

The Effect of Self-Care Interventions on Coping of Community Dwelling Elders with Age-Related Physiological Changes

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Abstract: Ageing is not merely number of years one has been survived but also, it is the physiological changes the body goes through during the life span. Managing age-related changes is rehabilitative process which greatly affected by seniors' coping capabilities. Therefore, it is necessary to help elders to live a healthy successful ageing through utilization of the self-care interventions. The aim of the study was to investigate the effect of self-care interventions on coping of community dwelling older adults with age-related physiological changes. Setting: The study was conducted at El-Wafaa club in Mahram Bec, which affiliated to the Ministry of Social Solidarity in Alexandria, Egypt. Subjects: 30 eligible participants were older adults, read and write, have neither cognitive impairment nor depression, free from any stressors during the last year as widowhood and relocation. Tools: Six tools were applied for data collection. This study revealed that 100.0% of the studied seniors used high level of emotional-based coping prior the interventions compared to 90.0% of them used high level of problem-based coping with physical age-related changes post the interventions. Overall knowledge of the majority of the participants as well as, overall practices of all study subjects have improved significantly after the implementation of the study intervention than before it. Conclusion: The self-care interventions were significantly improved the studied seniors' overall self-care knowledge, overall self-care practices, problem-based coping strategies and overall coping with age related changes. Recommendations: Constant planning and implementation of a training program for all health care professionals who provided the care for the older adults in order to improve the quality of medical and nursing care provided for the older adults in all various health settings.

Key words: Coping Strategies • Self-Care Management • Age-Related Changes • Older Adults

INTRODUCTION

Aging is a predictable individualized natural process, described by the progressive gradual deterioration in the structure of vital organs and tissues. The process of ageing is mainly identified by heredity and affected by a widespread variety of life style pattern variables; such as nutrition, activity pattern, life stressors, pollutions and irradiation. Because of ageing process is unsystematic, there is a broad discrepancy in the pace of aging among elderly people and the various organs within the same individual grow old at dissimilar rates [1]. At physiological level, ageing is linked with the gradual increase of a broad range damage of cells and molecules as time passes [2, 3]. Therefore, this degeneration could result in an ongoing

decline in physiological and cognitive capacity, loss of functional reserves of body systems, growing threat of numerous illnesses and eventually death. Maintaining physiological functioning of the elders is considered significant not only to the well-being of the seniors, but also to minimize the burden on therapeutic services and systems from the societal perspective [4]. As humans live longer, they all exhibit several universal changes at various levels. Throughout life span, the experience and manner of aging individuals to deal with the surroundings, financial resources, environment and social network can tremendously influence their longevity and health [5]. Although variations in older people's longevity are inherited, the personal and behavioral factors combined with physical and social

environments have long-term impact on how they age. Abstaining from unhealthy behaviors all over life time is mainly leading to maintain physiological and cognitive capacity and reserves, as well as declining the threat of morbidity and mortality [2, 6].

Older adults are more likely to go through challenges when facing abundant physical and mental changes in which they begin to lose their body functional reserves and consequently, their tendency for stress set in [7]. Stress occurs when the affected individuals have fewer resources to overcome the challenging situation and there is less likelihood of utilization of efficient adaptive skills [8]. The continued disclosure of the elders to everyday unprecedented unavoidable changes derived from the aging process might impair neuroendocrine and behavioral responses as an adaptation to stressor events. Ultimately, older adults may encounter the risk to biopsychosocial imbalance. Furthermore, older adults could recognize their ego is threatened by the others' negative judgment, since a negative perception about the aging process may be socially publicized. Therefore, aging well should be implicated the utilization of adaptive self-care interventions in order to endorse older adults functioning and well-being within the limitations of personal capacity and resources [9, 10].

Self-care management is crucial and fundamental for the older adults that comprises the capability of the individuals in order to enhance health, avoid illness and cope with stressors, which created by any alterations particularly, changes related to ageing. Self-care is not only involving traditional knowledge-based education, but also includes processes that improve self-efficacy; build up problem-solving skills and support of knowledge implementation in real-life situations [7, 11]. Coping is a strategy that is used by the old people to manage stressors caused by ageing changes and classified into preventive and corrective approaches. Preventive approach is conducted by the individuals through strictly engaging in health promotional activities, from young age to avoid or lessen the impact of future body declines and associated problems at old age. While, the other feature of coping is the corrective approach that is used to manage stressors which is previously occurred. While, corrective approach has two strategies of coping which are problem focused and emotional focused coping [7, 12, 13].

Problem focused coping strategies focus on allowing old people to manage the problem by accepting responsibility, self-control, confronting and planning for problem solving, which is achieved through therapeutic

medication, take physiotherapy and psychosocial therapy. However, emotion-focused coping strategies focus on modifying negative emotions to stressors, as opposed to taking measures to manage the stressors [7, 12, 14]. Several studies reported that the use of problem-focused strategies is more effective than emotion-focused strategies in adjusting better to life [12, 14, 15]. Emotion-focused coping is also subdivided into active and adaptive coping. Active coping is the capability of the seniors to regain back their health status and reduce any further deterioration to their body which is achieved through education, exercise, social and religious interaction. When health condition become not reversible, incurable, as well as age related changes associated problems failed to be managed by active approach, adaptive coping can be used. Adaptive coping is considered as a coping manner by which older adults could modify their beliefs, feelings and pattern of life through acceptance, avoidance, perception modification, sharing more love and hope with others and exhibit less fear regarding death [14, 16, 17]. Multiple researches documented that older adults reported more accommodative strategies than younger ones [16, 17, 18]. Unfortunately, some of elders lose their motivation to perform adaptive activities or strategies because of poor health status [7].

Coping is also a rehabilitative process by which stressors could be managed by health care personnel. Gerontological nurses are one of the health care professionals who are knowledgeable regarding the aging process; what, how and why changes occur; as well as which self-care interventions are suitable to manage these ageing changes in order to cope with every particular era in their lives [7, 19]. They also have the ability and opportunity to carry out counseling regarding the realities of the ageing process for older adults, which assist them in maintaining their quality of life. As well, they have the opportunity to enhance their elders' self-care abilities by teaching the seniors how to detect and manage physiological associated ageing changes and problems, boosting them with hope, educating them how they can handle the situation and improve their state of wellbeing [7, 20]. Moreover, gerontological nurses play crucial role in assisting the older adults to attain and practice coping skills in various ways in a regular pattern, as well as utilize adaptive strategies to help the elders to live a healthy successful ageing [7, 21].

