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Original Article

Relation Between Functional Status and Quality of Life Among Geriatric Patients with Parkinson's Disease

1 Mervat Mohamed Fahim El-abassy,2 Heba Ahmed Mohamed El Fedawy , 3Heba Noshy Abd El-Aziz Mohamed, 4 Soad Hassan Abd Elhameed

1 Nursing Specialist- Technical Institute of Nursing, Faculty of Nursing - Mansoura University

2 Assistant Professor of Gerontological Nursing, Faculty of Nursing - Mansoura University

3 Assistant Professor of Gerontological Nursing, Faculty of Nursing - Mansoura University,

4 Professor of Gerontological Nursing, Faculty of Nursing - Mansoura University

ABSTRACT

Background: Parkinson' disease is the second most prevalent neurodegenerative diseases, it is characterized by motor manifestation such as bradykinesia, tremor, stiffness, and postural instability also non-motor manifestation like diminished olfaction and psychological problems. Parkinson's disease symptoms can impair functional ability, lower muscle strength, decrease balance, and lower quality of life. **Aim:** To estimate the relation between functional status and quality of life among geriatric patients suffering from Parkinson's disease. **Method**: A descriptive correlational design was used through a purposive sample of 102 geriatric patients suffering from Parkinson's disease at Mansoura University Hospital. **Tools:** Four tools were used to collect data; Structured Interview Schedule for Demographic and Clinical Data, Hoehn & Yahr Scale, Functional Independence Measure and World Health Organization health related Quality of life-BREF. **Results:** It was found that; 76.5% of geriatric patients living in rural areas, males were more prevalent, 78.4 % of geriatric patients were totally independence and 88.2% of them had poor quality of life. **Conclusion:** There was a statistically significant correlation between functional status and quality of life among geriatric patients with Parkinson's disease. **Recommendations:** Designing educational programs for the geriatric patients with Parkinson's disease about the process management and how to cope with the disease to help patients in maintaining health and good functional status.

Keywords: *Geriatric Patients, Parkinson's Disease, Functional Status and Quality of Life.*

Introduction

The second most common neurodegenerative disease is Parkinson's disease (PD) (Melandri, 2022) Earlier research reported that PD affects around 8.5 million people globally, the prevalence was 315 cases per one hundred thousand people (Kim, et al., 2024) China is projected to include more than half of the global PD population and has the highest number of PD patients worldwide (Zheng, et al., 2023).

The Hoehn & Yahr (H&Y) scale is frequently used to stage PD based on motor sequelae by the neurologist, it's a 5 stages scale with stage 5 being most advanced (Hurley, 2018). PD is linked to increasing of mortality ratio of approximately 1.5 when compared with general population, overall mortality increased with male sex, age, presence of minor impairment of cognitive function and higher dose of levodopa. Early onset of PD and mild cognition impairment were associated with higher PD-related mortality rates (Hoogland, et al.,2019). No specific cure is exist for PD but drugs can assist managing its symptoms. (Aggarwal, et al., 2021).

The definite etiology of PD is still unknown, it is linked to a number of risk factors, as aging, genetic abnormalities and environmental variables (Zhang, et al., 2024). Pathologically, PD is caused by dopaminergic neurons degeneration in the Substantia Nigra. This leads to a drop in dopamine levels in the striatum and aberrant motor control (Chia, et al., 2020). The most significant risk factor for PD is age; incidence increases dramatically in the 60s and then rapidly in the following decades of life (Hou , et al., 2019). Aging is closely linked to the onset of PD, as aging is a naturally occurring, evolutionarily conserved process that involves the dysregulation of multiple pathways, including oxidative stress, mitochondrial dysfunction, and neuroinflammation. Many of these pathways are also implicated in neurodegenerative conditions, and aging is linked to cellular pathway impairment, which makes dopaminergic neurons more vulnerable to cell death (Pang, et al., 2019).

