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Relationship between Cognitive Function, Self-esteem, Self-care Capabilities, and Activities of Daily Living of Institutionalized Older Adults

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ABSTRACT
Background: With advancing age, there is an increased susceptibility to various functional limitations, cognitive declines, and self-care disabilities, which often results in compromised physical and psychological well-being. **Objective:** The study was conducted to identify the relationship between cognitive function, self-esteem, self-care capabilities, and activities of daily living of institutionalized older adults. **Subjects and Methods:** 100 elders of both sexes aged 60 years andabove were included in the study. Mini-Mental State Examination (MMSE), The Katz Activities of Daily Living (ADL) Scale, The Exercise of Self-Care Agency (ESCA) Scale and The Rosenberg Self-Esteem Scale (RSES) were used. **Results**: Findings revealed the presence of significant relationships between cognitive function and both self-care capabilities and activities of daily living, whereas no significant relationships were found between self-esteem of the studied elders, and their cognitive function, self-care capabilities, and activities of daily living. **Conclusion and Recommendations:** The findings suggest that, specific emphasis should be placed on the ongoing assessment of cognitive function which is important to predict the self-care of older adults, and to institute the appropriate intervention, and further researches are needed to examine and evaluate the effectiveness of rehabilitation programs to improve elders' cognitive function and self-care capabilities.

INTRODUCTION

Different physical and psychological factors play a key role in the elder's willingness and ability to participate in self-care activities. These factors include: physical and cognitive functioning, self-care capabilities and self-esteem of the older adult.[1] Proper cognitive functioning, self-esteem and self-care capabilities are the important components of independence functioning of the elderly

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individual.[2] They are also highly individualized and are based on personal resources, physical and/or psychological health status of older adults.[3] In later life, cognitive function, self-esteem and self-care capabilities are closely connected to successful performance of activities of daily living.[4]

A growing body of research suggests that there is an association between cognitive and physical functioning, and self-esteem among the elderly.[5-7] It was argued that cognitive status is likely to be related to physical functioning, particularly the ability to perform self-care activities and activities of daily living, which may influence both physical and psychological well-being.[8] In this respect, Elovainio et al. (2009)[9] noted that poor cognitive function may play a role in the initiation and the progression of poor physical function and low self-esteem. Another study demonstrated a positive correlation between low cognitive function and later declines in physical functioning.[10] Moreover, it was reported that disability and cognitive impairment show similar patterns of increasing frequency with aging; elders with low cognitive performance are at higher risk of functional impairment.[11] Fairly strong evidence indicated that maintenance of self-care capabilities is the most cost-effective method to ensure enhanced quality of life in old age. It can promote overall health status, encourage independence, maintain physical and psychological well-being, improve cognitive function, and preserve self-esteem in later life.[12,13]

However, many factors such as normal physical, cognitive and psychosocial changes which are experienced by the older adults, and chronic illnesses may profoundly influence independent functioning of the elderly, especially in performing activities such as visiting friends or family member, shopping, worshipping outside the home, and vacationing.

Performance of these activities requires higher levels of physical and cognitive functioning which consequently affects the self-esteem of elders.[14]

Elders with normal cognitive abilities and high self-esteem are usually motivated to perform self-care. On the other hand, elders with deficits in cognitive functions such as memory, language, abstract thinking and judgment have great difficulty executing activities of daily living, may need to be reminded to perform self-care, may be unaware of the need for self-care and the appropriate methods of achieving it, or may be totally dependent on others in meeting their self-care. Cognitive decline represents a major factor involved in the pathogenesis of age-related frailty and functional decline. In this respect, it was reported that cognitive impairment is the greatest predictor of self-care deficits in the elderly.[15,16]

Performance of self-care activities requires that elders value themselves sufficiently to invest the time and energy in performing activities of daily living. Changes in mood and low self-esteem that may be experienced with aging may directly affect the elder's ability to perform self-care activities.[17,18] Mood changes, feelings of helplessness, hopelessness, incompetence, and perception of self as incapable and frail are possible consequences of self-care limitations and may lead to increased dependency and reduced opportunities for socialization.[19] At the same time, problems related to self-care can be devastating to elders because of their effect on self-esteem. They negatively influence their self-esteem.[20-22] The elder with emotional disturbances may direct his/her energy inward or may have no enough energy required to perform the different self-care activities.[23]

Nurses are challenged to improve physical as well as psychological well-being of older population. To do so, nurses need a thorough understanding of the relationships between

factors, such as cognitive function, self-esteem and self-care capabilities, which could affect elders' well-being. Examining the relationships between these factors can direct the nurse toward potential rehabilitative interventions to enhance cognitive function, improve self-esteem, increase self-care capabilities, and foster independency among older individuals.[24] The aim of this research is to identify the relationship between cognitive function, self-esteem, self-care capabilities, and activities of daily living of institutionalized older adults.

MATERIALS AND METHODS

Study setting:

The study was carried out in four elderly homes in Alexandria selected randomly by ballot, two governmental homes (Dar El-Hana, and Dar El-Hadaya), and two private homes (Dar Mohamed Ragab, and Dar Ahmos Khalifa).

