EFFECT OF CHRONIC PAIN ON ACTIVITIES OF DAILY LIVING AMONG ELDERLY AT THEIR HOMES

Eman Shokry Abd–Allah [1], **Heba Mohamed Ahmed** [2],
Reda Elsaid Elbadwy [3]

(1) Professor of Community Health Nursing and Gerontological Nursing in Faculty of Nursing at Zagazig University,
(2) Head nurse in cardiology care unit in Diarb Negm central hospital ,
(3) Lecturer of Community Health Nursing in Faculty of Nursing at Zagazig University.

Abstract:

Back ground: Chronic pain is a global public health concern because of its high prevalence, high economic costs, and negative impact on the quality of life of individuals and their families. **The aim** of this study was to evaluate effect of chronic pain on activities of daily living among elderly at their homes. **Design:** A descriptive design was utilized. **Setting:** The study was conducted at Kafr El-Genady Village, Diarb Negm District, Sharkia Governorate. **Sample:** A stratified random sampling technique of 352 elderly suffering from chronic pain. **Tools:** Ⅰ - An interview questionnaire sheet consisted of three parts (personal characteristics-pain assessment and assessment of the impact of pain on elderly life). ⅠⅠ - Assess effect of chronic pain on Daily Living Activities. **Results:**. Revealed that there were statistically significant relations between elderly' independence in DLAs and all the aspects of impact of pain (p<0.001). **Conclusion:** The elderly suffering from chronic pain in the study settings have a high prevalence of chronic diseases. The pain has high impact on their life and most of them are partially or totally dependent in the Activities of Daily Living (ADLs). **Recommendation**: More efforts from gerontology and community health nurses in carrying out their educational roles through individual and group sessions for elderly to improve their knowledge of the chronic pain.

Key words: Activities of daily living and Elderly, Chronic pain.

Introduction:

Pain is defined by (IASP) as an" unpleasant sensory and emotional experience associated with actual or potential tissue damage. Pain is considered a subjective phenomenon and reflects the patient's own perception of their sensory and emotional experience. Pain is not an inevitable part of aging but unfortunately is accepted as a normal part of aging among older adults for which they may be undertreated **(Sharma et al.,2014).**

Pain can be classified into acute and chronic pain. Acute pain lasts less than three to six months, or pain directly related to tissue damage and **Pain is regarded as chronic when it lasts or recurs** for more than three to six months, or beyond the point of tissue healing **(Ratini, 2016).**

Chronic pain is a frequent condition, affecting an estimated 20% of people worldwide and accounted for 15% to 20% of physician visits. it can alter a person's life, reduce the quality of life, and also has an impact on the patient's family**(Treede, 2015).** In Egypt, a study was done in Alexandria in elderly homes revealed that prevalence of pain among institutionalized elderly was 88.24% **(Mohammed, 2012).**

The prevalence of chronic pain among elderly people of the community ranged from 29.7% to 89.9%. Often located in the upper and lower limbs, the back, neck and joints, the face, abdomen,

knee, hip, chest and rectum, this pain has been reported with moderate/severe intensity. In the elderly population, a relationship has been found between the occurrence of chronic pain, its increased intensity, and a prolonged period of living with it and a worse self-perception of the health status **(Pereira, et al 2014).**

Moreover, chronic pain has been linked to sleep disturbances, depression, reduced social activity, and poor physical functioning. These problems can make an older adult more dependent on others for activities of daily living (ADLs) and may lead to social isolation and increase healthcare costs. What's more, pain is commonly perceived as a threat and is influencing the older adult's coping process **(Peterson, 2010).**

Chronic pain is considered as a major public health problem that cause a significant economic and social burden. It is not only affects the patient but it also affects his/her family and social circle . The experience of pain interferes with different aspects of the patient's life, negatively affecting their daily activities, physical and mental health, family and social relationships, and their interactions in the workplace. Chronic pain can have a negative impact on the health and quality of life of the elderly **(Fine & Perry, 2011).**

Higher pain intensity leads to greater limitations in activities of daily living and conversely, residents who are dependent in their activities of daily living are more likely to suffer from unaffordable pain. pain commonly occurs in the legs and lower back, and can lead to a decrease in activities of daily living. Pain has also been shown to affect recreational activities, social events, ambulation, and posture **(Tarakci et al., 2015)**.

