Relationship Between Chronic Pain and Dependency Level in Activities of Daily Living Among Long-Lived Institutionalized Elderly: A Suggested Educational Intervention

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Abstract: Pain negatively impact physical, psychological, social and spiritual health among long-lived institutionalized elderly. Thus, pain assessment is an imperative part of nursing role that helps long-lived institutionalized elderly to perform activity of daily livings (ADLs) independently. The study aimed to assess the relationship between chronic pain and dependency level in activities of daily living among long-lived institutionalized elderly and to suggest an educational intervention for improving their activities of daily livings. A descriptive exploratory cross-sectional research design was utilized in this study. A convenient sample of 60 male and female long-lived institutionalized elderly was selected from two geriatric homes. Data collection: Four tools were used: 1) Personal data sheet, 2) Brief Pain Inventory to assess elderly pain, 3) Katz Index of activity of daily livings to assess elderly dependency level related to functional activity of daily Livings. 4) Lawton-Brody scale to assess elderly instrumental activity of daily livings. Results revealed that the mean age of elderly was 80 years. A significant relationship was found between pain categories and dependency level in activities of daily living at 0.031 as measured by Katz index scale. Also, a significant relationship was detected between categories of pain and functional level as measured by Lawton-Brody scale at 0.001. There were significant relationships between ADLs and age, sex, chronic illnesses and marital status of elderly.Conclusion: the study concluded that long-lived institutionalized elderly suffered from moderate to severe chronic pain that negatively interfered with their dependency level related to activities of daily living. Recommendations: incorporating pain and ADLs assessment into routine nursing care, dissemination of the educational intervention in different nursing homes and replication of the study on large sample size in different settings in order to generalize research findings.

Key words: Chronic Pain · Activities of Daily Livings · Dependency Level · Long-Lived Institutionalized Elderly

INTRODUCTION

Elderly people comprise the fastest growing segment of world's population [1]. According to Central Agency for Public Mobilization and Statistics (CAPMAS) in Egypt, it was reported that, the percent of older people "defined as 60 years of age and more" was 6.27% of total Egyptian population in 2006 and elevated to be 7.2% in 2013. This percentage is projected to be 8.1% in 2016 and 9.2% in 2021 and it is expected to reach 20.8% in 2050 [2, 3]. Notably, chronic pain in older adults is a common clinical condition encountered by nurses. Chronic pain is defined as 'pain that persists beyond the expected time of healing for duration of 3 months or more [4]. Elderly over 70 years have a high prevalence of chronic pain arising from osteoarthritis; osteoporosis (a significant cause of chronic pain); rheumatoid arthritis; and back pain. Chronic pain has a serious impact on long-lived elderly quality of life. Chronic pain decreases function due fear of movement, increases the incidence of depression, anxiety, sleep disturbance, loss of appetite and weight, cognitive impairment and limitations in the performance of daily living activities and may worsen other chronic diseases such as diabetes, hypertension and heart disease, that

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require continuous management for maximal control. [3, 5-7]. Researchers have found that long-lived institutionalized elderly with chronic pain require more assistance with activity of daily livings (ADLS) from nurses than those who are pain free, as pain interferes with the ability of long-lived elderly to perform ADLS [8 -10].

Chronic pain is common in long-lived older people as shown in a Louis Harris telephone survey which found that one in five older Americans (18%) are taking analgesic medications regularly (several times a week or more) and 63% of them had taken pain medications for more than 6 months [11, 12]. Another study has determined the prevalence of pain in a sample of older adults in U.S.A and the overall prevalence was 52.9% [13]. The prevalence of pain in people aged 60 years and above in Singapore was observed to be 19.5% [14, 15]. Previous studies have also suggested that 25 to 50% of older people in the community especially those living in nursing homes, suffer from chronic pain problems. It has been also estimated that 45to 80% of them have substantial pain that is undertreated. Studies of nursing home populations have found that older people commonly have several sources of pain, as older patients commonly have multiple medical problems, which make assessment and management more difficult. These facts highlight the need to recognize pain as an important factor affecting long-lived elderly health, which lead to interruption of treatment goals and overall daily living activities of older people living in nursing homes [16-18].