Study design:

A descriptive correlation design was used to investigate the relationship between the studied variables.

Target population and sampling:

The subjects of the present study comprised 100 elders of both sexes who were residing in the previously mentioned settings, aged 60 years and above, able to communicate effectively, and accepting to participate in the study.

The researcher used to visit the study settings based on a schedule, and started data collection based on the scheduled days from 9 am to 1 pm. All elders who fulfilled the study criteria were included in the study.

Study tools:

The following five tools were used to collect data for this research:

1- **Socio-demographic and health status structured interview schedule:**

This tool was developed by the researchers based on relevant literature to collect the following information from the study sample:

- Socio-demographic data of the elders

such as sex, age, marital status, educational level, occupation prior to retirement, and monthly income.

- Information about the admission and residence in the elderly home, such as decision for relocation, reason(s) for and satisfaction with relocation.
- Health status: satisfaction with health status, and self-rating of health.
- Physical function: hearing, vision, and mobility status.
- Social activities: social relationships with others in the elderly home, participation in recreational activities, leisure time activities, and visits to or by family members and friends.

2- **Mini-Mental State Examination (MMSE):**

The MMSE is a screening instrument developed by Folestein (1975)[25] to assess the global cognitive function of the elderly. It includes questions which assess both verbal response and performance. It contains items examining orientation, registration, recall, attention and calculation, naming, and language. The score of mini-mental state examination is 30 point classified as score of 24-30 indicating normal cognitive function, score of 18-23 indicating mild cognitive impairment, and score of 0-17 indicating severe cognitive impairment.

3- **The Katz Activities of Daily Living (ADL) Scale:**

The ADL scale is an instrument to assess independent living skills developed by Katz et al (1969).[26] It assesses the elder's activities of daily living namely, grooming, toileting, eating, dressing, bathing, and mobility. These activities were measured and scored according to the individual's actual performance. The quantification score of this scale made by the researchers as the total score was 18 points which were categorized into three levels of dependence; fully independent (6 points), partially dependent (7-12 points), and totally dependent (13-18 points).

4- **The Exercise of Self-Care Agency (ESCA) Scale:**

This scale was developed by Kearney and Fleischer (1979)[27] and designed to measure self-care capabilities through the assessment of one's ability to care for self. The scale was translated into Arabic language and tested for its translation, content validity, and reliability on Egyptian subjects by El-Husseini (2009).[28] The tool had demonstrated adequate validity and strong reliability (r=0.82). The Arabic version of the scale was used in this study. The ESCA is a 43-item scale in which subjects respond on a five point Likert scale, ranging from 4 for every characteristic of me to zero for every uncharacteristic of me. In case of negative items, the score is reversed. The maximum possible score is 172, indicating high capabilities of self-care.

5- **The Rosenberg Self-Esteem Scale (RSES):**

This scale was developed by Rosenberg in 1965[29] to measure the global self esteem. The Rosenberg self-esteem scale was translated into Arabic language and tested for its translation, content validity, and reliability on Egyptian subjects by Ebrahim et at. (2007).[30] The tool had demonstrated adequate validity and strong reliability (r=0.88.) The Rosenberg self-esteem scale is a ten-item Likert scale with items answered on a four-point scale ranging from strongly agree to strongly disagree. The scale contains five positively worded items and five negatively worded items. The score of the scale was calculated as follows:

- For items 1,2,4,6, and 7: Strongly agree=3, Agree=2, Disagree=1, and Strongly disagree=0.
- For items 3,5,8,9, and 10 (which are reversed in valence): Strongly agree=0, Agree=1, Disagree=2, and Strongly disagree=3.

The total score ranges from 0-30. Scores more than 25 suggest high self-

esteem, between 15 and 25 are within normal range of self-esteem, and scores below 15 suggest low self-esteem.

A pilot study was carried out in order to ascertain the clarity and applicability of all the study tools.

Ethical considerations:

An official letter was issued with the approval of the Ministry of Social Solidarity to the director of each elderly home included in the study.

Verbal consent from each elderly patient to participate in the study was obtained after explanation of the study purpose.

Every subject was interviewed individually by the researchers in his/her room or in the waiting room at the morning shift. After obtaining informed consent from all study subjects, anonymity, privacy, and confidentiality of data were assured,

RESULTS

Table 1 represents the distribution of the studied elders according to their socio-demographic characteristics and their relationships with the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living. The results indicated that 80.0% of elders were females and widowed. Although the male elders had the highest mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living (23.35 ± 5.82, 15.3 ± 1.46, 61.2 ± 14.49, and 9.95 ± 2.86, respectively) compared to females. However, the only statistically significant relationship noted was between the male sex and self-care capabilities ($t = 2.324$, $p = 0.022$).

Regarding educational level, 42.0% of the studied elders had university degree, followed by those who were illiterate (23.0%). The studied elders with university degree had the highest mean scores of both cognitive function (25.68 ± 2.57) and activities of daily living (10.53 ± 2.46), whereas the least mean scores of cognitive function and activities of daily living were

obtained by those who were illiterate (15.65 ± 3.16), and those who attended secondary school (7.82 ± 3.63), respectively. Statistically significant relationships were noticed between educational level and both cognitive function (F = 26.902, *p* = 0.000) and activities of daily living (F = 2.429, *p* = 0.029).