Pain assessment in the older person is particularly complex because of other underlying health issues, polypharmacy and increased sensitivity to pain- relieving medications. A range of other factors such as the patient's beliefs and attitudes toward pain and analgesic medications, health professionals' lack of knowledge and lack of understanding about the complexity of chronic pain, and even organizational barriers, add to the problem and complicate the nurse's role (Yağci **et al., 2014).** Comprehensive assessment of pain in older adults includes careful evaluation of not only the etiology and related factors, but also the impact of pain on the individual's function and overall quality of life **(Reid, et al., 2011).**

Nurses play a pivotal role in pain management. Untreated and undertreated pain has debilitating effects and significantly interferes with the patient's physical, emotional and spiritual well being, thus can alter the patient's quality of life. In this regard, nurses' role includes patient and health care professionals' education, attending courses and research activities on pain management. Nurses who possess a strong foundation in pain management and who can provide individual care to the patients with the proper attitude can make an important effect in pain management. The pain-related discomfort of the patients can thus be decreased and their quality of life increased **(Manwere et al., 2014).**

Significance of the study:

Undertreated pain has many detrimental consequences that affect the individual in question and can burden their family, friends and even society. Consequences include depression, anxiety, malnutrition, reduced cognition, impaired sleep, functional disturbances, declines in socialization and recreational activities, increased healthcare costs and reduced performance of daily living activities. The problem is even more important among elderly. Hence, this study was an attempt to elucidate the consequences of chronic pain on the life of elderly people.

Aim of the study:

This study aim was to evaluate the effect of chronic pain on activities of daily living among elderly at their homes.

Study Question:

What are the effects of chronic pain on activities of daily living among elderly?

Subjects and Methods:

A descriptive design was used to conduct this study. The study was conducted at Kafr El-Genady Village, Diarb Negm District, Sharkia Governorate.

Study subjects:

A proportionate stratified sampling technique composed of 352 elderly were recruited for this study according to the following

- **Inclusion criteria:**
  1- Age 60 years and above;
  2- Suffering from chronic pain;
  3- Able to communicate.

- **Exclusion criteria:**
  1- Elderly with neurodegenerative diseases such as delirium, dementia, parkinson's disease, paralysis.

Tools of data collection:

Two tools were used for data collection

Ι - An interview questionnaire sheet was developed by the researcher. It consisted of three parts

Part one: This covered the elderly personal characteristics.

Part two: This was for pain assessment.

Part three: for assessment of the impact of pain on elderly life.

Ι Ι - Assess effect of chronic pain on Daily Living Activities was developed by **(Katz and Akpom, 1976)**.

Scoring: The scores attained in the six areas of independence are summed-up for a total score ranging from zero to a maximum total of 6 points. The scores are categorized into "independent: 6", and dependent: <6."

Content validity:

Once the data collection was prepared in its preliminary form, it was tested for face and content validity by a panel of three experts from nursing and medical staff. They reviewed the tool and ascertained its relevance, comprehensiveness, clarity and understandability. Moreover, the DLAs scale has documented high levels of validity and reliability **(Kresevic, 2012)**. All experts' recommended modifications were done.

Pilot study:

A pilot study would be carried out on 10% of the study subjects to test the clarity and applicability of the tool and feasibility and practicability of the study. It also helped the researcher to determine the time needed for interviewing the elderly people. No modifications were done in the form of rephrasing some items. The tools were finalized accordingly. Those who shared in the pilot study were included in the main study sample.

Field work:

Once permission was granted to proceed with the study, the researcher started to prepare a schedule for recruiting the sample and collecting the data. The researcher visited the village under study and met the eligible elderly persons at their homes. She started by introducing herself to them, explained the aim and nature of the study briefly and in simple terms and invited them to participate. Those who gave their oral informed consent to participate were then interviewed using the data collection form. Each elderly was interviewed individually and privately at home.The time needed to conduct the interview ranged from 30 to 45 minutes. The work was done daily from 3:00 pm to 8:00 pm. The process of data collection lasted for three months and ten days, starting from September 2016 to November 2016.

