nd Session:** started by revision on the previous1st session and discuss common health needs among older adults.
  c. **3rd Session:** revision of the previous 2nd session and mention the new topic on common disorders and diseases among older adults.
  d. **4th Session:** revision of the previous 3rd session and adding of new knowledge related to nursing care of aging general health problems, myths and facts about aging.
- Teaching methods employed during the program implementation included integrated lectures, role-playing, group discussions, Teaching materials included PowerPoint presentations, illustrated pictures, Guidry videos, and booklet (handout).
- The researcher distributed the study tools on the studied nursing students for completion after implementation of the program and collected it after the students completed it.

Phase III: Evaluation phase:

- It was done by using the study tools II. Nursing Students' Aging Knowledge Structured Questionnaire tool III. The Ageism Attitude Scale and tool IV. (Fear from Aging (Gerascophobia) Questionnaire) immediately after implementation of the proposed program to determine its effectiveness.
- The researcher compared the post-test results with the pre-test results to evaluate the effect of the proposed aging educational program.

Ethical Considerations:

An ethical approval was obtained from the Research Ethics Committee of the Faculty of Nursing, Mansoura University. An informed consent was obtained from each subject enrolled in the study after providing comprehensive information about the nature of the study. Privacy of the study subjects and confidentiality of the collected data was assured and was only used for the purpose of the study. Each subject was assured that the participation was voluntary, and they were informed that they have the right to withdraw from the study at any time without any consequences or penalty.

Statistical Analysis:

All statistical analyses were performed using SPSS for windows version 20.0 (SPSS, Chicago, IL). Continuous data were normally distributed and were expressed in mean ±standard deviation (SD) and T-test. Categorical data were expressed in number and percentage. Chi-square test (or fisher's exact test when applicable) was used for comparison of variables with categorical data. The reliability (internal consistency) test for the questionnaires used in the study was calculate. Statistical significance was set at $p<0.05$.

Results:

Table 1: Shows that a total of 105 nursing students were enrolled in the current study. 76.2% of the studied participants aged between 18 to 20 years, with a mean of 18.2 ±0.6 years. As for their gender, 60% are males. According to the place of residence, 71.4% were living in rural areas. Concerning previous experience with older adults, 88.6% of the studied participants have a previous contact with older adults before. As for previous training in the field of geriatric care, 72.4% haven't

attended any courses or training regarding geriatric care.

Figure1: Illustrates that 47.6% of the studied participants were having high level of fear of aging (gerascophobia) before implementation of the program compared to 17.1% having high level of fear of aging after implementation of the program. Meanwhile, 52.4% of the studied participants were having low level of fear of aging (gerascophobia) before implementation of the program which increased to 82.9% after implementation of the program with highly statistically significant difference.

Table 2: Reveals that aging knowledge domains; 54.3% of the studied participants were having unsatisfactory knowledge regarding physiological changes domain before implementation of the program compared to 78.1% having satisfactory knowledge after implementation of the program with a highly statistically significant difference of <0.001. While 54.3% of the studied participants were having unsatisfactory knowledge before implementation of the program compared to 79% having satisfactory level of knowledge regarding psychosocial changes after implementation of the program with a highly statistically significant difference.

While 57.1% of the studied participants were having unsatisfactory level of knowledge regarding older adult's health needs knowledge domain before implementation of the program compared to 83.8% having satisfactory level of knowledge after implementation of the program with a highly statistically significant difference of <0.001. With regard to older adult's balance knowledge domain, 69.5% of the studied participants were having unsatisfactory level of knowledge before implementation of the program compared to 76.2% having satisfactory level of knowledge after implementation of the program with a highly statistically significant difference of <0.001.

As for older adult's health problems domain, 61% of the studied participants were having unsatisfactory level of knowledge before implementation of the program compared to 77.1% having satisfactory level of aging knowledge after implementation of the program with a highly statistically significant difference of <0.001. Furthermore, the total knowledge level of 59% of the studied participants was unsatisfactory before implementation of the program, compared to 83% were having a satisfactory knowledge level after the implementation of the

Table 3: Illustrates the attitudes of ageism of the studied participants. With regard to restricting life of older adults' subscale, 61% of the studied participants were having negative attitude before implementation of the program compared to 76.2% were having positive attitude after implementation of the program with a highly statistically significant difference <0.001.

