

Quality of Life for Older Adults with Neuropathy

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Abstract

Background; Neuropathy is a chronic condition among older adults where neuropathic pain has an effect on function and quality of life. Neuropathic pain underlies an estimated 30-65% of the activity seen at hospital pain clinics. In severe cases of chronic pain, the health-related quality of life is ranked as worse than other pain conditions, heart failure, or even cancer. **Aim of study:** The study is aimed to assess quality of life for older adults with neuropathy. **Study design:** Descriptive exploratory design was utilized to assess the quality of life for older adults with neuropathy. **Setting:** The study was conducted at Internal Medicine in El Demerdash hospital affiliated to Ain Shams University Hospitals. **Sample:** A purposive sample was used to the conducted study and was estimated 218 older adults with neuropathy. **Tools:** Three tools were used: interviewing questionnaire, medical records and neurological examination scale. **Result:** There was 38% of older adult had satisfactory knowledge about the neuropathy diseases, 77.5 % of them had poor level of practices, 34.9 % of older adults suffer from poor quality of life and 69.3% of them had not achieved their health needs. 77.1 % of older adults their quality of life was highly affected negatively according to physical health aspects, 40.4% of them affected psychologically, 53.2% of them had highly negative effect by spiritual aspects, and socioeconomically effect on 40.8% of them, also, the older adults suffered from complication of neuropathy as skin ulcer for 61.9%, falling to the ground for 36.7%, addiction to painkillers for 32.1%, insomnia for 23.4%. **Conclusion:** There were no significant differences between total knowledge and sociodemographic characteristics. There was insignificant relation between total older adults 'knowledge about neuropathy and Quality-of- life. The majority of older adults were poor level of practices. Finally, most of older adult's unachieved health needs. **Recommendations:** further studies to provide nursing intervention about rising patients' awareness toward prevention of neuropathy and improving QOL.

Keywords: quality of life, neuropathy, older adults

Introduction

Neuropathy is a term that refers to general disease or mal function of the nerves, so it's more common with older adults because mal function of the nerves is the one of the characteristic by this age. Any location for nerves in the body can be damaged from injury or disease, and neuropathy is often classified according to the types or location of nerves that are affected. Neuropathy can also be classified according to the disease causing it, for example neuropathy from the effects of diabetes is called diabetic neuropathy (*Kraus, 2016*).

Neuropathy is classified to peripheral neuropathy, cranial neuropathy (optic neuropathy and auditory neuropathy), autonomic neuropathy and focal neuropathy. Neuropathy is caused by different causes such as, injuries, infections as (HIV-AIDS) and even vitamin deficiency as (vitamin B12), diabetes, auto immune as

(rheumatoid arthritis, systemic lupus, amyloidosis, uremia, alcoholism and idiopathic (*Abdu, 2017*).

Neuropathy along with its fatal complications which is the leading cause of mortality and morbidity. The Chronic complication of neuropathy include foot ulcers, heart rhythm changes, blood circulation problems, strokes, peripheral neuropathy, Alzheimer's disease, Parkinson's disease and these complications vary depending on the underlying cause of the condition. All causes and complications of neuropathy are more common health problems for older adult with bad quality of life so this target of population are high risk for neuropathy (*Hinkle and Cheever, 2016*).

Health-related quality of life is substantially impaired among older adults with neuropathy. They are suffering from (lack of concentration, drowsiness, dryness of eyes and mouth, constipation, sexual disturbance, general weakness and numbness,...etc) the described

pain related interference in multiple health related quality of life and functional domains, as well as reduced ability to work, reduced mobility, social problems, lack of confidence, vision disturbance, inability to work, and feel with depression. The Interventions are considered successful by the older adults if Quality of life improved. Simple pain scores, although providing important information which includes the effect on quality of life (Abdu, 2017).

The community health nurse plays an important role in helping the older adults to maintain an independent life in the community for as possible by providing the appropriate knowledge and various resources to health care and disease management according to the severity of condition to make older adults able to cope with their conditions by: establishing goals of neuropathy management, identifying barriers to effective pain management, identifying appropriate interventions (Pharmacological-Non pharmacological-Multimodal and interprofessional, educating and monitoring pain relief, adverse effects, function and advocating for patients' rights (WHO, 2014).

Significance of the study

Neuropathy is a fast-growing health problem in Egypt with a significant serious impact on morbidity, mortality and health care resources. Currently, the prevalence of neuropathy in older adults in Egypt is around 56% of all adults aged over 60 years and the number of older adults as the last statistic is about (1,937,119 males/ and(2,013,459 females (Hegazi et al., 2016).