Administrative and ethical considerations:

The study protocol was approved by the postgraduate research ethics committee

of the Faculty of Nursing; Zagazig University. A verbal informed consent for participation was taken from each of the elderly subjects after full explanation of the aim and procedure of the study. They were informed that their participation in this study was voluntarily. The elderly subjects were given the opportunity to refuse participation. They were also notified that they could withdraw at any stage of the data collection without giving any reason. They were also assured that any information taken from them would be confidential and used for the research purpose only

Statisticalanalysis: Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians for qualitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the tool scales through their internal consistency. Qualitative categorical variables were compared using Chi-square test. Whenever the expected values in one or more of the cells in a 2×2 tables was less than 5, Fisher exact test was used instead. In larger than 2×2 cross-tables, no test could be applied whenever the expected value in 10% or more of the cells was less than 5. Spearman rank correlation was used for assessment of the inter-relationships among qualitative variables and ranked ones. In order to identify the independent predictors of the impact and independence scores, multiple linear regression analysis was used and analysis of variance for the full regression models done. Statistical significance was considered at p-value<0.05.

Results:

▪ **Table (1) shows that** The study involved 352 elderly whose age ranged between 61 and 93 years, median 71.0 years, with slightly more males (52.8%), married (56.3%) as shown in table 1. They were mostly illiterate (44.3%) or with basic education (32.1%). Slightly more than two-fifth of them had no previous job (41.5%).

▪ **Figure (1)** displays that more than three-fourth of the elderly were in the middle socioeconomic level (77.0%). Only 12.5% were in the high level.

▪ **Table (2) shows that** physicians were the major source of information as reported by 94.0% of the elderly. On the other hand, only 3 (0.9%) elderly mentioned nurses as a source of information.

▪ **Figure (2)** demonstrates that slightly more than a half of the elderly in the study sample were having high total impact of pain (57.4%).

▪ **Figure (3)** displays that the majority of the elderly in the study sample were totally dependent in their DLAs (81.0%), and 8.5% were partially dependent.

▪ **Table (3) illustrates that** elderly' Katz scores of independence in DLAs had statistically significant moderate negative correlations with all their pain impact scores. Moreover, the Katz scores had statistically significant weak negative correlations with elderly age, duration and severity of pain, and the number of associated symptoms, aggravating factors, management approaches, and of chronic diseases. The table also displays statistically significant weak moderate positive correlations between the scores of various impacts of pain and elderly age, duration and severity of pain, and the numbers of management approaches and of chronic diseases. Moreover, the score of physical impact of pain had a statistically significant weak positive correlation with the number of pain sites.

▪ **Table (4) shows that** in multivariate analysis the elderly age and education level, as well as the duration and severity of pain and its gradual start, in addition

to the number of chronic diseases were statistically significant independent positive predictors of the total pain impact score. On the other hand, the state of being unmarried (divorced/widow), living alone, using private clinics, having pain on standing and in any position were negative predictors. The model explains 51% of the variation in the pain impact score.

▪ **Table (5)** shows that elderly age, severity of pain, pain in any position, number of associated symptoms, in addition to the physical, psychological, and social impact scores of pain were its statistically significant independent negative predictors. The model explains 52% of the variation in the DLAs score.

Discussion:

Between 30% and 50% of the world population suffer from chronic pain **(de Souza et al., 2017)**. Its prevalence is particularly high in the elderly population, not only among those residing in nursing homes where it may reach up to 80% but also among community-dwelling ones **(Lewis et al., 2016)**. Such pain is persisting beyond a reasonable period for injury-healing, or is associated with chronic pathological problems. Chronic pain affects not only individuals but also their families and the society since it disturbs patients' living conditions and behavior, increasing morbidity and burdening the health system **(Moraes et al., 2015)**.

The present study was carried out to evaluate the effect of chronic pain on activities of daily living among elderly at their homes in Kafr El Genady Village, Diarb Negm District at Sharkia Governorate. The results indicate that the elderly experiencing chronic pain are mostly totally or partially independent in the performance of their activities of daily living (ADLs). The impact of pain is affected by their age, socioeconomic characteristics and the duration and the characteristics of their pain. Moreover, the impact of pain has a negative influence on their independence in ADLs.