Parkinson's disease is characterized by bradykinesia, tremor, postural instability and rigidity (Bohnen, et al., 2021). One of the main indicators of PD is tremor, which is an involuntary,

repetitive, oscillatory movement of a body part. (Pasquini, et al., 2023). Characteristically occurring at rest and usually beginning in one hand (where it is frequently referred to as "pill-rolling"), feet, or legs, and can progressively impact both sides of the body. Tremors are particularly visible in the distal portion of an extremity. The jaw, chin, mouth, or tongue may also involve in PD's resting tremor (Saikia , et al., 2019).

Bradykinesia, a symptom of disorders of the basal ganglia, is the most prevalent PD clinical manifestation. It includes difficulties with planning, initiating, and carrying out movements as well as performing sequential and simultaneous tasks, including fine motor control tasks (such as buttoning or using utensils) (Baladaniya& Baldania, 2023) Rigidity is one of PD hallmark symptoms present in up 89% of cases (Ferreira-Sanchez, et al., 2020). Rigidity is known as increased resistance and is occurring across the range of passive movements of limbs and generally accompanied by the" cogwheel" phenomena (Baladaniya & Baldania, 2023). Postural instability is lack of balance due to loss of reflexes related to posture especially reaction of balance, assuming a flexed position, and rotation of the trunk (Palakurthi & Burugupally, 2019) Postural instability frequently results in falls, decreased walking confidence, and a lower standard of living (Tan, et al., 2019).Autonomic nervous system dysfunction (orthostatic hypotension and constipation), olfactory loss, mood and cognitive abnormalities, and sleep problems are examples of Non-Motor Symptoms (NMS) in PD. Many of them may occur years or even decades before the classic motor symptoms of PD (Peball, et al.,2020).

Pharmacological treatment of PD consists of a dopaminergic supplement with levodopa, anticholinergics agents, MAO-B inhibitors of and COMT inhibitors, which essentially aims to manage the symptoms, improve functional mobility, and extend the life expectancy of treated PD patients (Marino, et al.,2020) For severe PD cases with motor fluctuations, device-assisted interventions, such as Deep Brain Stimulation and Levodopa-Carbidopa Intestinal Gel Infusion, provided efficient therapy choices (Richter, et al.,2019). Physiotherapy is becoming increasingly relevant as new therapy for PD (Muñoz-Vigueras, et al.,2021)

Functional health status is often defined as the capability to carry out everyday tasks necessary to meet essential needs, carry out usual roles, and maintain their health and wellbeing, and it is recognized that a patient's functional health status crucial in assessing overall general health (Skube, et al.,2018) Newly diagnosed PD patients have trouble carrying out everyday tasks because accomplishing both activity of daily living (ADL) and instrumental activity of daily living (IADL) requires physical skills (like stability and dexterity), cognitive skill (like reasoning, planning, and thinking) and perceptual (like sensory) abilities. 75% of I-ADL tasks and 50% of ADL tasks have gotten worse (Gorecka-Mazur, et al.,2019).

Quality of life (QoL) is defined as " individuals' perception of their position in relation to their goals, expectations, standards, and concerns, as well as the culture and value systems in which they live." (Kowitlawkul, et al.,2019). It's affected by motor symptoms, declining psychological and social functioning, the severity of the disease, and (NMS) like sleep problems, depression, fatigue, apathy, and speech impairment in Parkinson's disease patients. Moreover, NMS are more significant for a patient's QoL, caregiving burden, caregiver QoL and utilization of healthcare resource (Inguva, 2021).

Parkinson's disease is considering a major transition of patients' life and requires adapting to its complex requirements. The stigma associated with PD has a major impact on QoL (Salazar et al., 2019). Stigma experiences have contributed to Parkinson's patients avoiding social events, which led to loneliness, social isolation, and a decline in social interactions (Verity, et al., 2020)

Nurses have been identified as important healthcare providers for both the initial encounter of patients with medical care and the course of treatment of individuals with PD. Together with other healthcare team members, they can work to enhance QOL by implementing a standardized care plan that could cover needs for relaxation and sleep, mobility, and elimination, as well as by promoting health and preventing complications associated with the neurodegenerative disease process. (Parish & Kim, 2020).

Aim of the Study

Estimate the relation between functional status and quality of life among geriatric patients with Parkinson's disease.