Aim of the study

The aim of this study is to assess quality of life for older adults with neuropathy through:

1. Assessing older adults' knowledge about neuropathy.
2. Assessing older adults' practices toward care of neuropathy.
3. Assessing quality of life domains for older adults with neuropathy as (physical, social, emotional, psychological).

4. Assessing health needs and problems of older adults with neuropathy.

Research questions:

1. What is the quality of life for older adults with neuropathy?
2. Is there a relation between older adult's knowledge about neuropathy and their socio - demographic characteristics?
3. Is there a relation between quality of life among older adults with neuropathy and their knowledge about neuropathy?
4. Is there a relation between quality of life for older adults with neuropathy and their practices toward care of neuropathy?

Subjects and Methods

Study Design:

Descriptive exploratory design was utilized to assess the quality of life for older adults with neuropathy.

Settings:

The study was conducted at two settings firstly, the outpatient clinic of Ahmed Shawky Geriatrics Hospital and secondly, Internal Medicine in El- Demerdash Hospital which affiliated to Ain Shams University Hospitals. These outpatient clinics were specialized of management of all types of neuropathy that provided with physicians of neurologist and nurses of neurology specialist, which cover all population across Egypt.

Sample:

A purposive sample was used to conduct this study and the sample size will be calculated by using **Rao soft** sample size calculator (<http://www.raosoft.com/samplesize.html>) by a known total population of 500 subjects. The confidence interval will be set to 95% with a margin of error accepted adjusted to 5% and power of the test adjusted to 50%. The sample was estimated 218 older adults with neuropathy. The following inclusion criteria set for sample selection as follows.

Inclusion criteria

- 1- The older adults aged from 60 years and above.
- 2- The older adults were complaining of neuropathy syndrome for at least one month.

3- The sample contain male or female clients.

Tools of data collection:

The data were collected using three tools:

First tool: An interviewing questionnaire: This included the following four parts.

Part (I): This part included: Questions to assess socio- demographic characteristics of the study sample of older adults with neuropathy. This part included 10 closed and open-ended questions (question 1: question 10): such as gender, age, social status, educational level, job, monthly treatment costs income, residence, family size and number of rooms to determine of household crowded index.

Part (II): It was used to assess older adults' knowledge about neuropathy which developed by the investigator after reviewing recent and relevant cite. (W.H.O, 2014) that consisted of 12 questions closed ended with 62 items distributed as 4 questions regarding meaning of the nervous system, its anatomy, physiology, and types of nerves and 8 questions related to the meaning of neuropathy, its causes, types of neuropathy, their symptoms of this disease, diagnostic measures of neuropath, its methods of treatment for the elderly, the electrical stimuli are used in the treatment of neuropathy, and the complications of neuropathy.

❖ Scoring system of knowledge:

The score ranged from zero to one, for non-selected (unsatisfactory knowledge) = "(0)" and for selected items (satisfactory knowledge) take "(1)". The total score for all items related to knowledge was 62 point are summed up and categorized into two levels as followings.

<50% = Unsatisfactory 1: 31 <50% = Satisfactory 32: 62

Part (III): This part for older adults to assess their practices toward care of neuropathy which consisted of 6 questions included 14 items of self-care, 3 items of foot examination tools, 6 items of foot examination for toenails, cracked skin, cutaneous growths between the nails, nail growths, callus, secretions, of 8 items foot care

precautions, 9 items of foot washing, and 6 items of assessment of foot neuropathy shoes.

❖ Scoring system of practices:

A scoring system for each of practical items as reported by older adults Each of the items scored "2" marks for "always" response, "1" mark for "Sometimes" response and "0" for "Never" response for all items. All items of practices were summed up and changed into percentage. The total score for all items related to older adults' practices was 46 points and categorized into three levels as followings:

- Poor = <60% = 1: 54
- Average = >60%: <75% = 55: 68
- Good = <75% = 69: 92

Part (IV): This part to assess QOL of the studied older adults which consisted 5 closed ended questionnaires with 20 items for physical aspects, 6 items for psychological, 6 items for spiritual, 3 items economic, and social aspects adapted from Applicability of Toronto clinical Neuropathy scoring. According to WHO (2015).