As for occupation before institutionalization, the table shows that 45.0% and 36.0% of the studied elders were housewives and employees respectively. The only statistically significant relationship proved was between occupation before institutionalization and cognitive function (F = 13.056, *p* = 0.000), where the highest mean score of cognitive function was obtained by elders who were employees (26.03 ± 2.61), while the least mean score was obtained by elders who were skilled workers (17.0 ± 2.83).

In relation to monthly income, the elders whose income was 400 LE and more constituted 63.0%. A statistically significant relationship was detected between monthly income and cognitive function (F = 8.706, *p* = 0.000), where the studied elders with monthly income 400£ and more had the highest mean score of cognitive function (24.16 ± 4.15), whereas those with monthly income less than 100£ had the lowest mean score of cognitive function (16.67 ± 4.51).

The table also shows that there were no statistically significant relationships detected between both age and marital status, and the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living (p > 0.05).

Table 1. Distribution of the studied elders according to their socio-demographic characteristics and their relationship with the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living

Items	Studied elders (n = 100)		Cognitive function	Self-esteem	Self-care capabilities	Activities of daily living
	No.	%	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)
Sex						
Male	20	20.0	23.35 ± 5.82	15.3 ± 1.46	61.2 ± 14.49	9.95 ± 2.86
Female	80	80.0	21.91 ± 4.96	15.16 ± 1.61	53.03 ± 13.97	9.63 ± 3.05
Test of significance			***t = 1.119*** ***p = 0.266***	***t = 0.348*** ***p = 0.729***	***t = 2.324**** ***p = 0.022***	***t = 0.432*** ***p = 0.667***
Age (in years)						
60 –	43	43.0	22.02 ± 5.05	14.98 ± 1.77	56.0 ± 15.698	10.05 ± 2.74
70 –	34	34.0	22.41 ± 5.21	15.29 ± 1.45	52.94 ± 15.22	9.44 ± 2.97
80 +	23	23.0	22.22 ± 5.44	15.43 ± 1.38	54.7 ± 10.22	9.39 ± 3.55
Test of significance			***F = 0.053*** ***p = 0.948***	***F = 0.743*** ***p = 0.478***	***F = 0.425*** ***p = 0.655***	***F = 0.530*** ***p = 0.590***
Marital status						
Single	4	4.0	19.75 ± 7.37	16.5 ± 0.58	52.25 ± 21.08	7.5 ± 4.44
Married	11	11.0	21.45 ± 7.66	15.55 ± 1.04	64.36 ± 14.47	8.36 ± 2.87
Divorced	5	5.0	25.6 ± 3.65	16.0 ± 0.0	59.0 ± 20.16	11.4 ± 1.34
Widowed	80	80.0	22.21 ± 4.68	15.03 ± 1.67	53.18 ± 13.35	9.88 ± 2.94
Test of significance			***F = 1.11*** ***p = 0.349***	***F = 1.894*** ***p = 0.136***	***F = 2.223*** ***p = 0.090***	***F = 2.146*** ***p = 0.099***
Educational level						
Illiterate	23	23.0	15.65 ± 3.16	15.13 ± 1.55	55.43 ± 13.48	9.39 ± 3.14
Read & write	11	11.0	21.45 ± 4.41	15.18 ± 1.33	63.73 ± 15.03	9.91 ± 3.33
Primary/preparatory school	13	13.0	20.33 ± 4.62	15.33 ± 1.67	57.58 ± 17.16	8.17 ± 2.76
Secondary school	11	11.0	24.82 ± 2.18	15.45 ± 1.44	47.64 ± 14.12	7.82 ± 3.63
University degree	42	42.0	25.68 ± 2.57	14.97 ± 1.7	53.37 + 13.88	10.53 + 2.46
Test of significance			***F = 26.902**** ***p = 0.000***	***F = 0.524*** ***p = 0.789***	***F = 1.496*** ***p = 0.188***	***F = 2.429**** ***p = 0.029***
Occupation before institutionalization						
Employee	36	36.0	26.03 ± 2.61	15.17 ± 1.699	52.94 ± 13.77	10.03 ± 3.12
Housewife	45	45.0	19.91 ± 4.497	15.02± 1.62	57.16 ± 14.97	9.29 ± 3.05
Commercial work	10	10.0	18.8 ± 6.26	15.2 ± 1.30	45.6 ± 6.54	10.4 ± 2.61
Skilled worker	9	9.0	17.0 ± 2.83	16.25 ± 0.96	45.0 ± 10.71	8.0 ± 3.27
Test of significance			***F = 13.056**** ***p = 0.000***	***F = 0.745*** ***p = 0.564***	***F = 1.586*** ***p = 0.184***	***F = 0.932*** ***p = 0.449***
Monthly income (LE)						
< 100	3	3.0	16.67 ± 4.51	16.33 ± 1.16	61.67 ± 21.01	9.33 ± 4.62
100 –	3	3.0	21.67 ± 2.31	15.33 ± 1.16	45.67 ± 16.56	6.0 ± 5.196
200 –	13	13.0	18.08 ± 4.35	15.23 ± 1.36	47.85 ± 6.23	10.08 ± 2.87
300 –	18	18.0	19.33 ± 5.80	14.89 ± 1.41	58.0 ± 15.37	9.83 ± 2.83
400 +	63	63.0	24.16 ± 4.15	15.21 ± 1.696	55.21 ± 14.67	9.76 ± 2.88
Test of significance			***F = 8.706**** ***p = 0.000***	***F = 0.560*** ***p = 0.692***	***F = 1.496*** ***p = 0.209***	***F = 1.232*** ***p = 0.302***