Research Questions

1. What is the level of functional status of geriatric patients with Parkinson's disease?
2. What is the level of quality of life among geriatric patients with Parkinson's disease?

3. What is the type of relationship between the functional status and quality of life among geriatric patients with Parkinson's disease?

Method

Research design

A descriptive correlational design was used in this study.

Setting

The study was carried out at neurological outpatient clinics at the three medical centers that affiliated to Mansoura University Hospitals. The neurological outpatient clinics received Parkinson's disease patients on Wednesdays of every week in outpatient clinics No. 1, 6, 7, and 8 and was called movement disorders outpatient clinic. This clinic receives approximately 7 patients every day, provides medical checkups, medication and health teaching to these patients.

Study subjects*:* A purposive sample of 102 geriatric patients with Parkinson's disease attended the above-mentioned setting were selected in this study based to the following criteria: Patient aged 60 years and more, participating in the study voluntarily, capable to communicate and available at data collection time.

Exclusion criteria: Geriatric patients suffering from other diseases that can impair gait performance, such as cerebrovascular disease and fractures and geriatric Patients with uncontrolled diabetes mellitus who have peripheral neuropathy.

Tools of Data Collection

The following four tools were used for collecting data*:*

Tool I: Structured Interview schedule It was developed by the researcher after reviewing related literature, it included two parts.

***Part I*:** Demographic data of the geriatric patients such as age, gender, marital status, educational level, occupation, and income.

Part II: Clinical data of geriatric patients as the onset of disease, received treatment, medical history and comorbidities.

Tool II: Hoehn and Yahr Scale (1967)

The Hoehn and Yahr Scale originally developed in 1967 by Margaret Hoehn and Melvin Yahr to measures how PD symptoms progress and the level of impairment **Hoehn and Yahr (1967).** It includes stages 1 to 5. After that, stages 0, 1.5 and 2.5 has been added for the in-between course of PD. The modified Hoehn and Yahr scale described as, Stage 0 (No symptoms of disease), Stage 1 (Signs of disease on one side), Stage 1.5 (Signs of disease on one side also include spine and neck), Stage 2 (Both sides are involved but no impairment in balance) , Stage 2.5 (Minor manifestation on both sides, and recovery when the 'pull test' is applied), Stage 3 (Balance impairment, mild to moderate disease and physically independent), Stage 4 (Severe impairment, but still capable to walk or stand without help) and Stage 5 (Need a wheelchair or bedridden if not helped).

Tool III: Functional Independence Measure (FIM Instrument) (1987)

The FIM instrument was developed by **Hamilton et al., (1987)** to assesses daily activity, dependency and disability the. This tool was translated into Arabic and examined for validity and reliability by **Shebl and Abd Elhameed, (2014)**. It consists of 18 elements that evaluate six functional areas, these elements split into two major domains: Motor domain consist of 13 elements and Cognitive domain consist of 5 elements, motor domain include; (six elements for self-care, two elements for control of sphincter, 3 elements for transfer, 2 elements for locomotion), and cognitive domain consist of (2 elements for communication and 3 elements for social cognition)

All items were scored into 1 of 7 levels as level one indicates complete dependence and level 7 indicate complete independence. The 7-point scale be divided into three levels of dependence ('complete dependent' 1 or 2 points, 'partially dependent' 3, 4 or 5 points and 'independent' 6 to 7 points), The levels of functional dependence were classified according to FIM's total score; the minimum total score (18 points) represents total dependence, 19-60 corresponds to maximum/moderate dependence (i.e., need help up to 50% of tasks), 61-103 indicates minimal dependence and supervision (requires help up to 25% of tasks), and 104-126 refers to total independence.