❖ Scoring system for quality-of-life aspects:

Each of the quality-of-life items scored "0" marks for "always" response, "1" mark for "Sometimes" response and "2" for "Never" response for all items and the total score of quality-of-life aspects' effects are distributed as follow:

Scoring system of Quality of life physical

- < 60% = poor 1: 23 (**High negative effects**)
 - > 60%: 75% = average 24: 29 (**Moderate negative effects**)
 - > 75% = Good = 30: 40 (**Low negative effects**)
- Scoring system of Quality of life **psychological**
- < 60% = poor 1: 6 (**High negative effects**)
 - > 60%: 75% = average 7: 8 (**Moderate negative effects**)
 - > 75% = Good = 9: 12 (**Low negative effects**)

Scoring system of Quality of life **spiritual**

- < 60% = poor 1: 6 (**High negative effects**)
- > 60%: 75% = average 7: 8 (**Moderate negative effects**)
- > 75% = Good = 9: 12 (**Low negative effects**)

Scoring system of Quality of life **socioeconomic**

- < 60% = poor 1: 6 (**High negative effects**)
- > 60%: 75% = average 7: 8 (**Moderate negative effects**)
- > 75% = Good = 9: 12 (**Low negative effects**)

The total quality of life level scores was calculated by summing all these marks and converting them into percentages as the following: The total quality of life was considered poor quality of life if the percent score was <60% (1: 45 grads), average if the percent score was > 60%: 75% = average (46: 56 grades), and good if the percent score was > 75% (57:76 grades).

Validity and Reliability:

Content and face validity were performed by 3 professors of the community health nursing department and two professors from the geriatric specialty of Faculty of Medicine, all experts were affiliated to Ain Shams University, Egypt who reviewed the tools for content accuracy. The developed tools were tested for reliability on a sample of 50 subjects. The first, second, and third parts only for whom the reliability test was done, but the rest of the tools were slandered. The reliability test of translated version was established by using the Cronbach alpha and Pearson correlation which showed good internal consistency construct validity Cronbach alpha = (0.887).

II. Operational Design: Preparatory Phase:

A review of literature was done **regarding** current and past available literature, covering the various aspects of the problem, using text books, articles, magazines and internet sites through research gate. This was necessary for the investigator to get aquatinted with, and oriented about aspects of the research problems, as well as to assist in development of data collection tools.

Ethical consideration:

All ethical considerations were considered for ensuring the older adults' privacy and confidentiality of the collected data during the study. Firstly the study protocol take

agreement of Ethical Committee affiliated to Faculty of Nursing Ain Shams University. Secondly the purpose and nature of the study were explained for the participants and oral consent was taken to gain their participation after explain the purpose of the study and being informed that each study subject is free to withdrawal at any time through the study. Finally all selected study sample agreed to participate in the study and they were assured that the study would posed no risks or hazards on their social, psychological or physical health.

Pilot Study:

A pilot study was conducted at the beginning of the study for 22 cases (10% of the total sample) to investigate the feasibility of data collection tools, their content, validity, clarity, and simplicity. It took about one month from beginning of February 2019. Then subjects were included in the pilot study were excluded from the actual study sample.

Field work:

The actual process of data collection was carried out in six months consequently the period from the beginning of March 2019 until the end of august 2020, two days per week nearly about 5 hours /daily (Sundays & Tuesdays) in order to collect the total sample of 218 of older adults. The investigator introduced her to the two previous mentioned setting directors and the nurse supervisors and the other health team workers that will help her in data collection to save the time and to also gain the trust of patients. The investigator explained the aim of the study to all of them and then distributed the questionnaire sheet after clear explaining the way to fill it out. The interviewing tools took about maximum 30 minutes for every older adult and the physical examination tool took about 15 minutes for each one. The medical record took about 15 minutes for each patient. There were about 4 to 5 patients each determined day.

Administrative Design:

Formal letter from the Dean of the Faculty of Nursing, Ain Shams University directed to the directors of Ahmed Shawky Geriatrics Hospital and Internal Medicine in El Demerdash Hospital which affiliated to Ain Shams University Hospitals

Statistical design: Data was analyzed and tabulated using the Statistical Package for Social Science (SPSS) version 19. Qualitative data was presented as number and percentage. Relations between different qualitative variables were tested using Chi-square test (X^2) and correlation coefficient (r). Probability (p-value) < 0.05 was considered significant and < 0.001 was considered highly significant.

Results:

Table (1): presents that, 59.6% of older adults were male and their age group ranged from 65: < 70 years for 39.0% of them with mean = 67.24 and Standard Deviation = +5.39. There were 68.8% of them married while. 19.3 % were divorced.

Regarding to educational level there were 20.2% of older adults were illiterate and highly educated and there were 52.3% of them were retired and jobless which reflects that, there were 20.6% of them had not enough monthly income that is insufficient for family needs and their treatment cost depends on health insurance for 44.0 % of them and 40.4% were at the expense of the state.