As for positive ageism subscale, 50.5% of the studied participants were having negative attitude before implementation of the program compared to 72.4% were having positive attitude after implementation of the program with a highly statistically significant difference.

Concerning negative ageism, 58.1% of the studied participants were having negative attitude before implementation of the program compared to 70.5% were having positive attitude after implementation of the program with a highly statistically significant difference.

In addition, the total ageism attitude score indicated that 56.2% of the studied participants were having negative attitude toward older adults before implementation of the program, compared to 73.3% were having positive attitude after implementation of the program with a highly statistically significant difference.

Table 4: Shows that statistically insignificant difference was found between the studied participants aging knowledge level, ageism attitude and gerascophobia total score according to their demographic characteristics before implementing the program.

Table 5: Shows that statistically insignificant difference was found between the studied nursing students aging knowledge level, ageism attitude and gerascophobia total score according to their demographic characteristics after implementing the program.

Table 6: Reveals that a highly statistically significant relation was found between the studied participants aging knowledge level and their level of fear of aging after implementation of the program X^2=34.478, P<0.001. Moreover, a highly statistically significant relation was found between the level of ageism and their level of fear of aging X^2=29.020, P<0.001

Table 7: Shows that a highly statistically significant relation was found between the studied participants aging knowledge level and their ageism attitude after implementation of the program X^2=50.719, P<0.001 **Table 8:** Illustrates that there are insignificant correlations between aging knowledge, ageism attitudes and

gerascophobia before implementation of the proposed program compared to a highly statistically significant positive correlations ($p<0.001$) between aging knowledge and ageism attitudes. Additionally, a highly statistically significant negative correlations ($p< 0.001$) were found between gerascophia and aging knowledge, ageism attitude after implementation of the proposed program.

Table (1): Distribution of the Studied Participants According to Their Demographic Characteristics (N=105):

Demographic characteristics	N (105)	%
Age of participants (Years)		
18 – 20	80	76.2
< 18	25	23.8
Mean ±SD	18.2 ±0.6	
Gender		
Male	63	60.0
Female	42	40.0
Place of residence		
Rural	75	71.4
Urban	30	28.6
Previous experience with older adults		
Yes	93	88.6
No	12	11.4
Previous training in the field of geriatric care		
No	76	72.4
Yes	29	27.6

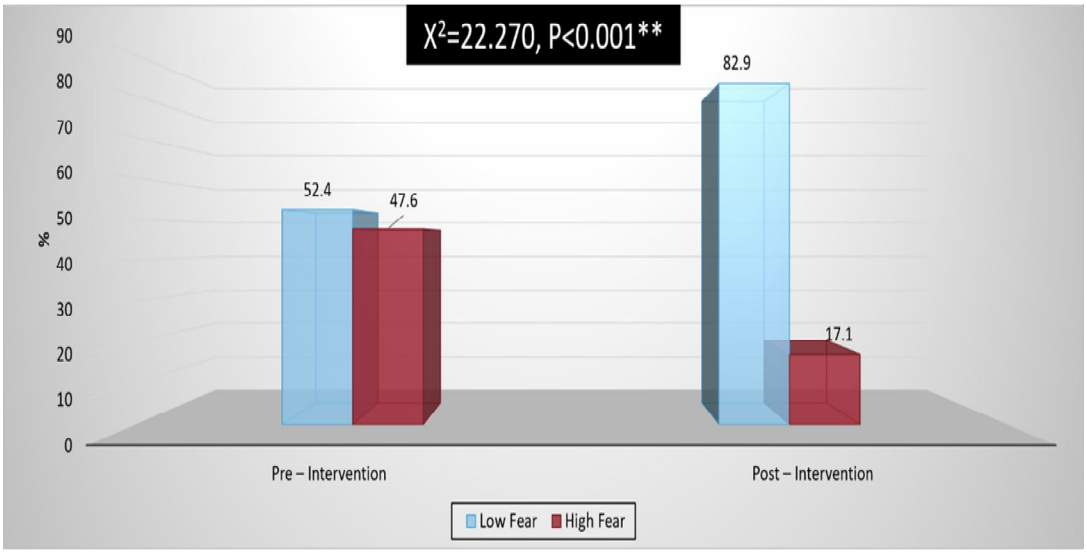

Figure (1) Distribution of the Studied Participants According to Their Gerscophobia Total Score