The primary goal of nursing care of long-lived elderly either in the community or in nursing homes, is to maintain dependency in performing activities of daily living (feeding, dressing, moving in and out of bed, mobility, bathing or toileting, walking or transferring from one position to another and maintenance of bowel and bladder continence) [19]. Nurses are often the first to note when elderly had any decrease in their functional status; therefore, routine screening of pain and ADLs is very important and must be performed for all long-lived older people [20]. The role of community and gerontological health nurses also include enabling the elderly to carry out basic activities of daily living safely and independently, participate in social roles and receive personal assistance from caregivers as needed. Instrumental activities of daily living (IADLs) are another factor to consider when assessing independence. IADLs assess a person's ability to live independently thrive. IADLs include companionship and mental support, transportation and shopping, planning and preparing

meals, managing the household, managing medications, communicating with others and managing finances [21, 22].

The extent to which pain interferes with ADLs has recently been shown to increase with increasing age, irrespective of the site or underlying health condition, which leads to physical, mental and social changes that require more attention and adjustment. Although prevalence of chronic pain is higher among institutionalized long- lived elderly with greater degree of ADLs dependency level, pain is not properly assessed by nurses and is often unidentified or undermanaged, which negatively impacts elderly dependency level and their quality of life [12]. There are still few studies addressing chronic pain prevalence among long-lived institutionalized elderly, so community and gerontological health nursing role should involve assessment and management of pain among long-lived institutionalized elderly to promote their health as well as to apply the interventions needed to encourage independency in performing elderly ADLs [10]. Therefore, the aim of the current study was to assess the relationship between chronic pain and dependency level in activities of daily livings among long-lived institutionalized elderly and to suggest an educational intervention for improving their activities of daily livings.

Operational Definition:

- Long- lived institutionalized elderly: they are the elderly who are aged from 75 and more, living in nursing homes and are not immobilized or bed ridden.

Research Questions:

- What is the level of chronic pain among institutionalized long-lived elderly?
- Is there a relationship between chronic pain and dependency level in daily living activities among institutionalized long-lived elderly?
- What is the intervention needed for preventing pain and improving activities of daily life among long-lived elderly?

MATERIALS AND METHODS

Research Design:

- A descriptive cross-sectional exploratory research design was utilized in the study, as it suits the aim of the study.

Setting:

- This study was carried out in two geriatric homes in Giza governorate. All geriatric homes belong to Ministry of Social Solidarity- Social Affairs Sector. In Giza governorate, the number of governmental geriatric homes (free or with minimum payment) was ten homes, while the number of private nursing homes was 56. Two geriatric homes were selected randomly, one of them selected from governmental nursing homes - named Om Hanea geriatric home- and the other was selected from private nursing homes- named Dar El- Hana geriatric home. Number of elderly in every geriatric home ranged between 25 to 50 elderly. These geriatric homes provide formal care services for the elderly such as medical, nutritional, social and cultural services.

Sample:

- A convenience sample of 60 long- lived (aged 75 and more) male and female elderly from both geriatric homes (Om Hanea and Dar El-Hana geriatric homes), were included in the study. All of them were able to communicate and were fully conscious. Elderly, who were bedridden / immobilized or had any mental or physical disability, were excluded from the study.

Tools of Data Collection: Four tools were utilized for data collection of the current study:

First Tool: Socio -Demographic Data Sheet:
- It was designed by the researchers; it consisted of 12 questions that assess the personal and demographic data of the study sample such as age, gender, previous place of residence, income, education, marital status.

Second Tool: Brief pain inventory (BPI), this tool was developed by Charles and Ryan [23]. The BPI is a powerful tool that has been adopted worldwide for clinical pain assessment. This tool is composed of 9 questions and it is utilized to assess elderly clients regarding pain intensity and the amount of interference of the pain with the function of everyday life. The four pain severity items and seven pain interference items are rated on 0-10 scale. Items assessed include: site of pain, impact of pain on mood, work, general activity, walking, relationships, enjoyment of life and sleep.