As well as 57.3% of older adults lived in urban area which reflect that there were 50.9 % of theme lived in crowded area

Table (2): explains that, 77.1 % of older adults, their quality of life was highly affected negatively according to physical health aspects, 40.4% of them affected psychologically, 53.2% of

them had highly negative effect by spiritual aspects, and socioeconomically effect on 40.8% of them..

Table (3): prove that, only there were not significant statistical differences between total knowledge for older adults and their sociodemographic characteristics such as gender with ($x^2 = 0.503$ and $P \Rightarrow 0.05$) also there were not significant statistical differences between total knowledge for older adults and other sociodemographic characteristics like social status, educational level, job, monthly income and treatment costs with ($X^2 = 4.653, 2.581, 2.442, 2.094$, and 4.128 respectively and $P \Rightarrow 0.05$)

Table (4): evinces that, there is a significant statistical relation between total older adults' knowledge about neuropathy and their Quality-of-life level with $x^2 = 16.761$ and $P \text{ value} < 0.05$.

Table (5): reveals that, there is insignificant statistical relation between total older adults' knowledge about neuropathy and their Quality-of- life level with $x^2 = 1.624$ and $P \text{ value} > 0.05$.

Figure (1): illustrates that there were 38% of older adult had satisfactory knowledge about the neuropathy diseases and 62% of them had unsatisfactory knowledge.

Part (I): This part represents demographic characteristics of the study sample of older adults with neuropathy.

Table (1): Distribution of socio demographic characteristics of older adult with neuropath (n = 218).

	Items	No	%
Gender	Male	130	59.6
	Female	88	40.4
Age	60: < 65years	67	30.7
	65: < 70 years	85	39.0
	70: < 75 years	35	16.1
	75: < 80 years	18	8.3
	80 > 85years	13	6.0
	Mean = 67.24 Std. Deviation = +5.39	Minimum = 60 Maximum = 85 years	
Social status	Single	20	9.2
	Married	151	69.3
	Divorced	42	19.3
	Widow/widower	5	2.3

Table (1) Cont...

Items	No	%
Educational level		
Illiterate	44	20.2
Read & write	57	26.1
Preparatory education	10	4.6
Secondary education	63	28.9
Highly educated	44	20.2
Job		
Retired but have a job	104	47.7
Retired but have no job	114	52.3
The monthly income		
Insufficient	45	20.6
Sufficient for family needs	157	72.0
Sufficient & save.	16	7.3
Treatment costs		
On state expense	88	40.4
Health insurance	104	44.0
Private	26	11.9
Residence		
Rural	93	42.7
Urban	125	57.3
Household crowding index		
Severely crowded >2	72	33.0
Crowded > 1	111	50.9
Not crowded < 1	35	16.1

Table (2): Distribution of the total effects of older adults' diseases on quality of life aspects (n=218).

Items	High negative effects		Moderate negative effects		Low negative effects	
	No	%	No	%	No	%
The physical health aspects:	168	77.1	35	16.0	15	6.9
The psychological health aspects:	88	40.4	69	31.7	61	28.0
The spiritual health aspects:	116	53.2	60	27.5	42	19.3
The socioeconomical health aspects:	89	40.8	54	24.8	75	34.4

Table (3): The relation between older adult's knowledge about neuropathy and their socio - demographic characteristics (n=218).

Items	Older adults' knowledge						Chi-Square X ²	P value
	Unsatisfactory (135)		Satisfactory (83)		Total			
	No	%	No	%	No	%		
Gender								
Male	83	38.1	47	21.6	130	59.6	0.503	0.47
Female	52	23.9	36	16.5	88	40.4		
Age								
60: < 65years	39	17.9	28	12.8	67	30.7	3.547	0.47
65: < 70 years	58	26.6	27	12.4	85	39.0		
70: < 75 years	20	9.2	15	6.9	35	16.1		
75: < 80 years	9	4.1	9	4.1	18	8.3		
80 > 85years	9	4.1	4	1.8	13	6.0		
Social status								
Single	8	3.7	12	5.5	20	9.2	4.653	0.19
Married	98	45.0	53	24.3	151	69.3		
Divorced	26	11.9	16	7.3	42	19.3		
Widow/widower	3	1.4	2	0.9	5	2.3		
Educational level								
Illiterate	24	11.0	20	9.2	44	20.2	2.581	0.63
Read & write	34	15.6	23	10.6	57	26.1		
Preparatory education	6	2.8	4	1.8	10	4.6		
Secondary education	40	18.3	23	10.6	63	28.9		
Highly education	31	14.2	13	6.0	44	20.2		
Job								
Retired but have a job	70	32.1	34	15.6	104	47.7	2.442	0.11

Table (3): Cont...