Table (2): Aging Knowledge Domains Total Score of the Studied Participants before and after Implementation of the Proposed Program:

Nursing students' aging knowledge domains:	Before the proposed program				After the proposed program				Chi – Square	
	Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory			
	N	%	N	%	N	%	N	%	X^2	P
Physiological changes knowledge domain (8Q)	57	54.3	48	45.7	23	21.9	82	78.1	23.342	<0.001**
Psychosocial change knowledge domain (7Q)	57	54.3	48	45.7	22	21.0	83	79.0	24.857	<0.001**
Older adult's health needs knowledge domain(3Q)	60	57.1	45	42.9	17	16.2	88	83.8	37.915	<0.001**
Older adults balance knowledge domain(4Q)	73	69.5	32	30.5	25	23.8	80	76.2	44.081	<0.001**
Older adult's health Problems knowledge domain (6Q)	64	61.0	41	39.0	24	22.9	81	77.1	31.296	<0.001**
Total Knowledge Level (28Q)	62	59.0	43	41.0	22	21.0	83	79.0	31.746	<0.001**

Table (3): Ageism Attitude Domains Total Score of the Studied Participants before and after Implementation of the Proposed Program:

Ageism Attitude Scale Domains:	Before the proposed program				After the proposed program				Chi – Square	
	Negative		Positive		Negative		Positive			
	N	%	N	%	N	%	N	%	X^2	P
Restricting life of elderly subscale (9Q)	64	61.0	41	39.0	25	23.8	80	76.2	29.660	<0.001**
Positive ageism subscale (8Q)	53	50.5	52	49.5	29	27.6	76	72.4	11.524	<0.001**
Negative ageism subscale (6Q)	61	58.1	44	41.9	31	29.5	74	70.5	17.409	<0.001**
Total Ageism Attitude Score (23Q)	59	56.2	46	43.8	28	26.7	77	73.3	18.859	<0.001**

Table (4): Relation between Aging Knowledge, Ageism Attitude and Gerascophobia Total Score of the Studied Participants and Their Demographic Characteristics before the implementation of the Proposed Program:

Demographic Characteristics	Aging Knowledge				Ageism Attitude				Gerascophobia			
	Unsatisfactory Knowledge (n=62)		Satisfactory Knowledge (n=43)		Negative Attitude (n=59)		Positive Attitude (n=46)		Low Fear (n=55)		High Fear (n=50)	
	N	%	N	%	N	%	N	%	n	%	n	%
Ageof rticipants (Years)												
< 18	14	22.6	11	25.6	16	27.1	9	19.6	15	27.3	10	20.0
18 – 20	48	77.4	32	74.4	43	72.9	37	80.4	40	72.7	40	80.0
Chi – Sqaure / Fisher's exact test	X2=0.126, P=0.723				X2=0.813, P=0.367				X2=0.764, P=0.382			
Gender												
Male	34	54.8	29	67.4	35	59.3	28	60.9	30	54.5	33	66.0
Female	28	45.2	14	32.6	24	40.7	18	39.1	25	45.5	17	34.0
Chi – Sqaure	X2=1.680, P=0.195				X2=0.026, P=0.871				X2=1.432, P=0.231			
Place of residence												
Urban	19	30.6	11	25.6	16	27.1	14	30.4	17	30.9	13	26.0
Rural	43	69.4	32	74.4	43	72.9	32	69.6	38	69.1	37	74.0
Chi – Sqaure / Fisher's exact test	X2=0.319, P=0.572				X2=0.139, P=0.709				X2=0.309, P=0.578			
Previous xperience with elderly												
Yes	53	85.5	40	93.0	54	91.5	39	84.8	49	89.1	44	88.0
No	9	14.5	3	7.0	5	8.5	7	15.2	6	10.9	6	12.0
Chi – Sqaure / Fisher's exact test	X2=1.426, P=0.232				X2=1.161, P=0.281				X2=0.031, P=0.861			
Previous training in the field of geriatric care												
Yes	15	24.2	14	32.6	17	28.8	12	26.1	15	27.3	14	28.0
No	47	75.8	29	67.4	42	71.2	34	73.9	40	72.7	36	72.0
Chi –qaure	X2=0.889, P=0.346				X2=0.096, P=0.757				X2=0.007, P=0.933			