Scoring System of BPI: Elderly pain was classified into three categories: scores from 7-10 is considered as severe pain, scores from 4-6 considered as moderate pain, while scores from 1-3 is considered as mild pain.

Third Tool: Katz Index of Independence in Activities of Daily Living:

- This tool consists of 6 questions that assess functional status of the elderly clients and their ability to perform activities of daily living independently [24].

Scoring System: Classification of elderly independence level was as following: scores from (0-2) means being dependent, scores from (3-5) means being partially dependent, while score of (6) means being independent.

Fourth Tool: Lawton-Brody Instrumental Activities of Daily Living scale (IADL).

- This scale was developed by Lawton and Brody in 1969 to assess independent living skills necessary for functioning of elderly, as it measures eight domains of function (shopping, food preparation, managing finances, ability to use telephone, housekeeping, laundry, transportation and taking medication). It is useful for identifying how a person is functioning at the present time, in addition to identifying improvement or deterioration over time [25].

Scoring System: Classification of elderly' functions of living skills were as following: scores from (0-3) low function, scores from (4-6) moderate function, while scores from (7-8) indicate high function.

Validity and Reliability of Study Tools:

- For the first tool, content validity index was calculated to be 90%. For second tool, brief pain inventory (BPI), Croncbach alpha reliability ranges from 0.77 to 0.9. For third tool (Katz Index of Independence in Activities of Daily Living) and the fourth tool (Lawton-Brody Instrumental Activities of Daily Living scale) (IADL), Inter-rater reliability was established at .85.

Procedure:

- Data was collected through a period of 4 months from August 2016 till November 2016. The researchers visited each nursing home two days per week from 10 am till 1 pm. After elderly had been fully informed and consented for participation in the research, the researchers started to collect data through structured interview through which each tool took about 30 minutes. An Arabic educational booklet that

include age- related physiological changes, causes and risk factors of chronic pain among elderly, preventive measures of chronic pain such as: lifestyle modifications, proper body mechanics, proper posture, good nutrition and proper sleeping. After finishing data collection, copies of the educational booklet were left to the directors of geriatric homes.

Ethical and Legal Consideration: An official permission was taken from Ministry of Social Solidarity- Social Affairs Sector, to conduct the study. Then, other permissions were taken from the directors of each nursing home, through which the researchers explained the nature and the purpose of the study. Inside each nursing home, all elderly were informed about the aim and importance of the study. Elderly were also told that their participation in the study is completely voluntary and they have the right to withdraw from the study at any time; anonymity and confidentiality were also assured through coding the data. Data collected were used for the purpose of the current research only.

Pilot Study: A pilot study was conducted on 6 elderly clients (10%) to ensure feasibility and clarity of the study tools. Based on the results of the pilot study, required changes were done to the tools, so, the pilot sample was excluded from the study sample.

Statistical Analysis: Upon completion of data collection, data were scored, tabulated and analyzed by computer using the (SPSS) program version (20). Descriptive statistics such as frequency, percentage, mean and standard deviation were utilized to analyze data pertinent to the study. Relations between different variables were tested using Chi-square and paired T-test. Probability value (p-value) was considered statistically significant when $P \leq 0.005$ and it was considered highly significant when P value is less than 0.001.

RESULTS

The study results are presented in the following parts:

Part I: Description of personal characteristics and medical data among long-lived elderly.

Part II: Assessment of pain, distribution of total pain score, activities of daily living as measured by Katz index and by Lawton Brody.

Table 1: Frequency distribution of long-lived elderly according to their personal characteristics. (n=60)

Personal characteristics	N	%
Age:		
75>80	49	81.7
80>85	6	10
85>90	5	8.3
Mean:	80±0.87	
Gender:		
Male	31	51.7
female	29	48.3
Place of residence:		
Urban	45	75
Rural	15	25
Marital status:		
Single	5	8.3
Married	10	16.7
Divorced	8	13.3
Widowed	37	61.7
Educational level:		
-Can't read or write	12	20
-Can read & write	22	36.7
-Primary	3	5
-Preparatory	13	21.7
-Secondary	3	5
-University	7	11.7
Length of stay at nursing home:		
- Less than 2 years	30	50
- 2-3 years	17	28.3
- More than 3 years	13	21.7

Part III: The relationship between pain scores and activity of daily livings.