Because of older adults are challenged by the effect of ageing process, thus coping strategies become a necessary approach that help them to live independent

life. In emerging a public-health rejoinder to ageing, it is vital not just to deem approaches that mitigate the losses associated with longevity, but also process that may reinforce adaptation [7, 22]. Because of the concept of self-management is out the light of health care interest, elders could suffer from more confusing daily struggles due to the lack of essential knowledge and skills to effectively dealt with these changes and its impact on older adults' life quality and self-reliant living. Despite, there are consistent individual differences in how ageing is experienced, there is a much need for researches to investigate the ageing process and its coping strategies [7, 23]. In Egypt, no studies have been carried out regarding successful ageing program. Therefore, there is a growing need to identify the effectiveness of self-care management program on coping of older adults with physiological ageing changes living in the community.

Aim of the Study: The study aimed to investigate the effect of self-care interventions on coping of community dwelling older adults with age-related physiological changes.

Research Hypotheses:

- Older adults who receive the proposed self-care interventions exhibit higher knowledge post the interventions than before it.
- Older adults who receive the proposed self-care interventions exhibit higher practices post the interventions than before it.
- Older adults who receive the proposed self-care interventions exhibit higher coping level with age-related physiological changes post the intervention than before it.

MATERIALS AND METHODS

Materials

Research Design: The study followed a quasi-experimental design (One Group Pre-test Post-test Study).

Settings: The study was carried out in El-Wafaa club in Mahram Beck. Of the five clubs affiliated to the Ministry of Social Solidarity in Alexandria, Egypt. The previously mentioned study setting was selected because of high registered number and attendance rate of older adults. The total-number of elders who registered at El- Wafaa club is 600 older adults, with an attendance rate of 10 to 12 elders daily. The working hours of the club are from 9 am to 3 pm every day except-Friday.

Subjects: The study subjects comprised 30 community-dwelling seniors who attended the above mentioned setting and fulfilling the following criteria; age 60 years and above, read and write, able to communicate, free from any stressors during the last year such as widowhood, retirement, chronic illnesses and relocation, have neither cognitive impairment or depression and willing to participate in the study. The program Epi info 7 was used to estimate the sample size using the following parameters:

- Population size: 80
- Expected frequency: 50%
- Acceptable error: 10%
- Confidence coefficient: 95%
- Minimum size sample = 30

Tools: Six tools were used to collect the necessary data from the study subjects:

Tool (1): Mini Mental State Examination (MMSE) Scale:

The MMSE was developed by Folstein *et al.* [24]. It is a reliable measure and originally designed for assessing cognitive function of the older adults. It consists of questions that investigate the memory, orientation to time, place, attention, calculation, naming, repetition, registration and language. The scale includes 30 questions in which the older adult's response is either yes or no. The MMSE was translated into Arabic and approved to be valid and reliable by "Elhusseini 2008" [25]. The Arabic version of this scale was used in this study. Before the application of self-care program, the researchers used the MMSE scale in order to exclude older adults who have severe cognitive impairment. Scoring is based on the number of correct items, with a maximum of thirty points. Possible scores were categorized as 24-30 indicates intact cognitive function, scores from 18 to 23 indicates mild cognitive impairment, while 0-17 indicates severe cognitive impairment.

Tool II: Geriatric Depression Scale Short-Form (GDS-SF):

The geriatric depression scale – short Form (GDS-SF) is a 15-item self-report instrument developed by Yesavage and Sheikh [26]. This scale is originally generated to assess the presence of depression and general well-being of the elderly. The GDS-SF was translated into Arabic and proved to be valid and reliable ($r=0.70$) by "El husseini 2013" [27]. The Arabic version of this scale was used in the present study. In this scale, the older adult has chosen the best answer either yes and takes a score of one (1) or no and takes score as (0) for

how he/she have felt over the past week. Scores range from 0 to 15. Items are summed for a total score. For ten questions, a positive answer indicates the presence of depression and negative answer for the remaining five questions (question number 1, 5, 7, 11 and 13) also indicates depression. Scores of the scale were categorized either as 0 to 4 indicates no depression, or 5 to 8 indicates mild depression, or 9 to 11 indicates moderate depression, or 12-15 indicates severe depression.

Tool III: Older adults' Socio – Demographic Data Structured Interview Schedule: This tool was developed by the researchers and completed by all participants prior to application of self-care program to collect the following information such as age, sex, marital status, educational level, income, pre-retirement occupation, current work status, place of residence, available social support, stressful events occurrence within the past 12 months as widowhood, as well as presence of medical problems.

Tool IV: Age-Related Physiological Changes Knowledge Questionnaire (ARPCQ): This tool was developed by the researchers based on review of relevant literature [10, 18, 19]. It was designed to measure older adults' knowledge regarding normal physical age related changes that had been experienced during ageing process. It consists of set of specific multi-dimensional ageing changes questionnaires within twelve discrete domains. The first domain described the various basic characteristics of normal ageing process (3 items), the second domain declared enormous alterations in elders' breathing process (3 items), the third domain pointed out the variations that occurred in older adults' cardiovascular system (5 items), the fourth domain addressed the different elders' muskeloskeletal system difficulties and complaints (3 items), the fifth domain identified the deviations which befallen in older adults' urination process (3 items), the sixth domain indicated the amendments that occurred in the special senses such as vision, hearing, taste, smell and touch (6 items), the seventh domain represented the changes that ensued in male and female elders' genital organs (4 items), the eighth domain negotiated the difference that arisen in elders' skin, hair and nails (3 items), the ninth domain represented the distinctions that occurred in older adults' gastrointestinal system (3 items), the tenth domain revealed the modifications in elders' immunity (3 items), the eleventh domain exhibited the transformation that happened in elders' nervous system (3 items) and the twelve domain showed the conversion that occurred in

elders' endocrine system (2 items). Answers of the respondents to the questions of this instrument were categorized by the researchers as correct, incorrect and do not know. Each correct item took score of one (1), while incorrect/ do not know response took a score of zero (0). The maximum score possible in this questionnaire is 41, which indicates that all items are answered correctly. The reliability of this instrument has been tested and validated in older populations with Cronbach's coefficient alpha 0.91.

Tool V: Physical Age Related Changes Self-Care Practices (PARCP): This tool was developed by the researchers to assess the degree to which older adult adhere to self-care practices regarding the physiological changes associated with ageing. It is a self-report measurement, which involved items focus on practices that performed in order to cope with numerous age related physical changes that experienced by older adults in each body system. The response to each item was scored on a 5 point Likert scale from 1 'never' to 5 'always'. The total score is calculated by summing the rating for each item. Lower scores indicate poor self-care behavior. The Self-Care Inventory is proved to be valid and reliable in older adults as measured by Cronbach's coefficient alpha 0.94.