The study sample comprised elderly with a wide range of age, from sixties to nineties with almost equal distribution of gender. This allowed the exploration of the effect of age on the impact of chronic pain and independence in ADLs. The study in fact identified elderly age as a significant factor that has an independent effect on both impact of pain and ADLs. The findings are quite plausible given the negative effect of aging on elderly physical and functional capacities. In agreement with this, a study in Germany demonstrated increased limitations in self care with increasing age among patients with chronic pain **(Fehrmann et al., 2018)**. Nonetheless, research in the United States has demonstrated that there is a wide variation of functional capacities among elderly people which were attributed to the influence of certain genetic factors **(Foebel and Pedersen, 2016)**.

The elderly persons in the present study were suffering from chronic pain of varying duration, extending for more than thirty years for some of them. The duration of pain would certainly have a great influence on the impact of such pain on their life and on the performance of their ADLs. In congruence with this, a study in Kirkkonummi in Europe revealed that among the elderly people suffering from chronic pain, those with longer duration of pain had significantly lower scores of quality of life and more incapacities **(Rapo-Pylkkö et al., 2016)**.

According to the results of the current study, more than half of the elderly persons in the sample reported having pain of sever intensity and persisting for hours. Such severe pain that persists for long periods of time would certainly have a negative impact on all physical and psychological aspects of the life of the

elderly. In addition, it would undoubtedly decrease their independence in the performance of their ADLs. In congruence with this, similar pain characteristics were also reported by **(de Sola et al., 2016)** in a study in Spain, where elderly had pain of long duration, in multiple sites, mostly in the joints. On the same line, a study in Brazil reported site of chronic pain among elderly **(Pereira et al., 2017).**

Another indicator of the severity of pain among the elderly in the present study is the high prevalence of associated symptoms. The most commonly reported associated symptoms were the inability to move, in addition to anorexia and insomnia. The presence of such symptoms associated with the pain would undoubtedly have more untoward effects on the elderly life. In agreement with this, a study in the United States reported that chronic pain may be associated with severe insomnia and sleep disorders that may even lead to suicidal depression **(Silber et al., 2018).**

Meanwhile, the present study results point to major deficiency of the role of the nurses in patient education. Thus, although all participating elderly persons expressed their need and willingness to have more information about pain and analgesia, only less than one percent of them mentioned the nurse as a source of related information. This underscores the need for improving nurses' performance as an important source of information and in patient education. In this respect, a recent study in the United States demonstrated the effectiveness of nurse-provided sessions in improving the outcomes of elderly patients suffering from chronic pain due to rheumatoid arthritis **(Lumley et al., 2018).** Moreover, the role of the nurse in chronic pain management has been emphasized in studies in the United States **(Montgomery &McNamara, 2016)** and in France **(Savigneau &Soyeux, 2017).**

According to the current study results, more than half of the elderly in the sample were having a high total impact of pain. This high prevalence of impact of pain is expected given the previously explained high severity and persistence of the pain symptoms for long periods and its occurrence at any time and in any position. The finding is in line with the results of a study in Sweden **(Bernfort et al., 2015)** where chronic pain in the elderly had high physical and psychological impacts that increased with pain severity, in addition to the associated economic costs.

The highest impact of pain among the elderly in the present study was on the spiritual aspect of their life. Conversely, the social impact was the least affecting them. The great affection of the spiritual aspect of the pain impact could be attributed to that the presence of pain, particularly when severe and of long duration might prevent the elderly person from fulfilling his/her religious obligations and ordinances such as praying and fasting or going to the mosque/church. This is of particular importance at this age when the spiritual aspects of the life are of major concern. In congruence with this **(Nsamenang et al., 2016)** in a study in the United States identified the high spiritual impact of pain among elderly and its effect on their performance of their ADLs. Thus, **(Mattenklodt & Leohardt, 2015)** in a study in Germany recommended giving more attention to spiritual and religious issues as approaches to better coping with chronic pain among elderly people.