Part IV: The relation between study variables.

Table (1) shows that elderly age ranged between 75 to 90 years with mean age 80±0.87, 51.7% of them were males and 75% of them live in urban places. The same table also indicates that 16.7% of elderly clients were married, while 36.7% of them can read and write. Also, 50% of the elderly stayed at nursing home less than two years.

Figure (1) denotes that 22, 19 and 18% of the long-lived elderly suffer from arthritis, diabetes and hypertension respectively.

Table (2) represents that the majority (90%) of elderly clients had got pain for more than 6 months, while 36.7% of them were using relaxation as a technique to control pain and the majority of elderly clients (95%) were lacking knowledge about pain control. The same table also indicates that 81.6% of elderly complain of pain in lower limbs.
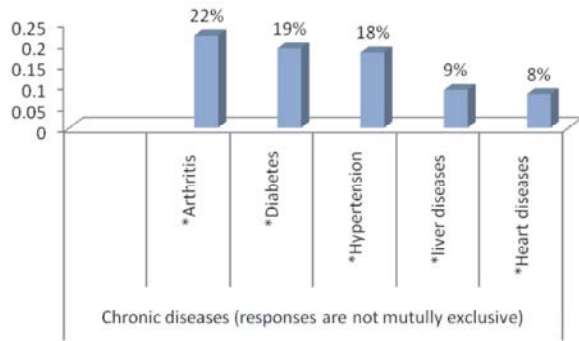
Fig. 1: Percentage distribution of elderly chronic diseases. (n=60)

Table 2: Frequency distribution of pain assessment data among long-lived elderly at the selected nursing homes. (n=60)

Knowledge related to pain	N	%
Duration of pain	6	10.0
Less than 6 months More than 6 months	54	90.0
Methods of pain control:		
Relaxation	22	36.7
Hot compresses	16	26.7
Warm fluids	14	23.3
Walking around	8	13.3
Lacking knowledge about pain control:		
Yes	57	95.0
No	3	5.0
*Site of pain:		
Head & neck	14	23.3
Upper limbs	17	28.3
Lower limbs	49	81.6
Back	19	31.6
Abdomen	10	16.6

*Responses are not mutually exclusive

Table 3: Percentage distribution of medications taken to control pain among long-lived elderly at selected nursing homes (n = 60)

*Type of medications taken	N	%
NSAIDs	44	73.3
Analgesics	18	30
No medication	3	5

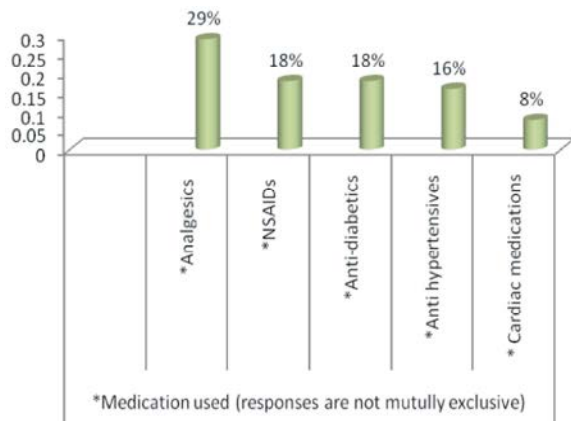*Responses are not mutually exclusive.

Fig. 2: Percentage distribution of medications used among elderly at selected nursing homes (n=60)

Table 4: Percentage distribution of the total pain score among long-lived elderly at selected nursing homes. (n=60)

Total pain	N	%
Mild pain	2	3.3
Moderate pain	46	76.7
Severe pain	12	20.0

Table 5: Percentage distribution of levels of dependency as measured by Katz index of activities of daily livings (ADLs) among long-lived elderly at selected nursing homes. (n=60)

Variable	N	%
Independent	24	40
Partially dependent	24	40
Dependent	12	20

Table 6: Percentage distribution of levels of functioning as measured by Lawton-Brody instrumental activities of daily living (IADLs) among long-lived elderly at selected nursing homes. (n=60)