Tool IV: World Health Organization health related Quality of life-BREF (W HOHRQOL-BREF) (1997)

It is a shorter version of the original instrument WHOHRQOL-100 developed by **World Health Organization (1997)**, to assesses the quality of life. It includes 26 elements that measure four major domains of HRQOL: 7 elements for physical health, 6 elements for psychological health, 3 elements for social relationships, and 8 elements for the environment; in addition to overall health related quality of life and general health. Questions are rated on one-to-

five-point scale. The domains score was scaled in positive direction (as higher scores refer to higher health quality of life), while questions number 3, 4 and 26 were scored in negative direction (as higher scores mean lower health related quality of life). The total score greater than or equal 60 indicates good quality of life while total score less than 60 indicates poor quality of life **(Ohaeri &Awadalla, 2009).**

Data Collection Process

Phase I: Preparatory Phase: It included the following steps:

1- Administrative step

- An official written letter was issued from the Faculty of Nursing, Mansoura University and directed to the appropriate authorities in the selected setting to obtain his approval and was informed about the purpose of the study and the time of data collection.
- An official approval was obtained from the responsible authority of the hospitals to carry out the study
- The researcher met the medical and nursing staff at the hospitals and introduced herself to them and take the acceptance to collect data and described the purpose of the study& time of data collection.

2- Literature review step

- That completed through reviewing academic works from around the world and nationally on various aspects including Parkinson's disease in elderly, functional ability and quality of life of patients suffering from PD by using different resources like textbooks, online searches, and scientific published articles. The design of the study tools was based on this review.

3- Developing the study tools of data collection step

- Tool I (structured interview schedule) was developed by the researcher relies on extensive review of relevant literatures.
- Study tools, I (Structured Interview schedule), II (Hoehn and Yahr Scale), tool III (FIM Instrument) and IV (World Health Organization Quality of life-BREF) were utilized to gather the required data from the geriatric patients.
- **Validity**: The study tools were examined for its validity by a jury of five expertise in the relevant field of gerontological nursing who revised the tools for clarity, relevancy, applicability, comprehensiveness, understanding and ease for implementation and according to their opinions, the necessary modifications were applied.
- **Reliability**: The reliability of tool Functional Independence Measure (FIM Instrument) (1987) and World Health Organization health related Quality of life-BREF (W HOHRQOL-BREF) (1997) were assured by using Cronbach alpha test (r= 0.864 & 0.881) respectively.
- **Pilot study:**was carried out on 11 of the geriatric patients with PD that represent (10%) of total sample to ensure that the tools are clear, relevant, feasible and applicable and to determine the needed duration to finish the sheet
- The time needed to fill the interview sheet ranged from 20-30 minutes.

Phase II: Operational phase This phase lasted 11 months from mid-June 2023, till the end of May 2024. and included the following:

- The researcher started data collection when the necessary approval was obtained.
- The researcher visited each clinic according to the schedule of the neurological outpatients' clinics at the three medical center (Wednesday of every week) and geriatric outpatients' clinic at Mansoura Specialized medical hospital (Sunday, Tuesday &Thursday) from 9 am to 12 pm.
- Geriatric patients, who matched inclusion criteria and accepted to participate in the study were interviewed individually, and the researcher started the interview by introducing herself to each elderly patient and caregiver and giving them a brief idea about the purpose of the study, ask elderly patient or caregiver to sign the written consent, and made sure that the patient was comfortable in his seat, then the necessary data were taken.
- Data collection started by assessing demographic and health-relevant data, through interviewing with elderly patients using tool I (Structured Interview schedule) and the researcher assessed severity of Parkinson disease by tool II (Hoehn & Yahr Scale).
- The researcher assessed functional status of geriatric patients with Parkinson disease by using tool III (Functional Independence Measure) and assessed quality of life of geriatric patient with Parkinson disease by using tool IV (World Health Organization health related Quality of life-BREF).

- The required data were gathered by using the study tools. Information about medications that had been used was collected by reviewing patients' medical follow up cards.

Ethical Considerations

An ethical approval was acquired from the Research Ethics Committee of the Faculty of Nursing – Mansoura University. An informed consent was obtained from elderly patients and their caregivers before starting of the study after describing the study's purpose. Patients were knowledgeable that sharing was entirely optional and that they could choose whether or not to take part in this study. Privacy of participants and confidentiality of the gathered information was ensured. Patients were assured that They are free to depart the study at any time without any penalties.