Concerning the pain-related factors influencing the impact of pain on the elderly persons of the current study, the results showed that the duration and severity of pain are the most influential. These factors affected all the impact aspects of pain on the elderly. The finding was confirmed in multivariate analysis. This is expected given that the presence of severe longstanding pain is disabling to the

elderly person as it impedes any physical, social or even spiritual activities and thus has both psychological and physical untoward effects on them. The findings are in line with those of a Swedish study that demonstrated a significant association between pain severity and duration and the impact of pain on elderly people life **(Willman et al., 2013).**

The present study has also investigated the elderly persons' ability to perform their Activities of Daily Living (ADL) independently. The results demonstrated that only around one-tenth of them were totally independent in the performance of all these activities, whereas the majority were partially or fully dependent. This high level of dependence among the elderly is certainly related to their pain which could impede their physical abilities and lead to their need for support from others. In agreement with this, a study in Austria revealed a high percentage of elderly people with chronic pain having deficits of independence in the performance of ADLs **(Pieber et al., 2015).** Similarly, a longitudinal follow-up study in Japan revealed a marked decline of the level of independence in the performance of ADLs among elderly individuals suffering from chronic musculoskeletal pain in elderly individuals **(Sugai et al., 2017).**

As regards the relations between elderly persons' independence in DLAs and the impact of pain, the present study findings indicate that the higher the physical, psychological and social impacts of pain are, the more the elderly person is dependent in his/her ADLs. This was confirmed in multivariate analysis. The finding provides a clear answer to the question of this research and confirms that chronic pain has a negative impact of the independent performance of ADLs among elderly.

The foregoing present study finding is in congruence with the results of the study conducted by **(Stamm et al., 2016)** in Austria, which showed a statistically significant association between the total impact of pain and independence in ADLs. On the same line, the results of the studies carried out by **(Vagetti et al., 2014)** and **(Santos et al., 2015)** in Brazil demonstrated statistically significant relations between the physical impact of pain and independence in the activities of daily living among elderly people. Furthermore, an Austrian study showed a statistically significant relation between the socioeconomic impact of pain and ADLs score **(Dorner et al., 2011).** Moreover, **(Ferriera et al., 2014)** in a study in Portugal revealed a statistically significant association between the psychological impact of pain and ADLs score of independence.

Conclusion:

The study findings lead to the conclusion that the elderly suffering from chronic pain in the study settings have a high prevalence of chronic diseases. The pain has high impact on their life and most of them are partially or totally dependent in the Activities of Daily Living (ADLs). The impact of pain is significantly influenced by their age, socioeconomic characteristics as well as the duration, severity, continuance pattern and persistence of their pain, in addition to the presence and numbers of chronic diseases. These same factors do influence their independence in ADLs. The scores pain impact and of independence in ADLs are negatively correlated. Hence, decreasing the impact of pain would improve elderly independence in ADLs.

Recommendations:

On the basis of the study findings, a number of recommendations are suggested as following:

♦ More efforts from gerontology and community health nurses in carrying out their educational roles through individual

and group sessions for elderly to improve their knowledge of the chronic pain.

♦ The proper management of chronic diseases is needed to help elderly with concomitant pain.

♦ Elderly should be encouraged in performing their ADLs to overcome their pain, with participation in social and recreational events and religious activities.

♦ General guidelines should be provided to elderly families to help them relieve their burden of pain.

♦ Research is proposed to assess the effectiveness of nursing interventions aimed at improving independence in ADLs among elderly suffering from chronic pain.

Table 1: Demographic characteristics of elderly in the study sample (n=352)

Demographic characteristics of elderly	Frequency	Percent
Age:		
60-	155	44.0
70+	197	56.0
Range		
Mean±SD	61.0-93.0	
Median	72.4±8.0	
	71.0	
Gender:		
Male	186	52.8
Female	166	47.2
Marital status:		
Married	198	56.3
Divorced/widow	154	43.8
Education:		
Illiterate	156	44.3
Basic	113	32.1
Intermediate	65	18.5
University	18	5.1
Had previous job:		
No	146	41.5
Yes	206	58.5