* Significant at p < 0.05 ** Significant at p <0.01

Table 2 presents the distribution of the studied elders according to their admission and stay in the elderly home and their relationship with the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living. One can notice that 83.0% of the studied elders made the decision for their own relocation (voluntary admission), while 17.0% of the elders were relocated based on the decision of family members and friends (involuntary admission). There were statistically significant relationships between decision for relocation and the mean scores of cognitive function (F = 20.130, p = 0.000), self-care capabilities (F = 23.116, p = 0.000), and activities of daily living (F = 12.539, p = 0.001).

Concerning reasons for relocation, the results revealed that loneliness, having no caregiver, and family problems were the most frequently reported reasons (39.0%, 28.0%, and 21.0%, respectively), whereas having no home (9.0%), and rejection by family (3.0%) were the least reported reasons for relocation by the studied elders. The only statistically significant relationship noted was between reasons for relocation and the mean score of activities of daily living (F = 7.707, *p* = 0.000), where elders who were rejected by family had the highest mean score of activities of daily living (12.0 ± 0.0), while those who had no caregiver had the least mean score of activities of daily living (7.36 ± 3.498). The same was observed for the relationship between satisfaction with relocation and the mean score of activities of daily living in which the studied elders who were unsatisfied with relocation (19.0%) obtained the highest mean score of activities of daily living (17.0 ± 1.73), whereas those who were satisfied (81.0%) obtained the least mean score of activities of daily living (8.42 ± 3.88). A statistically significant relationship was found between satisfaction with relocation and the mean score of activities of daily living (F = 4.346, *p* = 0.040).

Table 2. Distribution of the studied elders according to their admission and stay in the elderly home and their relationship with the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living

Items	Studied elders (n = 100)		Cognitive function	Self-esteem	Self-care capabilities	Activities of daily living
	No.	%	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)
Decision of relocation made by:						
Elderly person	83	83.0	23.16 ± 4.42	15.17 ± 1.57	51.83 ± 12.53	10.14 ± 2.66
Family members and friends	17	17.0	17.53 ± 5.99	15.29 ± 1.65	68.47 ± 15.19	7.47 ± 3.61
Test of significance			***F = 20.130***** ***p = 0.000***	***F = 0.089*** ***p = 0.766***	***F = 23.116***** ***p = 0.000***	***F = 12.539***** ***p = 0.001***
Reasons for relocation:						
Loneliness	39	39.0	23.41 ± 4.65	15.13 ± 1.61	51.97 ± 11.61	10.56 ± 2.23
Having no caregiver	28	28.0	22.18 ± 5.98	15.39 ± 1.499	58.39 ± 14.31	7.36 ± 3.498
Family problems	21	21.0	20.43 ± 5.46	15.0 ± 1.48	57.24 ± 19.69	10.48 ± 2.6
Having no home	9	9.0	22.89 ± 1.76	15.33 ± 2.0	51.44 ± 10.47	10.56 ± 1.42
Rejected by family	3	3.0	17.0 ± 1.73	15.0 ± 2.0	46.33 ± 6.35	12.0 ± 0.0
Test of significance			***F = 2.051*** ***p = 0.093***	***F = 0.230*** ***p = 0.921***	***F = 1.365*** ***p = 0.252***	***F = 7.707***** ***p = 0.000***
Satisfaction with relocation:						
Yes	81	81.0	21.9 ± 5.44	15.11 ± 1.52	60.0 ± 14.25	8.42 ± 3.88
No	19	19.0	23.47 ± 3.45	17.0 ± 1.73	17.0 ± 1.73	17.0 ± 1.73
Test of significance			***F = 1.443*** ***p = 0.233***	***F = 0.067*** ***p = 0.796***	***F = 3.311*** ***p = 0.072***	***F = 4.346**** ***p = 0.040***

* Significant at $p < 0.05$
**Significant at $p < 0.01$

Table (3) shows the distribution of the studied elders according to their health status and its relationship with the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living. It was found that most of the studied elders (87.0%) were satisfied with their health status and 63.0% of them rated their health status as good. The findings indicated that the majority of the studied elders (92.0%) had no hearing problems, whereas 49.0% of them had visual problems. As for mobility problems, 52.0% of the elders moved with assistance (by persons or assistive devices), followed by those who moved without assistance (46.0%), and those who were bedridden (2.0%).

As regards the relationship between the health status and the mean score of cognitive function, it was found that a statistically significant relationship was noted between visual problems and the mean score of cognitive function (F = 5.859, *p* = 0.001), where the studied elders who had no visual problems had a high mean score of cognitive function (21.33 ± 5.48).