Statistical Analysis

Data were analyzed by using SPSS version 22. One-sample Kolmogorov-Smirnov test was utilized to test the normality of data. The appropriate descriptive statistical tests as frequent, percentage, mean, and standard deviation were utilized. Also, inferential statistics were used; the correlation between variables was tested using Pearson's correlation coefficient. Graphs and tables were done for visualization of data. Statistically significant was set at $P < 0.05$.

Results

Table 1: shows demographic characteristics of the geriatric patients with PD. According to the table, 52.0% of geriatric patients aged from 60 to less than 65 years with a mean of 68.13±4.72 and 67.6% of them were male. Regarding marital status, 76.5% of the geriatric patients were married and 34.3% of them have secondary education. As regards occupation before retirement, 32.3% of geriatric patients were farmers and 64.7% of them stated that their income was insufficient. Also, it was observed that 76.5% geriatric patients were living in rural areas and 97.1%them living with their families.

Table (2): shows distribution of the studied geriatric patients according to their history of Parkinson's disease. According to this table 81.4% of geriatric patients had no family history of PD. As regards motor symptoms bradykinesia was reported by 95.1% of geriatric patients followed by 94.1% had resting tremors. According to non-motor symptoms constipation represented in 60.8% followed by smell problems in 58.8% of geriatric patients. The most common affected symptoms were motor which represented in 86.2% as reported by geriatric patients.

Table 3: show distribution of the studied geriatric patients according to their Parkinson's disease medications. The table demonstrates that 78.4% of the studied geriatric patients were treated with levodopa followed by 64.7% treated with amantadine. Also, 83.3% of the studied geriatric patients were suffering from side effects from PD medication, dizziness and nausea were reported as the most side effect of PD medication as represented in 47.1% and 42.2% respectively and 76.1% of the studied geriatric patients were committed to prescribed medications.

Table 4: shows domains of quality of life of the studied geriatric patients with Parkinson's disease. In this table, mean score for social relationships, the environment, physical health and psychological health was 62.17±10.53, 49.79±8.22, 49.61±6.53 and 46.41±7.44 respectively and the overall score of geriatric patients QOL was 51.99±6.39.

Figure 1: Illustrates level of functional status of the studied geriatric patients with Parkinson's disease. This figure demonstrates that 78.4 % of geriatric patients were totally independence and 19.6% of them have minimal dependence while 2.0% have moderate dependence.

Figure 2: Shows the levels of quality of life among the studied geriatric patients with Parkinson's disease. This figure shows that 88.2% of the studied geriatric patients had a low level of quality of life, whereas 11.8% of them had good quality of life.

Figure 3: shows correlation between functional status and quality of life among the studied geriatric patients with Parkinson's disease. This figure shows that, there was a statistically significant positive correlation between functional status and quality of life among studied geriatric patients with Parkinson's disease at $r=0.786$, $p<0.001$** as the higher functional status, the greater quality of life.

Table (1): Distribution of Studied Geriatric Patients With Parkinson's Disease According to Their Demographic Characteristics

Demographic Characteristics	n= 102	100%
Age (years)		
From 60 to less than 65 years	53	52.0
From 65 to less than 70 years	37	36.2
70 years and more	12	11.8
Mean ± SD	68.13±4.72	
Gender		
Males	69	67.6
Females	33	32.4
Marital status #		
Married	78	76.5
Unmarried	24	23.5
Level of education		
Illiterate	32	31.4
Read and write	23	22.5
Secondary education	35	34.3
Higher education	12	11.8
Job before retirement*		
Farmer	33	32.3
Housewife	32	31.4
Craft works	28	27.5
Employee	9	8.8
Monthly income		
Insufficient	66	64.7
Sufficient	36	35.3
The residence		
The countryside	78	76.5
Town	24	23.5
Living arrangements		
With the family	99	97.1
Alone	3	2.9

Unmarried (Single, widow and divorce)

- Craft works include (Factory worker, carpenter, barber, driver, trader, Painting works and Trader)

Table (2) Distribution of the Studied Geriatric Patients According to Their History of Parkinson's Disease