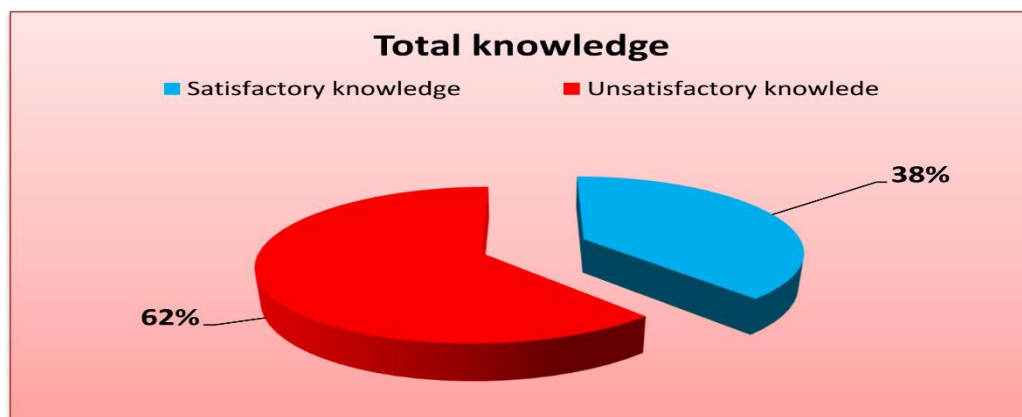
Older adults' knowledge								
Items	Unsatisfactory (135)		Satisfactory (83)		Total		Chi-Square X ²	P value
	No	%	No	%	No	%		
Retired but have no job.	70	32.1	34	15.6	114	52.3		
The monthly income								
Insufficient	32	14.7	13	6.0	45	20.6	2.094	0.35
Sufficient for family needs	93	42.7	64	29.4	157	72.0		
Sufficient & save.	10	4.6	6	2.8	16	7.3		
Treatment costs								
On state expense	53	24.3	53	16.1	88	40.4	4.128	0.12
Heath insurance	70	32.1	34	15.6	104	44.0		
Private	12	5.5	14	6.4	26	11.9		
Residence								
Rural	61	28.0	32	14.7	93	42.7	0.924	0.33
Urban	74	33.9	51	23.5	125	57.3		
Household crowding index								
Severely crowded >2	41	18.8	31	14.2	72	33.0	2.101	0.35
Crowded > 1	69	31.7	42	19.3	111	50.9		
Not crowded < 1	25	11.5	10	4.6	35	16.1		

Table (4): The relation between quality of life among older adults with neuropathy and their practices toward care of neuropathy (n=218).

Older adults' QOL	Older adults' Practices								Chi-Square X ²	P value
	Poor		Average		Good		Total			
	No	%	No	%	No	%	No	%		
Poor Level	52	23.9	22	10.1	2	0.9	76	34.9	16.761	0.002 **S
Average Level	68	31.1	9	4.1	6	2.8	83	38.1		
Good Level	49	22.4	4	1.8	6	2.8	59	27.1		
Total	169	77.5	35	16.1	14	6.4	218	100.		

Table (5): Relation between quality of life among older adults with neuropathy and their

Older adults' QOL	Older adults' knowledge						Chi-Square X ²	P value
	Unsatisfactory		Satisfactory		Total			
	No	%	No	%	No	%		
Poor Level	50	23.0	26	11.9	76	34.9	1.624	0.44 *Ns
Average Level	47	21.6	36	16.5	83	38.1		
Good Level	38	17.4	21	9.6	59	27.1		
Total	153	61.9	83	38.1	218	100.0		



knowledge about neuropathy (n = 218).

Figure (1): Distribution of the studied sample of older adults according to their total knowledge about neuropathy disease (n=218).