Table (5): Relation between Aging Knowledge, Ageism Attitude and Gerascophobia Total Score of the Studied Participants and Their Demographic Characteristics after the Implementation of the Proposed Program: N=105

Demographic Characteristics	Aging Knowledge				Ageism Attitude				Gerascophobia			
	Unsatisfactory Knowledge (n=22)		Satisfactory Knowledge (n=83)		Negative Attitude (n=28)		Positive Attitude (n=77)		Low Fear (n=87)		High Fear (n=18)	
	N	%	N	%	N	%	N	%	n	%	n	%
Age of participants (Years)												
< 18	3	13.6	22	26.5	9	32.1	16	20.8	23	26.4	2	11.1
18 – 20	19	86.4	61	73.5	19	67.9	61	79.2	64	73.6	16	88.9
Chi – Sqaure / Fisher's exact test	X^2=1.588, P=0.208				X^2=1.462, P=0.227				X^2=1.931, P=0.165			
Gender												
Male	10	45.5	53	63.9	17	60.7	46	59.7	53	60.9	10	55.6
Female	12	54.5	30	36.1	11	39.3	31	40.3	34	39.1	8	44.4
Chi – Sqaure	X^2=2.453, P=0.117				X^2=0.008, P=0.928				X^2=0.179, P=0.672			
Place of residence												
Urban	7	31.8	23	27.7	10	35.7	20	26.0	23	26.4	7	38.9
Rural	15	68.2	60	72.3	18	64.3	57	74.0	64	73.6	11	61.1
Chi – Sqaure / Fisher's exact test	X^2=0.144, P=0.705				X^2=0.955, P=0.328				X^2=1.133, P=0.287			
Previous experience with elderly												
Yes	17	77.3	76	91.6	24	85.7	69	89.6	75	86.2	18	100.0
No	5	22.7	7	8.4	4	14.3	8	10.4	12	13.8	0	0.0
Chi – Sqaure / Fisher's exact test	X^2=3.510, P=0.061				X^2=0.308, P=0.579				X^2=2.803, P=0.094			
Previous training in the field of geriatric care												
Yes	5	22.7	24	28.9	10	35.7	19	24.7	26	29.9	3	16.7
No	17	77.3	59	71.1	18	64.3	58	75.3	61	70.1	15	83.3
Chi – Sqaure	X^2=0.333, P=0.564				X^2=1.252, P=0.263				X^2=1.304, P=0.254			

Table (6): Relation between Gerascophobia of the Studied participants and Their Aging Knowledge and Ageism Attitude Total Score: N=105

Items	Before the proposed program				After the proposed program			
	Low Fear (n=55)		High Fear (n=50)		Low Fear (n=87)		High Fear (n=18)	
	N	%	N	%	N	%	N	%
Level of Knowledge								
Unsatisfactory Knowledge	36	65.5	26	52.0	9	10.3	13	72.2
Satisfactory Knowledge	19	34.5	24	48.0	78	89.7	5	27.8
Chi – Sqaure / Fisher's exact test	X^2=1.961, P=0.161				X^2=34.478, P<0.001**			
Ageism Attitude								
Negative Attitude	32	58.2	27	54.0	14	16.1	14	77.8
Positive Attitude	23	41.8	23	46.0	73	83.9	4	22.2
Chi – Sqaure / Fisher's exact test	X^2=0.186, P=0.666				X^2=29.020, P<0.001**			

Table (7): Relation between Aging Knowledge Total Score of the Studied Participants and Their Ageism Attitude Total Score before and after the Implementation of the Proposed Program: N=105