Concerning activities of daily living, statistically significant relationships were detected between self-rating of health status (F = 2.964, *p* = 0.024), visual problems (F = 3.379, *p* = 0.021) and mobility problems (F = 35.290, *p* = 0.000), and the mean score of activities of daily living. The highest mean scores of activities of daily living were obtained by the studied elders who rated their health status as very good, had no visual problems, and move without assistance (11.5 ± 0.85, 10.56 ± 2.55, and 11.41 ± 1.54, respectively).

Also the table 3 shows that there were no statistically significant relationships found between health status of the studied elders and their self-care capabilities and self-esteem (p > 0.05).

Table 4 illustrates the distribution of the studied elders according to their social activities and their relationship with the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living. It was observed that 63.0% of the studied elders had social relationships with others in the elderly home. Statistically significant relationships were found between social relationships with others and the mean scores of both self-care capabilities (F = 6.625, *p* = 0.002), and activities of daily living (F = 3.182, *p* = 0.046), where the highest mean score of self-care capabilities was obtained by elders who had no social relationships with others (61.0 ± 15.50). On the other hand, those who had social relationships with others had the highest mean score of activities of daily living (10.16 ± 2.88).

As for participation in recreational activities, only 28.0% of the elders participated in recreational activities, while 72.0% of the studied elders refused to participate in any recreational activities in the elderly home. A statistically significant relationship was noticed between participation of recreational activities and the mean score of activities of daily living (F = 10.314, p = 0.002).

Leisure time was spent by most of the studied elders (80.0%) in watching TV or listening to radio, whereas practicing hobbies, walking, and going to social clubs (11.0%, 5.0%, and 4.0%, respectively) were the activities of the rest of the elders. A statistically significant relationship was detected between leisure time activities and the mean score of self-care capabilities (F = 3.456, p = 0.019), where the studied elders who practiced hobbies had the highest mean score (63.45 ± 18.53), while those who walked had the least mean score of self-care capabilities (39.8 ± 2.39).

The results also revealed that more than one third (34.0%) of the studied elders reported that they visited or were visited by family members and friends once per week, whereas 18.0% of the elders had no visits. There was a statistically significant relationship noted between visiting family members and friends and activities of daily living (F = 2.404, p = 0.042). The studied elders who visited or being visited by their family members and friends on occasions obtained the highest mean score of activities of daily living (11.22 ± 1.68), whereas those who visited or being visited once per two weeks obtained the least mean score of activities of daily living (7.5 ± 3.97).

Table 3. Distribution of the studied elders according to their health status and its relationship with the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living

Items	Studied elders (n = 100)		Cognitive function	Self-esteem	Self-care capabilities	Activities of daily living
	No.	%	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)
Satisfaction with health status						
Yes	87	87.0	21.91 ± 5.31	15.1 ± 1.61	54.43 ± 13.67	9.7 ± 3.04
No	13	13.0	24.15 ± 3.41	15.77 ± 1.17	56.23 ± 19.07	9.62 ± 2.79
Test of significance			***F = 2.179 p = 0.143***	***F = 2.044 p = 0.156***	***F = 0.177 p = 0.675***	***F = 0.009 p = 0.924***
Self-rating of health status						
Excellent	2	2.0	25.5 ± 2.12	15.5 ± 2.12	49.0 ± 9.899	6.5 ± 0.71
Very good	1	1.0	28.0 ± 0.0	12.0 ± 0.0	50.0 ± 0.0	11.5 ± 0.85
Good	63	63.0	21.76 ± 5.39	15.0 ± 1.61	53.71 ± 13.41	9.94 ± 2.85
Fair	24	24.0	22.29 ± 5.34	15.75 ± 1.36	55.21 ± 15.80	8.46 ± 3.50
Poor	10	10.0	23.5 ± 2.96	14.9 ± 1.73	60.9 ± 18.07	9.0 ± 0.0
Test of significance			***F = 0.792 p = 0.533***	***F = 1.167 p = 0.330***	***F = 0.642 p = 0.634***	***F = 2.964* p = 0.024***
Hearing problems Yes	8	8.0	19.43 ± 3.46	15.43 ± 1.27	58.43 ± 13.32	11.71 ± 0.76
No	92	92.0	22.5 ± 5.16	15.18 ± 1.60	54.12 ± 14.35	9.55 ± 3.06
Test of significance			***F = 2.515 p = 0.086***	***F = 0.362 p = 0.697***	***F = 1.644 p = 0.199***	***F = 1.883 p = 0.158***
Visual problems						
Yes	49	49.0	19.22 ±5.08	15.0 ± 1.68	61.43 ± 12.36	8.09 ± 3.73
No	51	51.0	21.33 ± 5.48	14.74 ± 1.68	54.48 ± 16.46	10.56 ± 2.55
Test of significance			***F = 5.859** p = 0.001***	***F = 1.843 p = 0.145***	***F = 2.691 p = 0.051***	***F = 3.379* p = 0.021***
Mobility problems						
Move without assistance	46	46.0	22.35 ± 5.22	14.85 ± 1.56	55.63 ± 15.07	11.41 ± 1.54
Move with assistance	52	52.0	22.49 ± 4.96	15.53 ± 1.52	53.11 ± 14.29	9.11 ± 2.60
Bedridden	2	2.0	18.0 ± 1.41	15.5 ± 2.12	45.5 ± 21.92	3.5 ± 0.71
Test of significance			***F = 0.732 p = 0.536***	***F = 1.487 p = 0.223***	***F = 0.946 p = 0.421***	***F = 35.290** p = 0.000***