Tool VI: Jalowiec Coping Scale (JCS): This tool was developed by Jalowiec in 1984 [28]. It is used to identify individualized characteristics of strategies to cope with stressors. It consists of 15 problem-oriented and 25 affective-oriented items based on the Lazarus and Folkman's theory of stress, appraisal and coping. Each statement measured on a 5-point rating scale (1 = never to 5 = almost). The JCS was translated into Arabic and approved to be valid and reliable by "Abdelmegid [29] Subjects were requested to rate the usage degree of each coping strategy. The total scores were obtained by summing the subjects' responses to all 40 questionnaires, whereas problem-oriented and affective-oriented coping sub-scores were calculated by summing answers to items within the problem-oriented and affective-oriented coping categories. The total coping score can range from 40 to 200, while the affective-oriented coping strategies score can range from 25 to 125 and the problem-oriented coping strategies score from 15 to 75. Higher scores indicate which coping strategies used most often by the studied subjects [12]. The reliability coefficient of the Arabic version of the JCS was 0.79 for the total scores; 0.85 for both problem-oriented and affective-oriented coping sub-scale.

MATERIALS AND METHODS

- An official letter was issued from the Faculty of Nursing, Alexandria University and forwarded to the directors of the two elderly clubs to obtain their permission to carry out the study. Then, permission from the study setting responsible authorities was obtained after explaining the purpose of the study in order to gain their support and cooperation during the application of the study interventions.

Phase one: “Preparation Phase”:

- Tools III, IV and V were developed by the researchers after a thorough review of relevant literature. Tool III was designed to assess older adults’ socio–demographic and clinical data and tool IV was formulated to measure older adults’ knowledge regarding normal physical age related changes that had been experienced during ageing process, as well as tool V was designed to assess the degree to which older adult adhere to self-care practices regarding the physiological changes associated with ageing. Then, the Arabic version of tools I, II and VI were used in the study.

Development of Self-Care Interventions:

- An Illustrated educational booklet guide of self-care interventions namely "self-care interventions guide for coping with age related physical changes" was created by the researchers after a thorough review of recent relevant literature. The self-care interventions in this study covered areas related a variety of life style domains. It comprised of basic information and skills required for older adults in order to self-care and use effective coping strategies for dealing with various physiological age related changes. This booklet covered specific three parts; the first part consisted of complete description of basic various characteristics of normal ageing process and the factors that associated with the occurrence of age related physiological changes, while the second part composed of age related changes in different body systems namely: the respiratory, cardiovascular, gastrointestinal, urinary, reproductive, integumentary, sensory, nervous, immune and endocrine systems, whereas the third part involved the self-care interventions and the skills needed to cope with the physiological changes

in every older adults' body system such as nutritional requirements, physical exercise, functional activities, life style changes, skin care, mouth care, foot care, stress management and home /environmental modification.

- A jury composed of 5 experts in the related fields as gerontological nursing, community health nursing, medical surgical nursing and nursing education were consulted to examine the content validity of the study tools IV and V. The required modifications were carried out accordingly and therefore all tools verified to be valid.

- Reliability of tools IV and V were tested using Cronbach’s coefficient Alpha. These tools were applied on (10) older adults not included in the study that selected from Al Wafaa club in Alexandria. Those older adult were not included in the study. The results of the Cronbach’s coefficient Alpha were 0. 91 for tool IV and 0. 94 for tool V.
- A pilot study was carried out before implementing the actual study in order to ascertain the clarity and applicability of all the study tools, to estimate the time required for interviewing the elders and to identify obstacles that may be faced during data collection. The pilot study was conducted on 5 elders (from Dar Mohamed Ragab) after securing their informed consent, privacy and confidentiality. Results of this pilot study revealed that all tools were clear, applicable and consuming about 30 – 45 minutes for their application.

Phase II “Implementation phase”:

- The researchers used to go to the study setting following a certain schedule. Every subject was interviewed individually by the researchers. The researchers started the interview by introducing themselves, explaining the purpose of the study and ensuring that the elderly was physically and psychologically comfort and accepted to participate in this study.
- The researchers used tools I and II to select the study subjects who fulfill the inclusion criteria. Then, the researchers collected the study subjects' socio-demographic data using tool III. After that, the researchers used to visit each study subject's club in order to perform the planned sessions. The proposed self-care interventions were conducted on 6 groups that composed of 5 older adults. The self-care interventions were provided in 6 sessions, over 3

weeks period (2 sessions per week), with 2 days apart. Each subject was given an appointment to come 2 days later, thus the subjects who attended on Saturdays will come back on Tuesdays and participant who come on Sundays will come back on Wednesdays and so forth.

- Each session started at 9 am till 11. 30 am. It was divided into 2 parts from 9 am to 10 am, which included the theory and the knowledge. The researchers allowed the subjects to take a break for half an hour then the second part of the session was administrated which involved the practical part of self-care interventions. To keep contact with the study subjects, the researcher registered the phone numbers and the address of each study subjects. As well, the researchers gave each participant their phone number and a written note with the time and date of the next session.
- The researchers ensured that the place where the sessions were conducted is calm, with adequate lighting, well arranged and comfortable for the studied older adults. Then the researcher begins to implement the self-care program. The objective of the first and second sessions were the explanation of the meaning, goals and characteristics of normal ageing process and the factors associated with occurrence of normal physiological age-related changes or alterations, as well as. the difference between normal age-related physiological change and abnormalities such as chronic illnesses. Third and fourth sessions emphasized on brief description of the components of every body system and its functions, as well as age related physiological changes which occurred in these body systems namely; the respiratory, cardiovascular, gastrointestinal, urinary, reproductive, integumentary, sensory, nervous, immune and endocrine systems. The objective of the fifth and sixth sessions were the elaboration of the self-care interventions including; physical, psychological and social strategies and its related skills needed to cope with the physiological changes in every older adults' body system such as life style pattern changes as; nutritional requirements, physical pattern and exercise, sleep pattern, skin care, mouth care, foot care, stress management and home /environmental modification.
- Assessment of the overall self-care knowledge, self-care practices and coping strategies of the study subjects were done using tools IV, V and VI respectively. It was done before and after the administration of self-care interventions. Data time

collection ranged between 30 to 45 minutes, with provision of rest periods.

- Before starting a new session, the older adults were asked questions related to the topic that discussed in the previous session to identify their understanding. Missed or unclear points were re-emphasized by the researchers. Then a summary of the previous session was started to help older adults to refresh their information.
- During sessions, an illustrated booklet used in order to clarify the desired knowledge and skills for each study participant. Other diversity of teaching and learning strategies were used such as small group discussion and interaction, role play, videos, power point presentations, real life demonstration, re-demonstration of self-care procedures in order to motivate and reinforce each subject to do the required skills and to be complaint with proposed self-care interventions to cope with age related physical changes.
- By the end of each session, the researchers used to summarize the main points in the session and allowed the time for studied subjects to ask questions and get answers. As well, a handout and action plan calendar was given by the researchers to each study subjects after each session to enrich their memory and improve learning of the activities which took place in the session.
- The researchers used to reward the studied older adults by giving them simple prizes like medals and pens when seeing that each study subject able to be complaint with his/her proposed self-care interventions.