Items	Before the proposed program				After the proposed program			
	Negative Attitude (n=59)		Positive Attitude (n=46)		Negative Attitude (n=28)		Positive Attitude (n=77)	
	N	%	N	%	N	%	N	%
Level of Knowledge								
Unsatisfactory Knowledge	33	55.9	29	63.0	19	67.9	3	3.9
Satisfactory Knowledge	26	44.1	17	37.0	9	32.1	74	96.1
Chi – Sqaure / Fisher's exact test	X^2=0.541, P=0.462				X^2=50.719, P<0.001**			

Table (8) Correlation between participants' Aging Knowledge, Ageism Attitude and Gerascophobia before and after Implementation of the Proposed Program:

Item	Before the proposed program						After the proposed program					
	Aging Knowledge		Ageism Attitude		Gerascophobia		AgingKnowledge		Ageism Attitude		Gerascophobia	
	r	p	R	P	R	p	r	p	R	p	r	p
Aging Knowledge			0.165	0.092	-0.019	0.846			0.311	<0.001**	-0.382	<0.001**
Ageism Attitude	0.165	0.092			-0.166	0.092	0.311	<0.001**			-0.244	0.012*
Gerascophobia	-0.019	0.846	-0.166	0.092			-0.382	<0.001**	-0.244	0.012*		

Discussion

Ageism is a pervasive and urgent social problem which has been proven by scientific research. Poor aging knowledge, negative ageist beliefs, limited intergenerational contact and fear of aging are serious concerns which affect nursing students' interest and desire in geriatric careers to meet the needs of the growing older adults' population (Lytle, et al, 2021). Today, many people have a negative attitude regarding aging and experience gerascophbia due to loss of functional independence and increases in chronic illness. In fact, fear of aging has been proven to be associated with increased levels of negative attitudes toward older adults. Moreover, the negative perception of aging process leads to worsen fear levels and concerning about the capacity to maintain health in dimensions as the psychological, social, physical, and transpersonal or spiritual realms. As a result, understanding how fear of aging can influence behavior and interactions is a critical matter (Pakpour, et al, 2021).

The present study was conducted on one hundred and five participants of nursing students more than half of the studied participants are males, while more than three quarters of them were aged between 18 to 20 years with a mean of 18.2 ±0.6 years. It can be related to the academic nature of the study in the technical institute of nursing, Mansoura University which accepts students after graduation from high schools and almost at 18 years old. Additionally, males' students look forward to the professions which offer job opportunities as nursing profession, which increase the demand on nursing as a profession during the current economic crisis that makes it difficult for youth to find jobs so people are highly motivated to get in the field of nursing. This result contradicted with a previous study done in Egypt by Mohammed & Omar (2019) who found that the majority of their studied nursing students were aged above 20 years. This result agrees with the findings of Mohammed & Omar (2019), who found that males were more than females. On the other hand, this result contradicts with a study done in Egypt by Ebrahim, Eldeeb & Sayed, (2020) who found that female were more than the males.

As for the place of residence, about three quarters of the studied participants were living in rural areas. This result may be related to that all of the studied participants are living in the Dakahlia governorate, which is primarily an agricultural governorate and the majority of the rural residents have a great turnout for nursing. This finding was consistent with a study conducted in Australia by Venables, Wells, Fetherstonhaugh & Wallace, (2023) who found that the majority of their studied participants were living in rural areas. This result disagrees with the result of Ebrahim, Eldeeb & Sayed, (2020) who found that nearly more than half of their studied participants were living in urban areas.

In the current study, the majority of the studied participants have a previous experience dealing with older adults. This result may be due to the growing numbers of older population in recent years which increase the chance of the youth to

deal with older adults. This result is consistent with a study carried out in Jordan by Rababa, Al-Dwaikat & Almomani (2021) who found that more than half of their studied participants have previously contacted with older adults.