[a] By persons or assistive devices

* Significant at p < 0.05

** Significant at p <0.01

Table 4. Distribution of the studied elders according to their social activities and their relationship with the mean scores of cognitive function, self-esteem, self-care capabilities and activities of daily living

Items	Studied elders (n = 100)		Cognitive function	Self-esteem	Self-care capabilities	Activities of daily living
	No.	%	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)
Social relationships with others in the elderly home						
Yes	63	63.0	23.07 ± 4.74	14.98 ± 1.78	51.16 ± 12.49	10.16 ± 2.88
No	37	37.0	20.68 ± 5.61	15.54 ± 1.12	61.0 ± 15.50	8.78 ± 3.07
Test of significance			***F = 2.698*** ***p = 0.072***	***F = 1.470*** ***p = 0.235***	***F = 6.625**** ***p = 0.002***	***F = 3.182**** ***p = 0.046***
Participation in recreational activities						
Yes	28	28.0	22.14 ± 4.98	15.61 ± 1.07	58.11 ± 15.69	8.21 ± 3.80
No	72	72.0	22.22 ± 5.24	15.03 ± 1.71	53.32 ± 13.72	10.26 ± 2.42
Test of significance			***F = 0.005*** ***p = 0.945***	***F = 2.779*** ***p = 0.099***	***F = 2.264*** ***p = 0.136***	***F = 10.314**** ***p = 0.002***
Leisure time activities						
Watching TV or listening to radio	80	80.0	21.88 ± 5.17	15.05 ± 1.64	54.25 ± 13.75	9.69 ± 2.90
Practicing hobbies	11	11.0	24.82 ± 5.15	15.91 ± 1.22	63.45 ± 18.53	10.0 ± 2.79
Walking	5	5.0	21.6 ± 4.56	15.6 ± 0.55	39.8 ± 2.39	11.2 ± 1.095
Going to social clubs	4	4.0	22.25 ± 4.92	15.5 ± 1.73	57.25 ± 5.5	7.0 ± 5.77
Test of significance			***F = 1.081*** ***p = 0.361***	***F = 1.146*** ***p = 0.335***	***F = 3.456**** ***p = 0.019***	***F = 1.562*** ***p = 0.204***
Visits to or by family and friends						
Once / week	34	34.0	22.26 ± 6.17	14.97 ± 1.62	55.03 ± 12.02	10.06 ± 2.72
Once / two weeks	8	8.0	20.0 ± 4.84	16.13 ± 1.36	51.25 ± 11.26	7.5 ± 3.97
Once / month	27	27.0	21.19 ± 4.62	14.85 ± 1.56	58.67 ± 18.37	9.89 ± 2.50
On occasions	13	13.0	25.47 ± 3.55	15.41 ± 1.43	51.02 ± 12.74	11.22 ± 1.68
No visits	18	18.0	22.22 ± 4.12	15.56 ± 1.62	52.0 ± 12.18	8.61 ± 3.47
Test of significance			***F = 1.594*** ***p = 0.169***	***F = 1.268*** ***p = 0.248***	***F = 0.820*** ***p = 0.539***	***F = 2.404**** ***p = 0.042***

* Significant at $p < 0.05$
**highly Significant at $p < 0.01$

Table 5 distributes the studied elders according to their cognitive function as measured by MMES. It was found that elders who had normal cognitive functions represented 46.0% of the studied elders, whereas those who had mild and severe cognitive impairments represented 31.0% and 23.0% respectively.

Table 6 distributes the studied elders according to their self-esteem and self-care capabilities. It was noted that 67.0% of the studied elders had high self-esteem, while the rest (33.0%) had low self-esteem. Regarding self-care capabilities, the same table revealed that 35.0% of the studied elders had moderate self-care capabilities, whereas 65.0% of them had low self-care capabilities.

Table 7 distributes the studied elders according to their activities of daily living as measured by ADL. It was observed that most of the studied elders (84.0%) were partially dependent, whereas 16.0% of them were fully independent.