Variable	N	%
Low function	33	55
Moderate function	24	40
High function	3	5

Table 7: Relation between total pain score and dependency level in activities of daily living (ADLs) as measured by Katz index and by Lawton-Brody among long-lived elderly at selected nursing homes. (n=60)

Activities of daily living	Total pain score	
	R- value	p-value
1-Katz index	-0.338	*0.002
2- Lawton-Brody	-0.469	*0.000

* Significant at $P \leq 0.05$

Figure (2) indicates that 29, 18, 18, 16 and 8% of the elderly used analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), anti-diabetics, antihypertensive and cardiac medications respectively.

Table (3) indicates that 73.3% of the elderly were using Non-steroidal anti-inflammatory drugs (NSAIDs) to relieve their pain, while 5% of them didn't use any medication.

Table (4) points out that, 76.7% of the elderly had got moderate pain, 20% of them had severe pain, while only 3.3% had got mild pain.

Table (5) reveals that 40% of elderly clients were completely independent in performing activities of daily life, 40% of them were partially dependent while 20% of them were completely dependent.

Table (6) shows that 55% of the elderly had low function level in activities of daily life, 40% of them had moderate function level, while 5% of them had high function level.

Table 8: Relationship between pain categories and dependency level as measured by Katz Index scale among long lived elderly at selected nursing homes. n= (60):

Categories of pain n (%)	Dependency level		
	Dependent	Partially dependent	Independent
Mild pain n=2 (3.3%)	2 (3.3%)	4 (6.7%)	3 (5%)
Moderate pain n= 46 (76.6%)	4 (6.7%)	18(30%)	16 (26.7%)
Severe pain n=12 (20%)	6 (10%)	2 (3.3%)	5 (8.3%)
Total = 60 (100%)	12(20%)	24(40%)	24(40%)
χ^2(p)	1.271 (*0.031)		

* Significant at p≤0.05

Table 9: Relationship between pain categories and functional level as measured by Lawton-Brody scale among long lived elderly at selected nursing homes. n= (60):

Pain category/level n (%)	Functional level as measured by Lawton-Brody scale		
	Low functional level	Moderate functional level	High functional level
Mild pain (n) =2 (3.3%)	11 (18.4%)	10 (16.6%)	2 (3.3%)
Moderate pain (n) = 46 (76.6%)	12(20%)	11 (18.4%)	1 (1.7 %)
Severe pain (n) =12 (20%)	10 (16.6%)	3 (5%)	Zero (zero %)
Total = 60 (100%)	33 (55%)	24(40%)	3(5%)
χ^2(p)	1.532 (*0.001)		

* Significant at p≤0.05

Table 10: Relationship between total pain score and demographic data among long lived elderly at selected nursing homes. (n=60)

Demographic data	Mean and standard deviation	Test	p-value
Age	80±0.87	r =0.651	*0.01
Gender:			
Male	63.8±13.2	T-test =0.226	*0.02
Female	60.9±14.5		
Place of residence:			
Urban	62.3±13.1	T-test=0.927	0.358
Rural	58.5±15.7		
Marital status:			
Single	60.2±8.5	F=1.772	0.163
Married	54.2±9.2		
Divorced	57.5±13.7		
Widowed	64.3±14.7		
Educational level:			
Can't read or write	59.5±11.3	F=2.784	*0.026
Can read & write	57±14.7		
Primary	64.7±9.1		
Preparatory	72.5±12.3		
Secondary	55±13.9		
University	58.8±9.6		

* Significant at P≤0.05

Table (7) denotes that there is a highly statistically significant negative correlation between total pain score and level of dependency in activities of daily living as measured by Katz index as well as by Lawton-Brody scale, which means that when pain severity increased, independency level in ADLs will decrease.

Table (8) points out that there is a significant relationship between pain categories and activities of daily living dependency level among elderly as measured by Katz Index scale at 0.031.

Table (9) shows that a significant relationship was found between categories of pain and functional level of elderly as measured by Lawton-Brody scale at 0.001.