PD history	n (102)	100%
Family history of PD		
No	83	81.4
Yes	19	18.6
Degree of kindship	N=19	
1st degree	17	16.7
2nd degree	2	2.0
Symptoms of PD#		
Motor symptoms		
Bradykinesia	97	95.1
Resting tremor	96	94.1
Muscle rigidity	63	61.8
Postural instability	36	35.3
Non motor symptoms		
Constipation	62	60.8
Smell problems	60	58.8
Dysphagia	49	48.0
Sleep problem	36	35.3
Drooling saliva	30	29.4
Excessive sweating	27	26.5
Speech difficulty	25	24.5
Mood abnormality	23	22.5
Orthostatic hypotension	17	16.7
Cognitive abnormalities	10	9.8

Table (3) Distribution of the Studied Geriatric Patients According to their Parkinson's Disease Medications.

Medication history	n (102)	100%
Medication #		
Levodopa	80	78.4
Amantadine	66	64.7
Anticholinergic	49	48.0
COMT inhibitor *	17	16.7
Dopamine agonists	16	15.7
Monoamine oxidase -b inhibitors	14	13.7
Side effects from PD medication		
Yes	85	83.3
No	17	16.7
Type of side effects #		
Dizziness	48	47.1
Nausea	43	42.2
Dry mouth	25	24.5
Blurred vision	25	24.5
Hypotension	20	19.6
Vomiting	11	10.8
Leg swelling	7	6.9
Confusion	7	6.9
Mental changes	6	5.9
Commitment to prescribed medications		
Yes	78	76.5
Sometimes	24	23.5

More than one answer was given

*Catechol-O-Methyltransferase inhibitor

Table (4) Domains of Quality of life of the Studied Geriatric Patients with Parkinson's Disease (n=102)

Domains	Mean ± SD	Min.	Max.	Median
Physical health	49.61±6.53	35.71	64.29	50.00
Psychological health	46.41±7.44	29.17	62.50	45.83
Social relationships	62.17±10.53	33.33	75.00	66.67
Environment	49.79±8.22	25.00	68.75	50.00
Overall QOL score	51.99±6.39	35.86	64.14	52.73

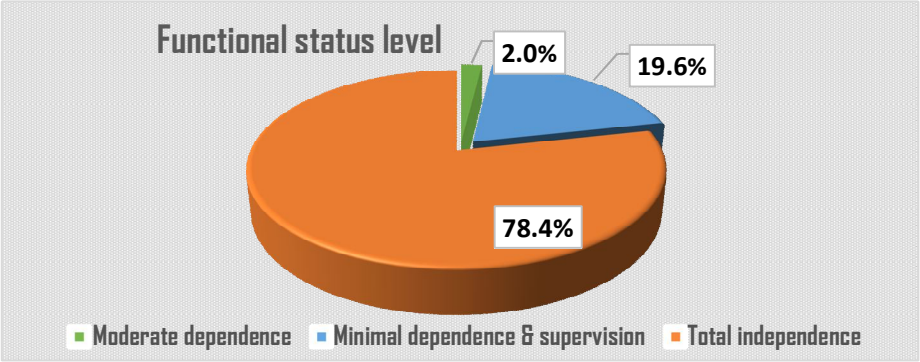

Figure (1) Level of functional status of the studied geriatric patients with Parkinson's disease (n=102)