Figure 1: Socioeconomic level of elderly in the study sample (n=352)
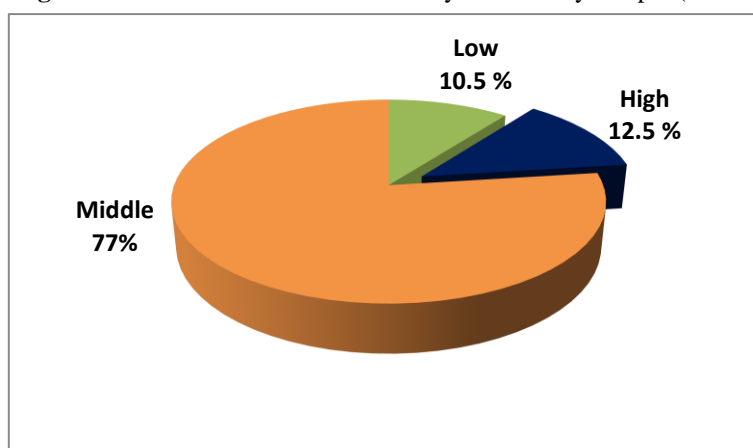
Table 2: Sources of information among elderly in the study sample (n==352)

Sources of information:@	Frequency	Percent
Physicians	331	94.0
Friends/neighbors	14	4.0
Media	5	1.4
Nurses	3	0.9

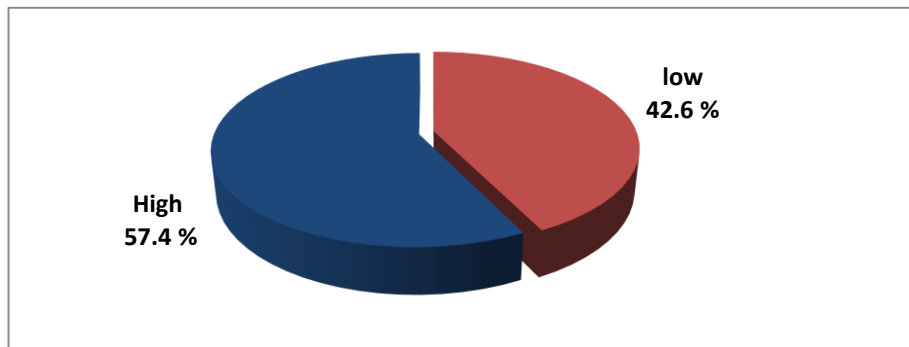**Figure 2:** Total impact of pain among elderly in the study sample (n=352)

Figure 3: Total independence in Daily Life Activities (DLAs) among elderly in the study sample (n=352)
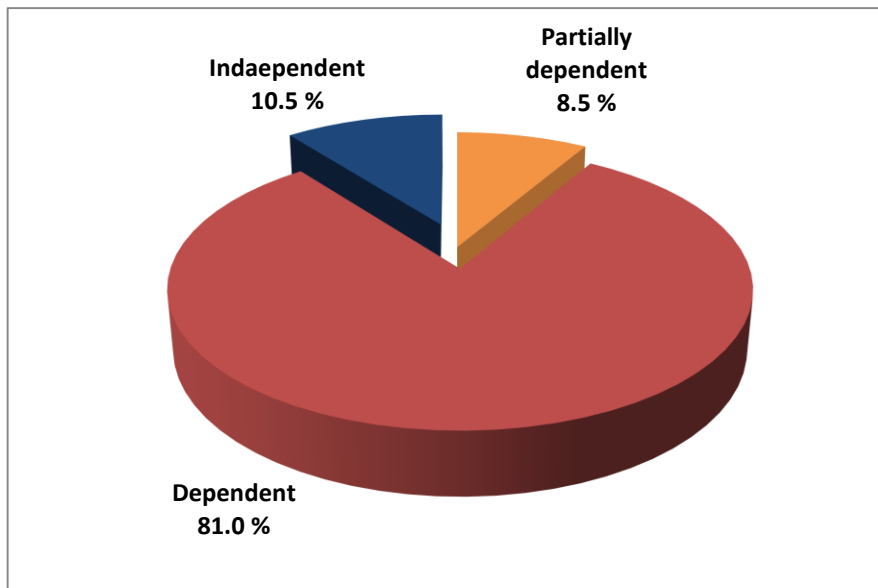
Table 3: Correlation between elderly's pain impact and Katz independence in DLAs scores and their characteristics