Table (10) reveals that there is a significant relation between total pain score of elderly clients and their age, gender and educational level, which means that pain severity increases with increasing age and pain differs between male and female elderly clients. While there was no significant relation between pain and place of residence and marital status of elderly.

Table 11: Relationship between activities of daily living (ADLs) as measured by Katz index and demographic data among long-lived elderly at selected nursing homes. (n=60)

Demographic data	Mean and standard deviation	Type of test	p-value
Age:	4.7±1.8	r = - 0.469	*0.000
Gender:			
Male	4.1±1.9	T-test =0.355	*0.021
Female	4.2±2.2		
Place of residence:			
Urban	4±1.9	T-test=0.803	0.425
Rural	3.9±2.3		
Marital status:			
Single	3.8±2.3	F=1.271	*0.031
Married	4.7±2.1		
Divorced	4.4±0.9		
Widowed	4.1±2.2		
Educational level:			
Can't read or write	4.3±1.9	F=0.814	0.545
Can read & write	3.9±2.4		
Primary	5.7±0.6		
Preparatory	4.8±1.2		
Secondary	4.3±2.1		
University	3.6±2.6		

* Significant at $P \leq 0.05$

Table 12: Relationship between activities of daily living as measured by Lawton Brody and demographic data among long-lived elderly at selected nursing homes. (n=60)

Variable	Mean and standard deviation	Type of test	p-value
Age:	4.6±1.2	r = -0.384	*0.000
Gender:			
Male	2.7±1.7	T- test=2.466	*0.017
Female	3.9±2.2		
Place of residence:			
Urban	3.1±1.9	T- test =0.981	0.331
Rural	3.7±2.2		
Marital status:			
Single	3±1.9	F=2.517	*0.01
Married	4.6±1.6		
Divorced	3.1±2.4		
Widowed	3±2		
Educational level:			
Can't read or write	3.8±2.3	F=1.977	0.097
Can read & write	3.5±2.1		
Primary	4±2.7		
Preparatory	1.8±0.9		
Secondary	4.6±2.3		
University	3.4±2.1		

* Significant at $P \leq 0.05$

Table (11) points out that, there is a statistically significant relationship between ADLs measured by Katz index and age, gender and marital status of elderly clients, while there was no statistical significant difference between ADLs and place of residence and educational level of elderly at selected nursing homes.

Table (12) signifies that, , there is a statistically significant relationship between ADLs measured by Lawton-Brody and age, gender and marital status of elderly clients, while there was no statistical significant difference between ADLs and place of residence and educational level of elderly at selected nursing homes.

DISCUSSION

Pain is a common problem among long-lived elderly that has great influence on the physical function, quality of life and activity of daily livings at nursing homes. Pain management in nursing homes can be improved, particularly through the careful use of appropriate pharmacologic and non-pharmacologic pain-management strategies [16, 26]. Independence in the ADLs is a central aspect of functioning. Older adults with chronic pain frequently experience impairments and limitations in functioning in various life areas [27]. There is a lack of evidence-based guidelines for the treatment of chronic pain among the long-lived elderly as studies tend to focus more on younger adults. Community as well as geriatric health nurses have great role in decreasing pain among elderly people and improving their activity of daily livings (ADLs), by screening older adults for ADLs problems, assess their functioning and provide them with intervention needed to relieve pain and encourage independency in performing ADLs [28].

The results of the current study showed that elderly clients' age ranged between 75 to 90 years with mean age 80±0.87, around half of them (51.7%) were males and three quarters of them (75%) live in urban places. Also, it was found that 16.7% of elderly clients were married, 36.7% of them can read and write and half of them (50%) stayed at nursing home less than two years. Related researches had found different results, as a study done by Cadogan *et al*. [26], to investigate the correlation between pain severity level and self-reported number of limitations in daily functions among 123 elderly who were recruited from two nursing homes in California, USA. It was reported that the mean age of elderly was 74 years, eighty-nine percent of participants were male, 70% were white Americans and the median length of their stay in the nursing homes was 1.4 years. Another study done by Lemos *et al.* [29] to check the impact of chronic pain on the functionality and the quality of life of the elderly among 20 elderly patients attending the Pain Clinic of Hospital de Base de São José do Rio Preto. The sample showed a predominance of males (70%), the mean age of participants was 66.35±6.25 and 20% of subjects have completed higher education. Another study by Miranda and Banhato [30], who conducted their research on 89 elderly residing in the city of Juiz de Fora, Brazil and found that the mean age of participants was 70.9 years, 9.0% of the participants completed the high school and regarding marital status, 59.6% of elderly were married.