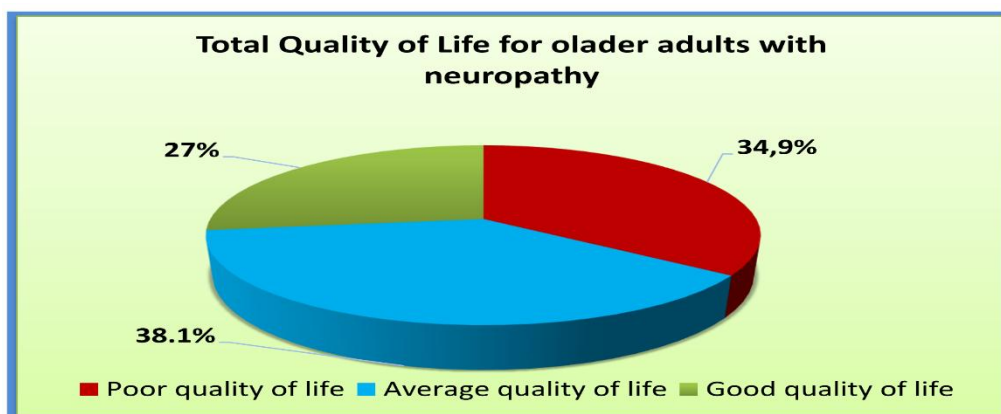


Figure (2): Distribution of the total quality of life for older adults with neuropath diseases (n=218).

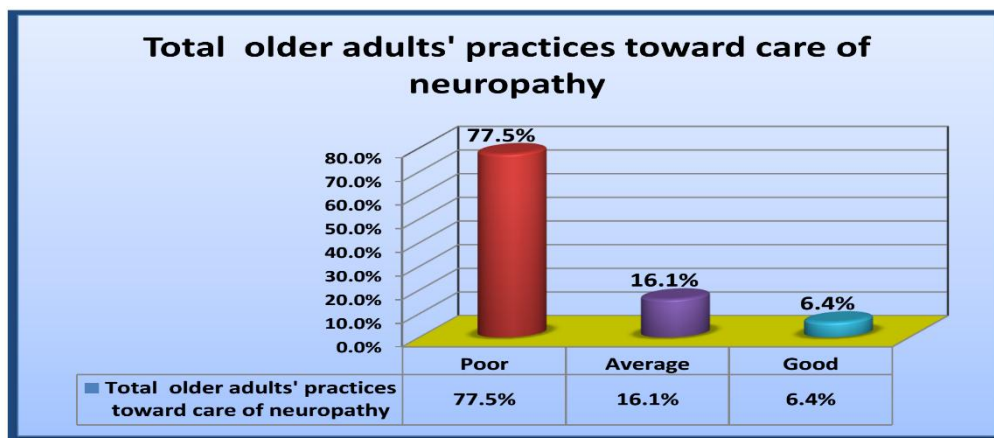


Figure (3): Distribution of the studied sample of older adults according to their total practices toward the care of neuropathy (n=218).

Discussion:

Neuropathy is a common complication of diabetes mellitus. The most common manifestation is diabetic peripheral neuropathy (DPN) with chronic sensorimotor symptoms and signs, the onset of which is usually insidious. DPN may be asymptomatic in about 50% of patients; from 10% to 20% may have sensory symptoms necessitating treatment. Symptoms include pain which can be severe, numbness, paraesthesiae, hyperaesthesiae, and unsteadiness. As the disease progresses, symptoms can improve or disappear, leaving patients at risk of the complications of diabetic ulceration and non-traumatic amputation (Selvarajah et al., 2019).

Painful symptoms in DPN have a significant detrimental impact on health-related quality of life (HRQL). In one study involving 255 patients, the severity of pain (assessed with a version of the brief pain index modified specifically for use in painful DPN, the BPI-DPN) was significantly associated with impaired HRQL on all domains of the SF-12. Patient utilities assessed with the preference-based generic instrument EQ-5D, showed a significant gradient from 0.2, 0.5 to 0.7 for those with severe, moderate and mild pain respectively. Painful DPN is an important category of neuropathic pain for which published guidelines on assessment include measurement of HRQL and for which specific HRQL outcome measures have been developed (Venkataraman et al., 2019).

Although profound in impact, painful symptoms are only one aspect of DPN. Autonomic symptoms of DPN are also significant the impact of which would not necessarily be addressed by a patient outcome measure focused on the assessment of the impact of pain. Accordingly, there is interest in appropriate outcome measures to assess diabetic patients' disease experience more broadly and the impact of treatments. More generally, the increasingly recognised need to assess patient-reported outcomes (PROs) such as HRQL in evaluating health care and medical decision making has led to a demand for rigorous outcome measures. In DPN, generic instruments such as the SF-36, SF-12 and EQ-5D have generally been used to evaluate HRQL in clinical trials and intervention studies. Although well-established and well documented instruments, these generic measures are known to lack sensitivity to disease-specific aspects of HRQ. In most conditions, therefore, both generic and disease-specific measures are needed to evaluate HRQL (Driscoll, 2017).