Correlation between elderly's pain impact and Katz independence in DLAs scores and their characteristics	Spearman's rank correlation coefficient					
	Katz DLAS	Pain impact				
		Physical	Psycho-logical	Social	Spiritu-al	Total
Katz (independence in DLAS)		**-.456****	**-.574****	**-.602****	**-0.508****	**-0.610****
Age	**-.292****	**-.209****	**.305****	**.252****	**.274****	.299**
Education	0.02	0.06	0.02	0.05	-0.04	0.02
Income	0.03	0.07	-0.08	-0.09	-0.04	-0.05
Socio-economic level	0.03	0.10	-0.01	-0.02	0.03	0.02
Duration of pain	**-.302****	**.458****	**.362****	**.349****	**.404****	.441**
No. of pain sites	-0.08	**.234****	-0.10	0.00	-0.03	0.02
Pain severity	**-.383****	**.308****	**.344****	**.353****	**.351****	.384**
No. of associated symptoms	**-.259****	0.00	**.127****	**.106***	0.04	0.07
No. of aggravating factors	**-.192****	-0.03	0.09	0.08	0.01	0.03
No. of management approaches	**-.179****	**.191****	**.211****	**.165****	**.201****	.220**
No. of chronic disease	**-.394****	**.511****	**.403****	**.378****	**.418****	.481**

(*) Statistically significant at p<0.05　　　　*(**) Statistically significant at p<0.01*

Table 4: Best fitting multiple linear regression model of the total impact score

Best fitting multiple linear regression model of the total impact score	Unstandardized coefficients		Standardized coefficients	t-test	p-value	95% confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	48.41	14.58		3.321	0.001	19.74	77.09
Age	0.22	0.10	0.11	2.354	0.019	0.04	0.41
Widow / divorced	-2.71	1.35	-0.08	2.002	0.046	-5.37	-0.05
Education level	1.49	0.49	0.13	3.038	0.003	0.53	2.46
Live alone	-13.04	5.96	-0.09	2.189	0.029	-24.75	-1.32
Use private clinics	-6.54	1.86	-0.15	3.512	0.001	-10.20	-2.88
Duration of pain	0.57	0.12	0.22	4.793	<0.001	0.34	0.81
Pain severity	4.40	1.01	0.18	4.348	<0.001	2.41	6.39
Gradual pain start	3.04	1.47	0.08	2.073	0.039	0.16	5.92
Pain in standing	-14.03	4.72	-0.12	2.973	0.003	-23.31	-4.75
Pain in any position	-6.15	1.57	-0.16	3.910	<0.001	-9.24	-3.06
No. of chronic diseases	6.53	0.70	0.41	9.380	<0.001	5.16	7.89

r-square=0.51

Model ANOVA: F=32.41, p<0.001

Variables entered and excluded: gender, income, income source, socioeconomic level, job, medications, pain: pattern, timing, number of sites, of aggravating factors, number of associated symptoms

Table 5: Best fetting multiple linear regression model for the DLAs score

Best fetting multiple linear regression model for the DLAs score	Unstandardized coefficients		Standardized coefficients	t-test	p-value	95% confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	10.12	0.67		15.111	<0.001	8.81	11.44
Age	-0.03	0.01	-0.11	2.844	0.005	-0.04	-0.01
Pain severity	-0.29	0.11	-0.11	2.529	0.012	-0.51	-0.06
Pain in any position	-0.67	0.17	-0.16	3.937	<0.001	-1.00	-0.03
No. of associated symptoms	-0.34	0.12	-0.11	2.878	0.004	-0.58	-0.11
Physical impact	-0.02	0.01	-0.17	3.431	0.001	-0.04	-0.01
Psychological impact	-0.02	0.01	-0.18	2.747	0.006	-0.03	0.00
Social impact	-0.02	0.01	-0.26	4.239	<0.001	-0.03	-0.01

r-square=0.52

Model ANOVA: F=53.50, p<0.001

Variables entered and excluded: gender, education, income, income source, socioeconomic level, job, living alone, chronic disease, medications, pain: duration, pattern, timing, number of sites, of aggravating factors, spiritual impact

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