The present study also specified that more than half of elderly clients (36.7%) were using relaxation as a technique to control pain, nearly three quarters (73.3%) of the elderly were using Non-steroidal anti-inflammatory drugs (NSAIDs) to relieve their pain and more than two thirds (81.6%)of them complain of pain in lower limbs. A study conducted by Higgins [31] to discover whether older people can live with chronic pain and how and in what way chronic pain impacts on their lives in nursing homes. It was mentioned that pain management in nursing homes are limited in scope and usually not effective, analgesic drugs seem to be used carefully and non-pharmacological approaches are often absent. Similarly, Lemos *et al*. [29], had indicated that 5% of participants believed that they will always depend on drugs to relieve pain and the most frequent attitude of 55% of them, is that elderly people must use relaxation methods and reduce their activities, in order to relieve pain. Regarding causes of pain, it was found that 40% of pain was related to osteoarticular diseases, 30% diabetic neuropathy, 30% polymyalgia rheumatica and 40% due to musculoskeletal disorder.

In the same regard, another study by McCarthy *et al*. [32], which was done to determine the prevalence of chronic pain in elderly people and its relationship with obesity and associated co-morbidities and risk factor. It was indicated that (59.1%) of subjects had moderate or severe pain in at least one location in the body and (28.7%) had pain most or all of the time over the previous 3 months. The most common pain location was the legs and feet (44.8%), followed by the back (39.8%) and the neck and shoulders (31.2%). Takai *et al*. [28] reported that pain commonly occurs in the legs and lower back and can lead to a decrease in activities of daily living. It was mentioned also that a correlation is present between chronic pain and depression, female gender, number of children and number of chronic diseases.

Regarding pain severity among elderly as measured by Brief Pain Inventory, the current study revealed that more than three quarters (76.7%) of long-lived elderly had got moderate pain, 20% of them had severe pain and only 3.3% had got mild pain. This result agrees with a study done by Tarakci *et al*. [33], which was implemented to investigate pain, depression and independence in activities of daily living of 186 geriatric residents of nursing homes in Istanbul , Turkey, as well as to evaluate the relationship between these variables. It was found that 56% of participants complained of severe pain, while 44% of them had no pain. Another study by

Cadogan *et al.* [26], which revealed that 18% of elderly reported their pain as mild, 43% of them reported moderate pain, 25% reported severe pain and 14% reported their pain as very severe. In addition to that, it was mentioned that at all levels of pain severity, elderly individuals perceive that pain limits their function in one or more of their basic day-to-day activities in nursing home. These results are important for community and geriatric health nurses to understand the contributing factors that lead to limitations in elderly functional activities.

As regard level of dependency in activities of daily livings measured by Katz index, it was detected that more than one third (40%) of elderly clients were completely independent in performing activities of daily life, 40% of them were partially dependent while 20% of them were completely dependent. In addition to that, there was a statistically significant negative correlation between total pain score and level of dependency in activities of daily living (ADLs) and with instrumental activities of daily living (IADLs) that are necessary for fundamental functioning of long-lived elderly to live independently in the community. This means that when pain severity increases, independency level in ADLs will decrease. In the same line, a study by Stamm *et al.* [27], who conducted a population-based cross-sectional survey in Austria on 3097 subjects aged $\geq$ 65 years, to explore the limitations in the ADLs in older adults with and without osteoarthritis, osteoporosis and chronic pain. It was specified that elderly clients who complain of chronic pain had great problems in performing their ADLs, IADLs and in their independency level. This finding may show that there is additional need for interventions that focus on improving independency level of older people which will improve their basic activities of daily life.