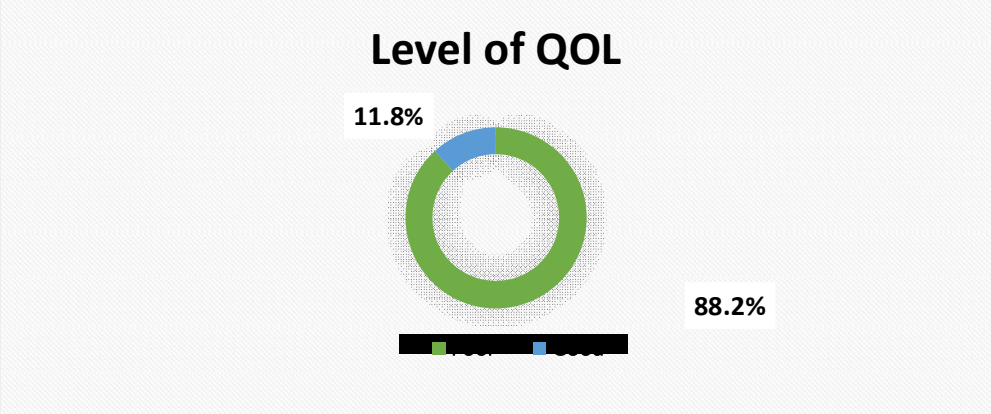

Figure (2) Level of Quality of life among the studied geriatric patients with Parkinson's disease (n=102)

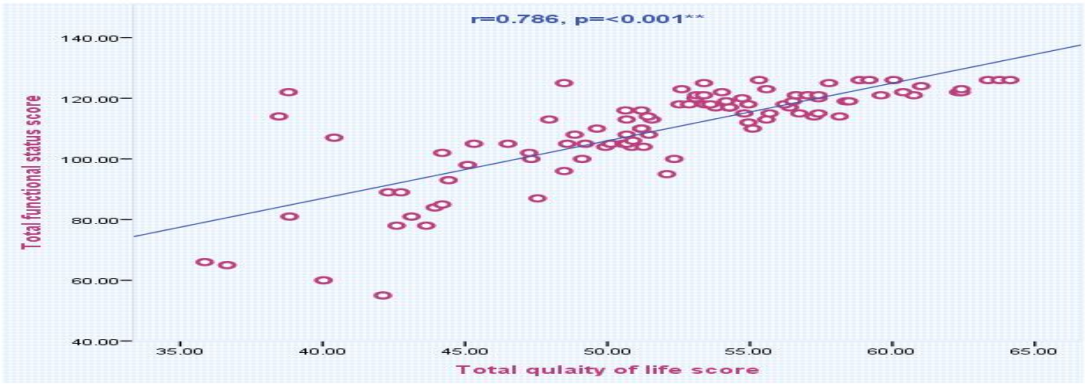

Figure3: Correlation between functional status and quality of life among the studied geriatric patients with Parkinson's disease

Discussion

Parkinson's disease features are tremor, bradykinesia, rigidity and postural abnormalities (Canfang, et al., 2024) These symptoms affect balance, functional mobility, and gait (Pinto, et al., 2019). These symptoms get worse and can have a significant impact one's psychological well-being, and patients with PD experience lower QOL and more psychological mental health problems like anxiety and depression (Cheng, et al., 2024).

Therefore, this study was carried out to determine the relation between functional status and quality of life among geriatric patients with PD.

According to the current study's findings, more than half of studied geriatric patients were aged from 60 to less than 65 years with a mean of 68.13±4.72. This result can be attributed to that advancing age is the biggest risk factor for the onset and progression of PD. The present study is compatible with a study carried out in Egypt by Mohamed, et al., (2020) who stated that the geriatric patients mean age was 68.25 ± 8.47 years. This result is incongruent with Sarhan & El sayed., (2018) reported that, studied elderly mean age was 58.49±9.53 years.

The current study revealed that PD affects elderly male more than females. This result may justified as males more likely to be exposed to environmental and occupational hazards of neurotoxic agents than females. These results were in the same line with Shaheen, et al., (2022), who reported that the majority of participants were men. This finding contradicted with a previous study done in USA by Subramanian, et al., (2020) who stated that women were more than half of the studied geriatric patients.

Regarding the level of education, one third of the studied geriatric patients had secondary education. This result may be justified as; secondary education may reflect the educational norms and opportunities available to the older adults during their formative years and may have limited access to higher education compared to younger generations. This finding is in accordance with a study carried out in Egypt by Sarhan & El sayed., (2018) who stated that, most of the studied sample had a secondary education. Conversely to the current result, a study done by Ritter& Bonsaksen (2019) found most of the studied elders had graduated college.