The aim of this study is to assess quality of life for older adults with neuropathy through:

1. Assessing older adult's knowledge about neuropathy.
2. Assessing older adults' practices toward care of neuropathy.
3. Assessing quality of life domains for older adults with neuropathy as (physical, social, emotional, psychological).

Assessing health needs and problems of older adults with neuropathy

Part (I): This part represents demographic characteristics of the study sample of older adults with neuropathy

This study showed that, Majority of older adults were male and their age group ranged from 65: < 70 years for two fifth of them with mean = 67.24 and Standard Deviation = +5.39. There were two third of them married while. One fifth were divorced. Regarding to educational level there were one fifth of older adults were illiterate and highly educated and there were half of them were retired and jobless

which reflects that, there were one fifth of them had not enough monthly income that is insufficient for family needs and their treatment cost depends on health insurance for two fifth of them and two fifth were at the expense of the state. As well as more than half of older adults lived in urban area which reflect that there were half of theme lived in crowded area.

Part II: - This part represents older adults' knowledge about neuropathy disease

This study showed that, regarding self-care of neuropathy 8.3% of older adults never measure blood sugar regularly and one third of them never tried to quit active smoking before or avoid secondhand smoke for one tenth of them. Also, there were just one quadrant of them said that they always compliance with Results 13 prescribed medications, treatment, and follow up with specialists in caring for their diagnosis. In addition to a little one tenth of older adults answered that they always reduce the amount of carbohydrates in their diet and one tenth never drank an appropriate amount of water (2: 3 ml) daily or practiced body exercise regularly like walking or joint movement for one fifth.

In agreement with our study, Bai et al. (2009) showed that Self-care behaviour scores were significantly influenced by different gender, education level, economic status and religious beliefs of older diabetic patients. Depression and self-care behaviour were negatively correlated. Social support, education and duration of diabetes significantly affected self-care behaviour, accounting for 35Æ6% of total variance.

Part III: This part represents Assessment of older adults' practices toward care of neuropathy

This study cleared that more than half of older adults with neuropathy said that they sometimes check their shoes before wearing them and two third of them check it when taken off. Also, three fifth of older adults answered that heels, soles, tops, inside, bottom, edges, sides of the shoe were sometimes checked before wearing and three fifth of them sometimes examined their shoes and socks for foreign objects to be removed.

In agreement with our study **Sari et al. (2020)** showed that Concerning foot self-care behavior, the average standard score was 47.4, indicating an overall poor level of foot-care behavior. Responses to questions regarding foot injury treatment and application of foot moisturizer got the lowest standard scores, with average stand-ard scores of 26.3, and 16.3, respectively. Responses with average standard scores below 60 were: examining foot condition (50.7), appropriate footwear (46.3), and foot injury prevention (34.3). Mean score for foot-care knowledge was 5.33 ± 2.2 , out of a maximum possible score of 11, indicating an overall poor level of foot-care knowledge.

Part IV: - This part represents assessment of the quality-of-life domains for older adults with neuropathy as (physical, social, emotional, psychological).

This study demonstrated that, three quadrant of older adults said that, there were sometimes difficulty when performing the daily tasks and found pain when insisting on performing these tasks for majority of them. There were 24.8% of older adults answered that they always found difficulty in walk as usual. While three quadrants of them reported that they sometimes found difficulty in going down the stairs. In addition, this table shows that two fifth, two fifth. two fifth, minority, of older adults said that, they always found it difficult to drive the car, difficult to use office tools such as a pen, difficult to use the mobile phone, difficult to had sexual relations, difficult to prepare food, respectively as physical aspects of quality of life. In agreement with our study **Chyun et al. (2006)** showed that Results of multivariate analyses (Table 2) demonstrated that in the majority of models, female gender, the presence of depressive symptoms and anxiety, and the presence of either signs or symptoms of peripheral neuropathy or subjective or objective evidence of autonomic dysfunction (power spectral results, heart rate, or BP responses to provocative maneuvers) were associated with poorer QOL. The following amount of variance was explained by each of these models

This study presented that, one quadrant of older adults said that there were always feel

sad and frustrated and always concerned about their symptoms of the disease and its effect on their performance. Therefore one third of them always feel ashamed of their selves and one third of them always worried about they were a burden to close relatives.