Phase III “Evaluation or Follow up Phase”: Post the implementation of self-care interventions, re-assessment of the knowledge, self-care practices and coping strategies of the study subjects was done by the researchers. The data collection started from the beginning of October 2018 till the end of December of the same year. The evaluation of the effectiveness of the proposed self-care interventions was determined through using the proper statistical analysis.

Ethical Considerations: An informed written consent was obtained from each study subject included in this study after explanation of the study purpose. Study subjects' privacy and anonymity were maintained along with confidentiality of the collected data. The researchers informed the study subjects that they have the right to withdraw from the study at any time.

Statistical Analysis of the Data: Data were fed to the computer and analyzed using IBM SPSS software package version 20. 0. (Armonk, NY: IBM Corp). Qualitative data were described using number and percent. Quantitative data were described using mean, standard deviation. Significance of the obtained results was judged at the 5% level. The used tests were; Student t-test for normally distributed quantitative variables and to compare between two studied groups, F-test (ANOVA) for normally distributed quantitative variables and to compare between more than two groups, Paired t-test for normally distributed quantitative variables and to compare between two periods. Pearson coefficient to correlate between two normally distributed quantitative variables.

RESULTS

Table (1) shows that the majority (86. 7%) of studied seniors was aged 60 to 70 years old with mean age (65. 0 ± 4. 12 years) which ranged between 60 and 76 years and similar percentages (60. 0%) of the studied older adults were females, married and live with family. Also, 56. 7% of the participants had university/postgraduate education, whereas nearly similar percentages (23. 3%, 20. 0%) of them had secondary and basic education respectively. Furthermore, 93. 3% of the study elders lived in urban residence. As well, 70% of the elderly participants were employees before retirement while, 30. 0% of them were housewives. Moreover, sufficient income was prevailing among 86. 7% of the studied participants.

Table (2) displays that 86. 7% of the study participants reported that they have a low level of overall self-care knowledge and 13. 3% of them reported that they have a moderate level of overall self-care knowledge before the application of the study interventions. While, the majority (93. 3%) of the study older adults reported that they have a high level of overall self-care knowledge and the same percentage (3. 3%) of them reported that they have either a moderate level or low level of overall self-care knowledge after the study interventions. The difference between pre and post the interventions is statistically significant ($P < 0. 001$). Prior to the interventions the total mean scores and the percent scores of overall self-care knowledge of the study seniors are 13. 20 ± 7. 84 and 32. 20 ± 19. 11 respectively. Whereas after the interventions, the total mean scores and the percent scores of overall self-care knowledge are 37. 20 ± 6. 05 and 90. 73 ± 14. 75 respectively. A statistically significant difference is found between the total mean scores, as well as, the percent

scores of the overall self-care knowledge of the study seniors before and after the interventions ($P < 0. 001$).

Table (3) illustrates that prior the implementation of the self-care interventions, 93. 3% of the study subjects reported that they have poor level of overall self-care practices to manage age-related changes and 6. 7% of them reported that they have a satisfactory level. While post the implementation of the self-care interventions, all (100%) of the study seniors reported that they have good level of overall self-care practices. The difference between the pre and post the interventions is statistically significant ($P < 0. 001$). Before the study interventions, the total mean scores and the percent scores of overall self-care practices of the study seniors are 153. 73 ± 43. 96 and 29. 90 ± 15. 70 respectively. While, the total mean scores and the percent scores of overall self-care practices after the implementation of the self-care interventions are 335. 37 ± 15. 63, 94. 77 ± 5. 58 respectively. A statistically significant difference is found between the total mean scores, as well as, the percent scores of the overall self-care practices of the study elders before and after the interventions ($P < 0. 001$).

Table (4) depicts that all participants reported that they use high level of emotional-based coping with physical age-related changes prior the interventions compared to 46. 7% of them post the intervention with statistically significant difference ($p_1 < 0. 001$). While 86. 7% of the studied seniors reported that they use low level of problem-based coping with physical age-related changes before the applications of the self-care interventions compared to 10. 0% of them after the interventions with statistically significant difference ($p_1 < 0. 001$). Furthermore, 13. 3% of the studied elders reported that they use high level of problem-based coping with physical age-related changes compared to 100. 0% of them reported that they use high level of emotional-based coping prior the interventions with statistically significant relation ($p_2 = 0. 002$). While 90. 0% of the studied participants reported that they use high level of problem-based coping with physical age-related changes compared to 46. 7% of them who reported that they use high level of emotional-based coping post the self-care interventions with statistically significant relation ($p_2 < 0. 001$). As regards overall coping, this table revealed that 96. 7% of the studied elders reported that they use high level of problem-based coping with physical age-related changes post the interventions compared to 76. 7% of them reported that they use high level of emotional-based coping prior the interventions with no statistically significant relation.

Table 1: Socio-demographic data of the studied subjects

Subjects' sociodemographic data	No. (n=30)	%
Age (years)		
60-70	26	86.7
>70	4	13.3
Min. - Max.	60.0 - 76.0	
Mean ± SD.	65.0 ± 4.12	
Sex		
Male	12	40.0
Female	18	60.0
Marital status		
Married	18	60.0
Single/Widow	12	40.0
Educational level		
Basic education	6	20.0
Secondary education	7	23.3
University/postgraduate education	17	56.7
Family support		
Alone	12	40.0
Live with family	18	60.0
Place of residence		
Rural	2	6.7
Urban	28	93.3
Work before retirement		
Employees	21	70.0
House wives	9	30.0
Monthly income		
Enough	26	86.7
Not enough	4	13.3

Table 2: Effect of self-care interventions on overall self-care knowledge level of the study subjects

Elders' Level of overall self-care knowledge	Phases of the study interventions			
	Pre-Interventions		Post-Interventions	
	No.(n=30)	%	No.(n=30)	%
Low	26	86.7	1	3.3
Moderate	4	13.3	1	3.3
High	0	0.0	28	93.3
Total score	13.20 ± 7.84		37.20 ± 6.05	
% score	32.20 ± 19.11		90.73 ± 14.75	

P <0.001*

p: p value for Paired t-test for comparing between the studied periods

*: Statistically significant at p ≤ 0.05

Low: Score % < 50% Moderate: Score % 50%-<75% High: Score % ≥ 75

Table 3: Effect of self-care interventions on overall self-care practices level of the study subjects

Elders' Level of overall self-care practices	Phases of the study interventions			
	Pre-Interventions		Post-Interventions	
	No. (n=30)	%	No. (n=30)	%
poor	28	93.3	0	0.0
Satisfactory	2	6.7	0	0.0
Good	0	0.0	30	100.0
Total score	153.73 ± 43.96		335.37 ± 15.63	
% score	29.90 ± 15.70		94.77 ± 5.58	

p <0.001*

p: p value for Paired t-test for comparing between the studied periods

*: Statistically significant at p ≤ 0.05

Poor level: Score % < 50% satisfactory level: Score % 50% -<75% good level: Score % ≥ 75