With regards to training in the field of geriatric care, slightly less than three quarters of the studied participants haven't received any training before. The most likely explanation is that the course of gerontological nursing in the technical institute of nursing is taught in the second academic year and all of the studied participants in the present study were in the first year and haven't studied any scientific content regarding geriatric care. In addition to lack of enthusiasm of the studied participants in having training in the field of geriatric care due to lack of relevant background regarding older adults care. This result is similar with the result of a study done in Korea by Ha & Kim, (2021) who found that more than three quarters of their studied participants didn't receive any training in geriatric care before. While this result contradicts with a study conducted in Turkey by Toygar & Karadakovan, (2020) which found that more than half of the studied participants have received training in geriatric care.

Consequently, the society's awareness of spreading the culture of older adult's care is not widespread and therefore nursing students' information on aging were little and the scientific research in this field is scarce too (Gallo, 2019). The present study results revealed that more than half of the studied participants were having low level of aging knowledge before implementation of the program, compared to more than three quarters were having high level of aging knowledge after the program, with a highly statistically significant variation after implementation of the program. This finding may be attributed to the improvement in aging knowledge level of the studied participants is related to the effect of the implementation of the program. Similar finding was found in a study in USA by Lytle & Levy (2019) who found that their study group participants reported more aging knowledge than control group participants. Also, this result agrees with the study of Lytle, Macdonald, Apriceno & Levy, (2021) which conducted in USA, found that the level of aging knowledge is higher in their study group participants than the control group.

Concerning the ageist attitude of the studied participants, the current study found that more than half of the studied participants were having negative attitude prior implementation of the program compared to the majority of them were having positive attitude with a highly statistically significant difference after implementation of the program. This result may be related to raised awareness and correct information about aging provided through the interventional aging educational program which resulted in changing their attitude from negative to positive. Similar finding was reported by Lytle & Levy (2019) who found that their participants reported significantly positive attitudes towards older adults than control group participants. Also agrees with a study done in USA on undergraduate nursing students which found that the studied participants showed positive attitudinal changes towards aging and older adults after Positive Education about Aging (Lytle, Nowacek & Levy, 2020).

Addressing gerascophobia is important among nursing students who have been shown to report limited knowledge of aging, negative ageist attitudes, limited contact with older adults, and lacked interest in geriatric care specialty which will affect their intention to acquire and study recent information in gerontological nursing (Lytle, Macdonald, Apriceno & Levy, 2021).

Regarding gerascophobia level, the current study revealed that nearly less than half of the studied participants were having high level of fear of aging before implementation of the program which decreased to less than one quarter after implementation of the program with a highly statistically significant difference. This may be related to the extensive knowledge they have gained about aging through the program which will be hired in the planning of healthy and productive lifestyle. This result contradicted with studies done in USA by Lytle & Levy (2019) and Lytle, Macdonald, Apriceno, & Levy (2021) who found that their study group participants reported significantly more fear of aging than control group participants. From the researcher point of view, the variation in the results of the present study and other studies may be related to that knowledge alone without application isn't enough to overcome serious limitations of aging process and its negative impacts on social, financial, psychological, spiritual, and health dimensions.

Concerning the relation between the demographic characteristics of the studied participants and the study variables before and after implementation of the program, no statistically significant relation was found between demographic characteristics of the studied participants and aging knowledge, ageism attitude and gerascophobia before and after implementing the program. This finding indicated that the

demographic characteristics has no effect on the studied participants' aging knowledge, ageism attitude and fear of aging. This finding has potential justification in light of the studied participants were sharing the same academic year and they were sharing the same sociodemographic characteristics. This finding agrees with a study carried out in the USA by Lester & Murrell (2022) also found that the demographic characteristics weren't significantly correlated with their study variables. This result disagrees with the findings of a study carried out by Cooney, Minahan & Siedlecki (2021**)** in the USA which found that demographic factors as age and gender could have an effect on knowledge, attitudes and feeling. In addition to a study carried out in Jordan by Rababa, Hammouri, Hweidi & Ellis, (2020) stated that there was a significant variation between the demographic characteristics and knowledge about aging and ageism attitude of their studied subjects. This difference may be related to that their participants have different sociodemographic characteristics.