Table 5. Distribution of the studied elders according to their cognitive function

Cognitive function [a]	Studied elders (n = 100)	
	No.	%
Normal cognitive functions	46	46.0
Mild cognitive impairment	31	31.0
Severe cognitive impairment	23	23.0

[a] Measured by Mini-Mental State Examination (MMSE)

Table 6. Distribution of the studied elders according to their self-esteem and self-care capabilities

Variables	Studied elders (n = 100)					
	High		Moderate		Low	
	No.	%	No.	%	No.	%
Self-esteem [a]	67	67.0	0	0.0	33	33.0
Self-care capabilities [b]	0	0.0	35	35.0	65	65.0

[a] Measured by Rosenberg Self-Esteem Scale (RSES)
[b] Measured by Exercise of Self-Care Agency (ESCA) Scale

Table 7. Distribution of the studied elders according to their activities of daily living

Activities of daily living [a]	Studied elders (n = 100)	
	No.	%
Partialy dependent	84	84.0
Fully independent	16	16.0

[a] M**easured** by Katz Activities of Daily Living **(ADL) Scale**

Table 8 shows the correlation between cognitive function, self-esteem, self-care capabilities, and activities of daily living of the studied elders. The findings indicated that the cognitive function had a significant negative correlation with self-care capabilities (r = -0.257, *p* = 0.01), and a significant positive correlation with activities of daily living of the studied elders (r = 0.278, *p* = 0.005). There was no statistically significant correlation between self-esteem of the studied elders, and the other variables (cognitive function, self-care capabilities, and activities of daily living).

Table 8. Correlation between cognitive function, self-esteem, self-care capabilities, and activities of daily living of the studied elders

Variables	Cognitive function	Self-esteem	Self-care capabilities	Activities of daily living
Cognitive function r (*p*)	1	0.139 (0.169)	-0.257* (0.01)	0.278** (0.005)
Self-esteem r (*p*)	0.139 (0.169)	1	0.089 (0.381)	-0.114 (0.26)
Self-care capabilities r (*p*)	-0.257* (0.01)	0.089 (0.381)	1	-0.074 (0.466)
Activities of daily living r (*p*)	0.278** (0.005)	-0.114 (0.26)	-0.074 (0.466)	1

* Significant at p < 0.05
** Significant at p < 0.01

DISCUSSION

With advancing age, there is an increased susceptibility to various functional limitations, cognitive declines, and self-care disabilities, which often result in compromised physical and psychological well-being.[4] Cognitive function, self-esteem, and physical activity of older adults can influence the overall quality of life, and may have a large impact on the elders' ability to remain functioning.[3,13]

To provide the best quality care, nurses have to be aware of the specific factors that have the greatest impact on the elder's life, and the relationships between such factors. Therefore, this research aimed to identify the relationships between cognitive function, self-esteem, self-care capabilities, and activities of daily living among institutionalized elders. Awareness of these relationships may provide a solid framework to ensure a cost-effective nursing care for older population.

The current research revealed that there were significant relationships between both self-care capabilities and activities of daily living, and cognitive function, whereas there was no significant relationship between self-esteem, and cognitive function, self-care capabilities, and activities of daily living of the studied institutionalized elders. This means that self-care capabilities and activities of daily living may be affected by elders' cognitive status and not by their self-esteem.

As for the relationship between cognitive function, and self-care capabilities and activities of daily living, the findings of the present research are in agreement with the results of Sánchez-Rodríguez et al. (2009)[31] and Suchy et al. (2010)[32] who demonstrated that self-care activities of older adults were associated with their cognitive function. They suggested that the ability of elders to engage in self-care activities is known to rely on their cognitive abilities and not only

on their physical abilities. In addition, there is less expectation of achieving optimal levels of cognitive functioning and an outstanding physical functioning in older adults.[13] This can be confirmed by the results of the present study which indicated that about two thirds of the studied elders had low self-care capabilities and all of them were either partially dependent or fully dependent in performing activities of daily living, and at the same time, more than half of them complained of mild to severe cognitive impairment. This association between self-care capabilities, activities of daily living, and cognitive function may be attributed to a common underlying cause which is the age-related physiological changes.

However, El-Husseini (2008)[28] who reported a positive correlation between self-care capabilities and cognitive status of older adults attributed this finding to the fact that cognitive functioning is considered as a factor which helps elders to adapt the self, the task, and the environment to facilitate functioning. Even the elder who is physically capable to perform self-care activities; he may not be alert enough to know when and how to perform the activities safely. In this regard, it was postulated that the presence of mild cognitive impairment may nevertheless interfere with the elder's ability to manage self-care activities.[8] It is thought that decrements in cognitive functions often jeopardize the elder's ability to manage safely and effectively the self-care activities.[3] This goes with the findings of Winchester et al. (2009)[33] who supported the premise that self-care limitations and cognitive impairment predict activities of daily living.

Regarding the relationship between self-esteem, and cognitive function, self-care capabilities and activities of daily living, the findings of numerous studies are contradicting with the findings of the current study. These previous studies

found a significant correlation between self-care capabilities, activities of daily living and self-esteem.[34-37] Some researchers rationalized their results by the notion that the physical function and self-care activities can contribute to maintaining high self-esteem among elder people.[36,37] However, elders may have high self-esteem due to different factors rather than the presence of optimal physical functioning and effective performance of self-care activities. Older adults may have high self-esteem when they have accomplished some goals, like having a happy marriage or having done well at a challenging job.[38] This was confirmed by this study's results which revealed that although there was no significant relationship between self-esteem and cognitive function, self-care capabilities, and activities of daily living of the studied elders, more than two thirds of the elders had high self-esteem. In contrast, Železnik (2007) found that the Slovenian elders' self-esteem was not so high. This finding was rationalized by the helplessness which is felt by the studied elders. Those elderly people who are not able to manage their life by themselves may feel abandoned and helpless and lack control over their life which may decrease their self-esteem.[3]

However, an explanation of the high self-esteem of the elders of the current study may be that many elders may perceive the decline in their physical health and the physiological changes as normal and expected with aging. Accordingly, they are more accepting of their condition and of their decreased self-care capabilities and are trying to cope with these difficulties. This explanation is supported by the results of the current research as the majority of the studied elders were satisfied with their health status and about two thirds of them rated their health as good. On the other hand, those who rated their health as good obtained the highest mean score of activities of daily living. This point of result

coincided with the findings obtained by Abou El-Seoud (2008)[39] who reported that elders who perceived their health as good perceived their self in a positive manner and had a positive self concept.