Table 4: Effect of self-care interventions on level of coping of the study subjects with physiological age related changes

Elders' Coping Level	Phases of the study interventions			
	Pre-Interventions		Post- Interventions	
	No. (n=30)	%	No. (n=30)	%
Emotional-based coping				
Low level of coping	0	00.0	16	53.3
High level of coping	30	100.0	14	46.7
Total score	70.20 ± 19.08		49.13 ± 3.75	
% score	45.20 ± 19.08		24.13 ± 3.75	
p ₁ <0.001*				
Problem-based coping				
Low level of coping	26	86.7	3	10.0
High level of coping	4	13.3	27	90.0
Total score	32.67 ± 8.65		53.93 ± 10.79	
% score	29.44 ± 14.41		64.89 ± 17.99	
p ₁ <0.001*				
P ₂		0.002*	<0.001*	
Overall coping				
Low level of coping	7	23.3	1	3.3
High level of coping	23	76.7	29	96.7
Total score	102.87 ± 20.12		103.07 ± 11.60	
% score	39.29 ± 12.57		39.42 ± 7.25	
p ₁ 0.966				

P₁: p value for Paired t-test for comparing between the studied periods

P₂: p value for Paired t-test for comparing between emotional and problem-based coping

*: Statistically significant at p ≤ 0.05

< 50% low level of coping >50% high level of coping

Table (5) noted that the study subjects who aged 60 to 70 years exhibited better problem-based coping and overall coping than the participants who aged more than 70 years old after application of the self-care program and the difference is a statistically significant (t=12.124, p<0.001), t= 9.040, p<0.001 respectively. While the studied older adults who aged more than 70 years exhibited better emotional-based coping than subjects who aged 60 to 70 years before application of the self-care program and the difference is a statistically significant (t=3.920, p<0.003). Also, the studied male participants revealed better problem-based coping than the studied female post self-care interventions and the difference is a statistically significant (t= 3.763, p<0.003). As well, the study widow elders exhibited better problem-based coping and overall coping than the studied participants who were married elders after application of the self-care program and the difference is a statistically significant (t=3.756, p<0.001), (t= 3.264, p<0.003) respectively. Additionally, the studied seniors who have university/postgraduate education showed better problem-based coping and overall coping than the studied participants who have either basic education or secondary education after the application of the self-care interventions and the

difference is a statistically significant (t=2.944, p<0.006), (t= 3.380, p<0.002) respectively. Moreover, the study seniors who live alone exhibited better problem-based coping than the studied elders who live with their families post self-care interventions and the difference is a statistically significant (t= 3.887, p<0.001). Furthermore, the studied elders who were professionals and employees pre-retirement showed better problem-based coping than the studied participants who were housewives after the application of the self-care program and the difference is a statistically significant (t= 3.897, p<0.001). Moreover, the studied older adults who have enough income showed better problem-based coping than the studied participants who have insufficient income after the application of the self-care interventions and the difference is a statistically significant (t=3.089, p<0.014).

The Table (6) illustrates that prior the implementation of self-care interventions, a reversed significant relation is found between overall self-care practices and emotional-based coping with physical age-related changes (r=0.553, p= <0.001) and there is a strong reversed significant relation between subjects' emotional and problem-based coping with physical age-related changes (r=-0.794, p= <0.001), as well as there is an

Table 5: Correlation between the study subjects' socio demographic data, emotional-based coping, problem-based coping and overall coping pre and post the study intervention

Subjects' socio- demographic data	Emotional-based coping		Problem-based coping		Overall coping	
	Pre-intervention	Post- intervention	Pre-intervention	Post- intervention	Pre-intervention	Post- intervention
Age (years)						
60 - 70	42.42±18.85	23.88 ± 3.96	28.72 ± 13.38	69.49 ± 14.50	37.72 ± 19.34	40.99 ± 6.46
>70	63.25±7.63	25.75 ± 0.96	34.17 ± 21.96	35.0 ± 0.0	32.17 ± 13.91	29.22 ± 0.60
t (p)	3.920(0.003*)	0.924 (0.363)	0.698 (0.491)	12.124(<0.001*)	0.598 (0.480)	9.040(<0.001*)
Sex						
Male	39.25 ± 18.01	23.42 ± 4.94	28.89 ± 14.73	40.69 ± 16.82	39.79 ± 13.74	40.47 ± 7.26
Female	49.17 ± 19.23	24.61 ± 2.75	20.22 ± 19.82	21.94 ± 4.72	38.96 ± 12.13	38.72 ± 7.36
t (p)	1.419 (0.167)	0.762(0.457)	0.534 (0.429)	3.763 (0.003*)	0.175(0.862)	0.642(0.526)
Marital status						
Married	68.98±10.91	23.39 ± 4.53	30.09 ± 14.49	36.33 ± 17.09	40.49 ± 6.57	33.99 ± 10.36
Single/Widow	58.75±22.03	25.25 ± 1.76	28.47 ± 14.88	58.50 ± 13.67	37.81 ± 8.19	47.24 ± 11.66
t (p)	1.430 (0.171)	1.574(0.129)	0.297(0.769)	3.756 (0.001*)	0.989(0.331)	3.264 (0.003*)
Educational level						
Basic education	65.0 ± 20.36	23.67 ± 3.27	23.33 ± 5.48	31.67± 15.68	39.13± 6.76	31.68 ± 8.83
Secondary level	65.48±15.51	23.46 ± 3.48	26.54 ± 10.62	34.77 ± 15.48	34.77 ± 15.48	31.68 ± 8.83
University/ Post-graduate education	64.61±19.14	24.65 ± 3.97	31.67 ± 16.73	53.18 ± 18.01	39.63 ± 7.79	45.11 ± 12.04
t (p)	0.096 (0.924)	0.854 (0.40)	0.965 (0.343)	2.944 (0.006*)	0.183 (0.856)	3.380 (0.002*)
Family support						
Alone	65.83±17.68	22.50 ± 7.78	45.36±19.22	60.83 ± 15.32	49.69 ± 9.28	39.75 ± 11.49
Live with family	64.82±18.33	24.25 ± 3.56	43.0± 24.04	27.20 ± 11.67	38.55 ± 12.57	38.46 ± 7.18
t (p)	0.076(0.940)	0.631(0.533)	0.166(0.869)	3.887(0.001*)	1.221(0.232)	0.132(0.896)
Place of residence						
Rural	22.50 ± 7.78	21.00 ± 4.24	29.17 ± 5.89	75.83 ± 12.96	25.00 ± 2.65	41.56 ± 7.51
Urban	46.82 ± 18.65	24.36 ± 3.69	29.46 ± 14.89	64.11 ± 18.22	40.31 ± 12.38	39.26 ± 7.35
t (p)	3.723(0.066)	1.235(0.227)	0.028 (0.978)	0.887(0.382)	1.719(0.097)	0.427(0.673)
Pre- retirement job						
Employees	48.71 ± 19.04	24.48 ± 3.97	31.27 ± 16.28	61.83 ± 15.32	42.17 ± 12.21	40.18 ± 7.29
House wives	37.0 ± 17.49	23.33 ± 3.24	25.19 ± 7.84	28.20 ± 11.67	32.57 ± 11.30	37.64 ± 7.26
t (p)	1.580 (0.125)	0.760(0.454)	1.062(0.297)	3.897 (<0.001*)	2.016(0.054)	0.876(0.389)
Monthly income						
Enough	66.03 ± 16.86	23.92 ± 3.98	30.45 ± 15.10	60.75 ± 8.85	38.17 ± 12.91	39.71 ± 7.05
Not enough	57.50 ± 25.98	25.50 ± 1.0	22.92 ± 6.44	42.81 ± 19.19	46.56 ± 7.54	37.50 ± 9.40
t (p)	0.879(0.387)	0.778(0.443)	0.972(0.339)	3.089 (0.014*)	1.255(0.220)	0.561(0.579)