In agreement with our study **Chyun et al. (2006)** showed most anxiety subscales, depressive symptom scores, and anger scores were negatively correlated with QOL, with the associations being strong and consistent across all QOL domains. Hostility was only weakly, and not significantly, associated with QOL in bivariate comparisons. In agreement with our study, **Girach et al. (2019)** showed that Stress can exacerbate the pain perceived by patients with DPN, as it does for most patients with all types of chronic pain. Pain will lead to higher stress levels, creating another vicious cycle, which leads to poorer QoL. Depression and anxiety also have an impact on perceived QoL. Depressed patients may report lower QoL at baseline in clinical trials and subsequently negative treatment effects. Research has shown that painful DPN is associated with catastrophic and anxiety provoked thinking, which as a result leads to a perceived decline in physical activity and subsequent reduction in QoL. Geelen et al. illustrated that patients with DPN suffer from various fears including those of hypoglycemia, negative evaluation, falling, and fatigue and some of these fears are associated with a reduced QoL and increased disability, observations are relevant to clinical practice, as they provide a theoretical framework on the psychosocial consequences of painful DPN, which can enable designing treatment strategies to address these specific fears, same study group looked into pain catastrophizing, defined as a negative cognitive set brought about during actual or anticipated pain experience, and showed that it is associated with a decline in physical activity and an increased perception of disability and decreased QOL in patients with painful DPN. This study presented that, one quadrant of older adults always struggling with treatment costs and one fifth of them always their income was not sufficient for treatment and follow-up which reflect that 40.8% of older adults always quit their job due to their illness, and their social behavior among members of the

surrounding community post illness were changed. Table (12) explains that, three quadrant of older adults, their quality of life was highly affected negatively according to physical health aspects, 40.4% of them affected psychologically, half of them had highly negative effect by spiritual aspects, and socioeconomically effect on two fifth of them.

In agreement with our study, **Lima et al. (2020)** showed that the descriptive analysis of the eight domains of the SF-36. Social Role Functioning exhibited the best mean score

Part V: Answer to Research questions

This study illustrated that only there were not significant statistical differences between total knowledge for older adults and their sociodemographic characteristics such as gender with also there were not significant statistical differences between total knowledge for older adults and other sociodemographic characteristics like social status, educational level, job, monthly income and treatment costs. In agreement with our study, **Du et al. (2019)** showed that A total of 2971 individuals was included in the present study, while some values of the variables were missing. Overall, there were slightly more female participants (51.0%), and 14.6% was aged between 75 to 79 years, with 16.4% aged ≥ 80 years. In terms of individual's body mass index (BMI), 9.6% of the subjects were in the underweight range, while 21.3% were overweight and 3.9% were obese. Around two-thirds of the sample held an agricultural household registration; nevertheless, 36.1% were currently living in village, and 22.3% in the urban-rural fringe. Among the participants, more than 50% received less than five years of education, and 27.2% were uneducated. As regards average annual household income, 27.5% earned less than RMB 15,000 CNY per year, and 26.1% earned from RMB 15,001–30,000 CNY, which accounted for the majority of the elderly. The survey showed that 28.4% self-reported varying degrees of decline in their activities of daily living (ADL) function. In disagreement with our study **Levterova et al. (2018)** showed that Patients with a painful diabetic peripheral neuropathy was lower QoL than those with DPN without pain in all 8 dimensions of the SF-36. These

differences are statistically significant from the PF, VT, BP and GH. These study estimated in El Demrdash outpatient and it's shows that, practice, knowledge and health needs for older adults affected with socio demographic stat and level of education

Conclusion

In conclusion the finding of the study revealed that, older adults age ranged from 60-70 years, two third of older adult had unsatisfactory knowledge about the neuropathy diseases. As well as more than three quarters of them had poor level of practices. Also, there were more than two thirds of them had unachieved health needs and more than one third of them suffered from quality of life. Finally, there was no significant relation between total knowledge and sociodemographic characteristics as well as insignificant statistical relation with QOL, while significant statistical relation between total older adults' practices about neuropathy and their QOL level.

Recommendations

In the light of the finding of the present study, the following recommendations are suggested:

1. Continuing long-term medical follow-up, in all clinics and specialized centers, to detect complications of neuropathy and its impact on the quality of life of the affected elderly is necessary to assess the level of quality of life of the elderly.
2. Educational program about prevention of neuropathic disease and care of peripheral neuropathy for older adults to raise their awareness and improve their practices.
3. Further studies to provide nursing intervention about raising older adults' awareness toward prevention of neuropathy and improving QOL.
4. Further studies on large geographical scale and on larger sample size to emphasize on the most common health problems and health needs of older adults with neuropathy.

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