Gerascophobia could have negative effect on physical health, social relationships, self-esteem and quality of life of nursing students. So, it's important to identify possible interventions to overcome its effects (Yawar. et al, 2022). Regarding the relation between fear of aging of the studied participants with their aging knowledge score before and after conducting the program, the study results indicated a highly statistically significant relation was found between the level of aging knowledge and the level of fear from aging after implementation of the program. This result could be explained by the effect of knowledge introduced in the educational program which clarified the positive aspects of aging process objectively rather than considered as a stage of weakness, dependency and frailty. Similar finding was found in a study done in USA by Cohen, Dawson & Ryan (2022) who found that participants with specific and professional knowledge about aging proved that aging knowledge affected their fear level from aging.

More importantly of the relationship between ageism and gerascophobia before and after implementation of the program, a highly statistically significant difference was found between the level of ageism and the level of fear of aging. This finding may be justified by nursing student's ageist attitude improved by raising knowledge through the program regarding aging process and its consequences and in turn reduced gerascophobia. This result is in the same line with a study done in USA by Cooney, Minahan & Siedlecki (2021), who reported that lower level of gerascophobia is associated with positive ageism and that there is a strong negative relationship between the two variables.

A highly statistically significant difference was found between the level of aging knowledge of nursing students and ageism attitude after implementation of the program; this indicated that the higher level of aging knowledge is associated with positive attitude toward aging**.** A possible explanation lies in increased aging knowledge corrects the misconceptions about aging, promotes more positive attitudes and less negative ageist behaviors. This has been achieved through the program which highlighted age related changes, dietary habits, exercises, chronic illnesses and its nursing care, and finally the myths and facts about aging in scientific method which lead to reducing negative ageism of the studied participants. This result is consistent with the study of Rababa, Hammouri, Hweidi & Ellis (2020) which conducted in Jordon who concluded that nurses with higher level of aging knowledge had demonstrated lower ageism toward older adults. Also, this result is consistent with a study carried out in the USA by Cooney, Minahan & Siedlecki (2021) who found that participants with high levels of aging knowledge reported lower levels of ageism than those who don't have.

On the subject of the correlation between aging knowledge, ageism attitude and gerascophobia of the studied participants, it was found that there is a highly statistically significant positive correlation between aging knowledge and ageism attitudes. Additionally, a highly statistically significant negative correlations were found between gerascophobia and aging knowledge, ageism attitude after implementation of the proposed program. This could be justified by increasing aging knowledge through the educational program could affect the ageism attitudes of the young adults by correcting the negative concepts about aging process and older adults. Incidentally; this finding could be justified in the light of terror management theory which suggested that ageism could be the way by which individuals react as a result of having fear of aging and viewing older adults in a negative way. So, by utilizing sufficient information about aging through educational program has affected ageism and fear of aging and knowledge could be a buffer for ageism and fear of aging. The same finding was reported by a study done in Italy by Donizzetti (2019) who found that aging knowledge level is

positively correlated with ageism. Also, the result of the present study agrees with a study done in USA by Barnett & Adams (2018) who concluded that there was a significant correlation between aging knowledge, ageism attitude and gerascophobia.

These results proved that the proposed aging educational program can be considered as valuable and reliable source of aging knowledge, was successful and effective in raising nursing student aging knowledge and improve their attitude and gerascophobia level which was supported by recent and relevant studies as discussed in the previously-mentioning sections.

Conclusion

Based on the findings of the current study, it can be concluded that it the proposed training program regarding aging is a successful and effective teaching approach that should be applied as a standardized teaching resource and routinely used for nursing staff caring for older adult and it should be integrate into the undergraduate nursing curriculum to raise awareness regarding aging process and geriatric field. This is based on the noticeable significant improvement in the studied nursing students' aging knowledge level, ageism attitude and gerascophobia after implementation of the program than before it which emphasized the importance of ongoing education and training in empowering nursing student knowledge and skills and improving the quality of elderly care.

Recommendations:

- Designing aging educational programs on geriatric care for the students in other different specialties and academic levels to enhance their knowledge about aging to be capable of providing an efficient nursing care for elderly.
- Encouragement of nursing students to attend training workshops and scientific events in geriatric field in order to keep their knowledge updated and maintain more positive attitudes.
- Distribution of the developed educational booklet on caregivers and other members of the MDT to contribute to better quality of older adult's care.

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