t: Student t-test

p: p value for comparing between the different categories

*: Statistically significant at $p \leq 0.05$

Table 6: Correlation between overall self-care knowledge, overall self-care practices, Emotion-based coping, problem-based coping and overall coping level among community Dwelling elders pre and post the self-care interventions

Periods of interventions	Domain	Overall Self-care Knowledge		Overall self-care Practices		Emotional-based coping		Problem-based coping	
		r	p	r	p	r	p	r	p
Pre-self-care interventions	Overall self-care Knowledge								
	Overall self-care Practice	0.026	0.407						
	Emotion- based coping	0.172	0.363	-0.553	<0.001*				
	Problem-based coping	-0.073	0.701	-0.017	0.931	-0.794	<0.001*		
	Overall coping	-0.012	0.948	0.173	0.361	0.369	0.045*		
Post-self-care interventions	Knowledge								
	Practice	0.764	<0.001*						
	Emotional- based coping	-0.607	<0.001*	0.293	0.116				
	Problem-based coping	0.379	0.035*	0.662	0.001*	-0.904	<0.001*		
	Overall coping	0.427	0.019*	0.485	0.001*	0.104	0.585		

r: Pearson coefficient *: Statistically significant at $p \leq 0.05$

intermediate positive relation between subjects' emotional and overall coping with physical age-related changes ($r=0.369$, $p= <0.045$). While, post the application of self-care interventions, a strong positive significant relation is found between overall self-care knowledge and overall self-care practices of the studied participants ($r = 0.764$, $P = <0.001$), whereas overall self-care knowledge and emotional-based coping of the studied older adults are reversed correlated and the relation is an intermediate statistically significant ($r = -0.607$, $P = <0.001$). Also, there is an intermediate positive relation between subjects 'overall self-care knowledge and problem-based coping with physical age-related changes ($r = 0.379$, $P = <0.035$), as well as an intermediate positive relation is found between subjects 'overall self-care knowledge and overall coping with physical age-related changes ($r = 0.427$, $P = <0.019$). Moreover, the studied seniors' overall self-care practices and problem-based coping and overall coping are correlated post the self-care interventions and the relation is an intermediate statistically significant ($r = 0.662$, $P = 0.001$) and ($r = -0.485$, $P = 0.001$) respectively.

DISCUSSION

The final stage of life span development is the late adulthood that described by various changes or declines which befall during the ageing process. Senescence is one potential effect of the ageing process, which characterized by memory difficulties, physical functioning deterioration and sensory deprivation. The capacity of an older person to cope with stress can be substantially affected by the physiological consequences of normal aging. Because of ageing is a constant irremediable varying process, which normally comes with many challenges and stressors overtime, the effects of physical aging are daunting. Therefore, the manner which the older individuals cope with physical ageing changes is mainly reliant on the circumstances in which occurs and on how older adults were accepting these changes in their bodies. If they perceive physiological changes as a natural process of aging, these changes will not appear as terrifying [1, 5, 30]. Coping was pictured as an approach that can be utilized by the elders to manage stressors caused by ageing changes and classified into two strategies; emotion focused coping and problem focused coping [23]. To age successfully it is not enough to be free of disease and disability, but the risk factors associated with disease and disability must be avoided as well. Keeping on the older adults with healthy successful

life whenever they are going through ageing process requires input of self-management program, which constitutes self-care knowledge, self-care actions and external resources [16]. In fact, not much is known about process of physiological aging in terms of its association coping strategies. Accordingly, this study focuses on coping with physiological aspects of the aging process and self-management interventions. Therefore, this study aimed to Investigate the effect of self-care interventions on coping of community dwelling older adults with age-related physiological changes.

Self-care management is the current trend in the field of health care which has a significant proactive role health promotion, maintenance of functioning, rehabilitation and quality of life [7, 11]. This research is the first study in Egypt that emphasized on the successful ageing, as well as, the association between self-management program and coping strategies of the older adults to cope effectively with physiological changes which associated with ageing normally. This study developed the first comprehensive educational Arabic-version booklet that clarifies the age-related changes which occurred in every body system and how to apply self-care strategies as well. This educational material helped the studied elders to manage every age related problem/complaint by identifying particular problem -solving skills and appropriate self-care measures.

The department of Health baseline self-care survey identified information as one of the key perceived barriers to self-care and provision of information is one of the core principles underlying the delivery of self-care [31]. The present study proved that fact and revealed that the majority (86.7%) of the study subjects had a low level of self-knowledge, while 13.3% of them have a moderate level of knowledge, prior to the interventions as shown in (Table 2). Definitely, seniors' knowledge regarding physiological ageing is a significant factor associated with older adults' participation in preventive and corrective coping strategies [32]. The findings of the present study proved that hypothesis and reported that self-care interventions had significant positive effect in improving the overall self-care knowledge of community dwelling older adults to cope with physiological age-related changes as represented in (Table 2). As well, an intermediate positive relation was found between subjects' overall self-care knowledge and overall coping with physical age-related changes as shown in (Table 6). Additionally, after the implementation of self-management interventions, the total mean scores and the percent scores of self-care knowledge of the studied

elders to cope with physical changes were improved in comparison to its level prior to the study interventions as shown in (Table 2). These findings could be related to the minorities (20%) of studied seniors have basic education. Education helps the studied seniors to increase their awareness regarding preventive a self-care health practices which related to age physiological aging. These improvements in total mean score the levels of self-care knowledge and its total mean scores after the study interventions in comparison to its level before the study interventions are consistent with previous studies done by El Husseini [27], Ali [33] and Ibrahim [34]. Similarly, Curtin *et al.* [35] confirmed these results and added that cooperative/participatory strategies (emotion-focused coping) and overall patient knowledge would be positively associated with patient functioning and well-being after the application of self-management program.