Another possible interpretation for the high level of self-esteem among the studied elders is that getting support from relatives and friends, making an effort to connect to others and limiting the time of being alone can enhance self-esteem.[24] In this respect, the majority of elders who participated in the present research visited and were being visited by family members, and about two thirds of them had social relationships with others in the elderly home. In the same direction, Orth et al. (2010)[40] studied self-esteem development from young adulthood to old age. They concluded that self-esteem of the studied participants increased from young adulthood into old age, peaked at about 80 years and declined only slightly from age 80 years to age 100 years. Researchers reported that self-esteem was most closely associated with extraversion. It appears that self-esteem of older adults is reinforced when significant others provide them with reassurance, care, support and love. This also means that taking control of social life and getting active in social relationships can improve self-esteem which in turn may motivate and energize the elderly to perform the activities of daily living. This is especially true knowing that the elders of the current study who had social relationships with others in the elderly home had the highest mean score of activities of daily living.

Moreover, high self-esteem of the studied elders may be attributed to the decision for relocation as the majority of the studied elders made their own decision for relocation and were satisfied with this relocation. This decision may foster feelings of power and control which can improve self-esteem, enhance motivation, and empower the elder to take control of

his/her life, manage self-care activities, and perform activities of daily living independently. This explanation can be confirmed by the results of this research which revealed that elders who made their own decision for relocation voluntarily had the highest mean score of activities of daily living. On the other side, it was argued that being involuntary relocated may lead to feelings of lack of control over one's life and this may decrease self-esteem and result in poorer adjustment and inability to function.[24]

Furthermore, it has been stated that the aging experience and the health decline, and sensory impairments that frequently accompany it can challenge self-esteem. Hearing loss and impaired vision which are associated with aging would contribute to feelings of loneliness, helplessness, and lack of control. These feelings can be deterrent to self-esteem.[34] This point of view is supported by the results of the present study as the majority of the subjects had no hearing problems, and more than half had no visual problems which may protect their self-esteem and encourage the elder to perform the activities of daily living successfully. This may be true because the studied elders who had no visual problems had the highest mean score of activities of daily living.

As regards the self-care capabilities and activities of daily living, the current research pointed out that about two thirds of the studied elders had low self-care capabilities, all of them were partially dependent and fully dependent in performing activities of daily living, and more than half of them move with assistance. These findings may be due to the fact that the elevated life expectancy contributes to an escalating number of people living with low self-care capabilities along with common impairments associated with aging such as cognitive, sensory, and mobility declines. This leads

to decreased ability to engage in self-care activities and activities of daily living. In this regard, the present study showed that the activities of daily living of the studied elders had the least mean score. These results are supported by another research which demonstrated that most of older people report self-care difficulties. These disabilities and limitations occur when the elder person has problems with physical function which leads to a restriction in the elder's ability to perform activities of daily living independently.[8]

The present study also showed that there was a significant relationship between leisure time activities and the mean score of self-care capabilities, where the studied elders who practiced hobbies had the highest mean score of self-care capabilities. An explanation of these findings could be that being as active as possible and practicing new hobbies and renewing interests can improve psychological well-being and enhance self-esteem, so motivate the elder to engage in self-care activities. These results are in harmony with those of El-Husseini (2008)[28] who found leisure time activities to be positively correlated with self-care capabilities. She suggested that participation in productive activities promotes cognition, improve physical health status, and increase sense of achievement; all of which improve self-care capabilities.

CONCLUSION AND RECOMMENDATIONS

Based on the results of the current study, it could be concluded that there is significant relationships between cognitive function and both self-care capabilities and activities of daily living, whereas there was no significant relationship between self-esteem of the studied elders, and cognitive function, self-care capabilities, and activities of daily living.

Accordingly, assessment of functional and cognitive ability of the elders on admission to the elderly homes is

recommended to provide basic data as well as to help in identifying those at risk to develop functional and cognitive problems and to intervene as early as possible.

In addition, specific emphasis should be placed on the ongoing assessment of cognitive function to predict the self-care of older adults, and to institute the appropriate intervention.

Educational programs for elders and their care givers should focus on developing the necessary awareness of age-related changes which may affect their cognitive function and self-care capabilities, and measures to enhance self-care capabilities, self esteem and improve cognitive functions in old age.

Older adults should be engaged in useful activities inside and outside the elderly homes to promote cognitive function, improve self-care capabilities and decrease dependency.

Further researches are needed to examine and evaluate the effectiveness of rehabilitation programs to improve elders' cognitive function and self-care capabilities.

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