The present study results showed that pain severity increase with increasing age and differ between male and female clients. Similarly, Leong and Nuo [34] and Brochet *et al.* [35], reported that nursing home residents with chronic pain were older than those without pain and female elderly complain of pain more than male clients. Other studies have failed to find a significant association between pain and the nursing residents' age or gender McCarthy *et al.* [32]; Torvik *et al.* [36]. The same results were denoted in a study by Tarakci *et al.* [33] which indicated that there were significant differences between pain severity and gender, marital status, the number of children and number of chronic diseases among elderly, while there were no significant differences in the age, educational level and length of stay of elderly in nursing

home. A possible explanation for this discrepancy is that nursing home residents usually consider pain to be a part of the aging process and thus may not constantly report pain to their caregivers.

The findings of the current study represented that statistically significant relationship between ADLs and age, gender and marital status of elderly clients, while there was no significant difference between ADLs and place of residence and educational level of elderly clients. This finding agrees with a study done by Pei *et al.* [19] with the aim to determine the factors associated with activities of daily living (ADL) among 158 disabled elders post-stroke, who were chosen from community health service stations in Tianjin city, China .It was found that there was correlation between age and socioeconomic level and ADLs of elderly patients, while there were no significant relation with gender, living alone or not or having chronic diseases. In addition, Tarakci *et al.* [33], had found that age, gender and chronic diseases affect pain severity and lead to limitation in ADLs and increased dependency level among geriatric residents of nursing homes.

Similar speaking, Pereira *et al.* [37], Dorner *et al.* [38] and Santos *et al.* [39] mentioned that pain interferes with people's perception of their own lives and, because of this; it requires appropriate interventions and preventive strategies that help improving the health of long-lived elderly clients in the community. These interventions aim at improving elderly well-being, reducing their pain complaints to improve functional capacity, quality of life and independency level in activities of daily living. The same point of view was argued by Dellaroza *et al.* [40] who performed a study with the objective of identifying the prevalence and characteristics of chronic pain and the association with functional capacity, among sample of community-dwelling elderly residents in the city of São Paulo, Brazil, using home interviews. Results indicated that 25.4% of the participants complained of pain most frequent in the lower back and 21.9% of them in lower limbs. Pain classified as moderate in 45.8% and intense in 46% of the elderly. Chronic pain was associated with increased dependence and decreased mobility among study sample (p <0.001). In view of these results, it is suggested that in order to increase the level of independence in the geriatric population, all factors affecting pain should be considered. Besides, assessing pain associated limitations in basic daily activities and implement nursing intervention that will improve their activity of daily livings.

Finally, having pain under control is a right of all elderly persons; thus, controlling pain or decreasing its intensity should be strategies that will improve the functional ability and quality of life of long-lived elderly people with chronic pain. So, it is necessary that pain assessment to be included in the plan of active aging programs implemented by community and geriatric health nurses, who are caring for the elderly and to apply interventions that improve long-lived elderly health.

CONCLUSIONS

Based on current study findings, more than three quarters of elderly had got moderate pain, while around one fourth of them had severe pain. There was a statistically significant negative correlation between total pain score and activities of daily living (ADLs and IADLs that are necessary for fundamental functioning of elderly to live independently); this means that when pain severity increases, independency level in ADLs will be decreased. Furthermore, the findings showed that there was a statistically significant relationship between ADLs and age, gender, marital status of long-lived elderly while there was no significant difference between ADLs and place of residence and educational level of elderly clients. So, it is important to conduct educational intervention to manage pain in elderly and to improve their independency level in ADLs.

Recommendations: Based on the findings of the current study, the following recommendations are proposed:

- Incorporate comprehensive pain and ADLs assessment of long-lived elderly into routine nursing care inside nursing homes.
- Disseminate educational intervention that aims to manage pain and to promote independency level in activities of daily livings for long-lived elderly residents in all nursing homes.
- Ensure the presence of qualified geriatric health nurses inside nursing homes to apply best practices in the management of pain among elderly people.
- Plan and implement programs by community and gerontological health nurses, to manage pain and improve functional and instrumental independence of elderly people.
- Conduct further researches that include larger sample size of elderly in different community settings to investigate more factors that affect pain severity and dependency in ADLs among broader elderly population in order to generalize the results.

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