With regard the overall self-care practices of the studied seniors before and after the implementation of the study program, the results of this study proved its hypothesis that the self-physiological ageing management program affected significantly and improved markedly the overall self-care practices of the studied elders as shown in (Table 3). Furthermore, the studied seniors' overall self-care practices and problem-based coping and overall coping are correlated post the self-care interventions as represented in (Table 6). Moreover, after the implementation of self-management interventions, the total mean scores and the percent scores of self-care practices were improved in comparison to its level prior to the study interventions as shown in (Table 3). These conclusions could be attributed to that much of the negative effects of aging are due to lifestyle choices and behaviors, which could be controlled through utilization of self-management program to cope and reverse declines with ageing. These findings are in line with Hassan *et al.* [36] who concluded that there was a statistical significant relationship between the studied participants' overall level of practices/functioning of and overall coping strategies. These improvements in the overall self-care practices level after the study interventions in comparison to its level prior to the study interventions are consistent with studies done by Ali [33], Ibrahim [34] and El Husseini [27]. Contrary to these results Curtin [35] confirmed that although one of the cooperative/participatory strategies (emotion-focused coping) was positively associated with physical functioning, two of the protective/proactive strategies proved to be negatively associated with physical functioning post the self-management interventions.

Coping has always been a process through which individuals deal with stress, solve problems and make decisions. Coping has two types; problem-focused which actually changes the person–environment relationship and emotion-focused which changes the meaning of the situation [37]. The results of this study confirmed that fact and revealed that all (100. 0%) of the participants reported that they use high level of emotional-based coping with physical ageing stressors/changes compared to 13. 3% of the studied elders reported that they use high level of problem-based coping prior the self-management program as shown in (Table 4). Furthermore, before the application of the self-care program, the use of emotional-based coping was exhibited significantly among the studied seniors who aged more than 70 years rather than other age categories as depicts in (Table 5). These conclusions could be explained by the fact that lack of knowledge and skills regarding how to manage physiological changed contribute to the older adults to use passive coping strategies (emotion-focused coping) more than active coping strategies (problem –focused coping). These findings were in agreement with Hossen *et al.* [38] added that the participants utilized both emotion-focused and problem-focused strategies and that many of these were faith strategies or emotional based coping strategies. As well, Moos [39] who showed that individuals who have more health-related and other life stressors are more likely to rely on avoidance coping, cognitive avoidance and emotional discharge coping. Similarly, Lazarus [40] who reported that increased use of emotion focused strategies is associated with ageing changes. Additionally, Brennan *et al.* [41] revealed that the use of problem focused coping strategies decreased with aging. These results are congruent with Hassan *et al.* [36] who documented that about one half (49%, 48% and 47%) of the elderly used problem solving, social support and wishful thinking respectively with a high degree as a coping strategy. As well, Souza-Talarico *et al.* [8] and Duner and Nordstrom [16] contradicted this study results and concluded that the problem-focused coping strategies were predominantly reported amongst the aged participants who cope with the stressors in a combative manner when they face with a harsh condition.

Whereas, after the implementation of the self-management program, this research proved its hypothesis and confirmed that, the majority (90. 0%) of the studied participants exhibited high level of problem-based coping with physical age-related changes compared to 46. 7% of them who reported that they use high level of emotional-based coping post the self-care strategies, with statistically significant relation as shown in (Table 4).

These conclusions could be related to the fact that coping is a proven strategy being used by the old people in managing limitations or stressors brought about by age related changes, particularly after introducing self-management program rather than before and consequently, the older adults become able to use active coping strategies (problem-focused coping) more than passive coping strategies (emotion –focused coping). These findings are in agreement with Kuria [42] who concluded that by offering self-rehabilitative program to the elderly during ageing process makes it possible to achieve positive effect in the use of coping, particularly problem-focused coping strategies which significantly exhibited after the self-management. Similarly, Blevins and Troutman [43] reported that successful ageing interventions /activities affected significantly coping with physical ageing changes.

As well, these findings are in accordance with Ouwehand *et al.* [44] who added and confirmed that once a problem occurs, health promotion self-care program/ activities could significantly improve proactively older adults' coping with the problem and improved the quality of life of the elderly. Furthermore, these findings are supported by several studies [12, 14, 15] which reported that the use of problem-focused strategies is more effective than emotion- focused strategies in adjusting better to life post the interventions. However, these results of the current study are in opposition with Couture and Lavoie [45] who reported that among the many coping strategies used by the participants; distancing, self-control, accepting responsibility and escape–avoidance (emotion-focused coping strategies) exhibited more than other coping strategies with statistically significant association with and quality of life after participation in self-care program. Furthermore, Curtin *et al.* [35] who revealed that the protective/ proactive strategies were less frequently utilized than were the cooperative/participatory types of strategies.

The use of the different coping strategies varies throughout the life span and there are differences even between the young-old and the oldest-old regarding coping with physiological changes [46]. The findings of the present study proved that hypothesis and reported that there is a statistically significant association between studied subjects' age and emotional based coping where the studied older adults who aged more than 70 years exhibited better emotional-based coping than subjects who aged 60 to 70 years before application of the self-care program. While, after application of the self-care program, the study subjects who aged 60 to 70 years exhibited

better problem-based coping and overall coping than the participants who aged more than 70 years old as represented in (Table 5). These conclusions could be explained by the fact that with increasing the age, the memory is exposed more to age-related changes, as well as, advanced age is usually associated with comorbidities which hinder them to cope with physiological changes and perform basic self-management tasks such as solving problems. These results are in accordance with Chen *et al.* [47], Meléndez *et al.* [48] and Lachapelle and Hadjistavropoulos [49] who revealed that older adults were less likely to use problem-focused coping and the use of emotion-focused coping increased by age before the application of the self-care program. However, these results are in contrast with Brennan *et al.* [41] who revealed that the use of problem focused coping strategies decreased with increasing age before application of the program.

As regards to the gender of the studied older adults, the present research has revealed that studied female participants revealed better emotion-based coping than the studied male before and after self-care interventions with no statistically significant relation. While, the studied male participants revealed better problem-based coping than the studied female post self-care interventions and the difference is a statistically significant. These results are expected after offering the program as males are more likely to be better educated and employed outside the home than females which may enable them to gain more information, skills and experience to use problem-based coping than females. These conclusions were in agreement with Meléndez *et al.* [48], Additionally, Rowe & Kahn [50] reported that successful physical agers" who follow healthy aging program tended to be male, white, affluent, healthier and better educated. In contrast to these results Demers *et al.* [51], Rose and Rudolph [52], Tamres *et al.* [53] and Lazarus [40] who reported that males and females did not differ in their use of problem focused forms of coping.

Health education is a process that bridges the gap between health information and health practices which could empower the older adults with skills that are essential for better coping and making control over physiological ageing stressors/changes [31]. The findings of this study proved that hypothesis and revealed that the studied seniors who have university/postgraduate education showed better problem-based coping and overall coping than the studied participants who have either basic education or secondary education before and after the application of the self-care interventions.

These findings could be due to more than half (56. 7%) of studied elders had university/postgraduate education. Also, those older adults with higher educational level have a greater probability of obtaining and grasping knowledge correctly from books, journals and other sources such as media technologies than older adults with basic and secondary education. These findings are in agreement with Tabrizi and Saadati [54], Quwehand [55] and Rowe & Kahn [50] who reported that higher educational level was positively related to the usage of proactive coping strategies and successful physical agers who follow healthy aging program tended to be healthier and better educated.

An important finding of this study, is the positive significant association which found between the studied older adults' marital status and problem-based coping and overall coping post the self-care interventions where the study single/widow elders exhibited better problem-based coping and overall coping than the studied participants who were married elders after application of the self-care program as illustrated in (Table 5). Indeed, these conclusions could be explained by that those who are single or widow subjects are more proactive regarding self-care arrangements, have time to be volunteer in caring others and participating in developed better emergency plans. On the other hand, married elders have much informal requirements/demands to deal with so, they become less proactive to self-care themselves and cope with physical ageing stressors/ changes. Surprisingly, the current study claimed that the study seniors who live alone exhibited better emotion-based coping than the studied elders who live with their families prior the self-care interventions and with no statistically difference. While, the study seniors who live alone exhibited better problem-based coping than the studied elders who live with their families post the interventions and with statistically significant difference as shown in (Table 5). These results might be attributed to, those elders who live alone in their own home even if they are more or less unhealthy, but at the same time they fear of being dependent on others, which in turn this fears help them to use problem-focused coping than emotion particularly after the implementation of self-management program with any physical ageing stressors/changes. While those elders who live with family have more obligations that prevent them to cope with physical ageing stressors/changes. These results are in agreement with Birkeland and Natvig [23] who documented that the elders who live alone use resigned and passive acceptance (emotion-focused coping) as the main coping strategy more than positive acceptance (problem-focused coping)

to deal with physical ageing changes prior the interventions. In contrast to these findings, Cheng [56], Rotach *et al.* [57] and Roe *et al.* [58] documented that the studied older adults who live alone use more a reversed, emotion-focused coping to deal with physical ageing changes prior the interventions.

The other notable findings of this research were that, before the application of self-care interventions, seniors who have enough income showed better problem-based coping than the studied participants who have insufficient income with no statistically difference. While, the positive significant association which found between the studied older adults' financial status and problem-based coping strategies post the self-care interventions where those studied subjects who have enough income exhibited better problem-based coping than the study subjects with inadequate income after the application of self-care interventions as depicts in (Table 5). These conclusions might be related to higher economic status allows the elders to have and utilize much resources in order to cope with physical age-related stressors/changes effectively by using problem- based coping strategies especially after introducing self- management program rather than before it. These results are supported with Yang and Wen [59] and Hung *et al.* [60] who revealed that economic stability usually is a good predictor of proactive coping with ageing loss. Similarly, Lang *et al.* [61] confirmed these findings and reported that the participants who have sufficient income used higher utilization of problem-based coping strategies in daily functioning to as attain adaptation to losses of aging.

According to the results of the present study, the proposed hypotheses were confirmed and proven where the implementation of self-care interventions are significantly effective in improving the overall self-care knowledge and overall self-care practices and overall coping of the studied older adults. There is a true evidence recommended that planning for successful aging becomes very significant to individuals as they approach the final stage of adulthood, which in turn can lead to better physiological satisfaction and adjustment to ageing. It is important to recognize that behavioral self-management programs/interventions targeting coping during ageing process could assist in achieving wellbeing throughout life span.

CONCLUSIONS

Based on the findings of the present study, it can be concluded that the self-care interventions had significant positive effect in improving the overall self-care

knowledge and overall self-care practices of community dwelling older adults to cope with physiological age-related changes. Additionally, before the application of the self-care program, the use of emotional-based coping was exhibited significantly among the studied seniors who aged more than 70 years rather than other age categories. While, after the implementation of the study self-care program, the use of a problem-based coping with physiological ageing changes was exhibited significantly among the studied community dwelling seniors who aged 60 to 70 years, male, widow, have university/postgraduate education, have sufficient income and living alone. Furthermore, a strong negative significant relation is found between subjects' emotional and problem-based coping with physical age-related changes pre and post the self-care interventions.

Recommendations: Based on the findings of the present study, it can be recommended that:

- Educational health program regarding the significance of using successful aging plans and available various resources during ageing process, via mass media and schools' programs in order to achieve greater older adults' satisfaction and wellbeing, as well as, breakdown the stereotypes that undervaluing older people's ability to participate and contribute fully in community life.
- Planning and implementation of a training program for all health care professionals who provided the care for the older adults in the relevant health care settings on regular basis. These training classes/programs should include specific relevant knowledge and skills regarding physical changes, which occur to the older adults normally during ageing process and its effect on individuals' well-being in order to improve the quality of medical and nursing care provided for the older adults in all various health settings.
- Inclusion of the study developed self-care interventions to cope with age-related physical changes in the plan of caring the older adults in the relevant health-care settings. The self-care program should be available to community-dwelling older adults and their caregivers which enables them to follow the principles of self-care management and to do the short-term and long-term preventive measures which in turn helps them to cope effectively with physiological changes that occurs normally during the ageing process. This will be done through dissemination of the developed self-care program

booklet and educational materials in the form of printed colored handouts and brochures, as well as, hanging of posters on the wall of all health care settings.

- Inclusion of the study developed self-care coping program in both theoretical and practical parts of the gerontological and community health nursing courses of the bachelor nursing students.
- Emphasize on the importance of maintaining healthy ageing that strengthen the abilities of older persons through commitment of the older adults with healthy nutrition, exercise, avoid sedentary life pattern, keep away from stress and risk behaviors, keep active and independent during ageing process
- Encouragement of governmental and private agencies to implement policies regarding creating age-friendly environments. Health policymakers need to acknowledge these self-care interventions in the delivery of health care promoting activities for older people.

Recommended Future Researches:

- Development of assessment tools/scales to accurately determine physiological changes that occur during ageing process early to prevent the possible problems associated with these changes.
- Comparative descriptive study to determine attitudes of younger adults versus older adults toward successful aging.
- Experimental prospective study to determine the effect of successful ageing program on the quality of life of community dwelling older adults

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