Concerning occupation before retirement, the result of the current study showed that approximately one third of the geriatric patients were farmers. This result may be due to the majority of the studied patients were living in the countryside and farming is the main occupation in the countryside, also they are more susceptible to pesticide and insecticides which increase the risk for PD. As regard monthly income, the present study founded that most of geriatric patients stated that their income was insufficient. This may be resulting from an increase in the high cost of living that disproportionate to the source of income, in addition to the burden of drug prices to treat the diseases that they may suffer. The study findings were congruent with the result of a study conducted in Egypt by Mohammed, et al., (2022) who found that the majority of studied subject have insufficient income.

The result of the current study revealed that the majority of geriatric patients with PD were living in the countryside. This can justify as people living in rural area are more having risk for pesticide exposure and rural areas may have higher levels of environmental toxins and reduced access to healthcare. This finding agreed with a study

conducted in Egypt by Mohammed, et al., (2020) who found that most of the studied patients were residing in the countryside. This finding was incongruent with a study carried in Egypt by Deraz, et al., (2024) who reported that majority of the studied participants were residing in urban areas.

Moreover, the current results showed that more than two thirds of the studied geriatric patients were married and the majority of them were living with their families. This finding may be related to that Egyptian society is characterized by strong family ties. Similarly, a study done in study done in Egypt by Amer, et al., (2024) who found that most of the studied elders were living with their families. In addition to study done in Japan by Takahashi, et al., (2016) who found that the majority of the studied sample were staying with their families.

As regard family history, the finding of the current study revealed that the majority of the participants had no family history of PD. this finding was consistent with study done in Spain by Chuquilín-Arista, et al., (2020) who reported that most of the participants had no family history of PD. As regard to motor symptoms of PD, the current finding found that the majority of the participants were suffering from bradykinesia and resting tremors. These results agreed with study done in China by Sun, et al., (2020) who reported that the most prevalent motor manifestations were tremor and bradykinesia. As well as study done in Turkey by Gokcal, et al., (2017) reported that the most prevalent motor manifestations were tremor and bradykinesia.

As regards non motor symptom, constipation was the most frequent non-motor manifestations as reported by geriatric patients. This finding may be resulted from difficulty swallowing and chewing in the elderly makes them eat soft foods that do not contain fiber, which causes constipation. This result was congruent with the result of a study done in Egypt by Ragab, et al., (2019) who reported that, gastrointestinal symptoms especially constipation were the most frequent non-motor symptoms among the studied group. While a study done in Italy by Fernandes, et al., (2021) found that sleep disorders was the most prevalent complaint in the studied sample.

The current study also showed that social relationships had the highest mean score which refer to the lowest level of problem and psychological health had the lowest mean score which refer to the higher level of problem. This in the same line with a study carried out in Morocco by Tibar et al., (2018) who reported that social relationships had the lowest level of problem. Also, study conducted in China by Lai, et al., (2018) who stated that psychological health had the lowest mean score and higher level of problem. The present study mismatched with a study done in USA by Hendred & Foster, (2016) who reported that the environment score was the highest while physical QOL was the most deteriorate domain in the PD group.

As regards the level of functional status, the current study revealed that the majority of respondents were totally independent. This may be related to the finding that the majority of patients were in stage 1 which has not yet affected their level of movement. In the same spirit, this results was congruent with Soyuer, et al., (2018) who conducted a study in turkey and found that most of participants were totally independent. In contrast, a study done in Pakistan by Fatima, et al., (2023) reported that the majority of participants were required minimal assistance.

In concerning QOL of geriatric patients with PD, the present study revealed that, the majority of them had poor quality of life. This can be justified by the fact that the disease is characterized by symptoms such as sleep problems, speech difficulty, anxiety, and dependence on treatment to control the symptoms of the disease, and this may reduce the quality of life. In agreement a study done in German by Balzer-Geldsetzer, et al., (2018), found that QOL reduced in PD patients.

A highly statistically significant positive correlation was found between functional status and quality of life among the studied geriatric patients with PD. This suggests that decreased ability of performing ADL led to increase dependency and make them feel like they are a burden on people around them and this in turn will reduce quality of life. Also, functional limitation often leads to social isolation and reduced participation social activities and may cause decrease in quality of life. Similarly, study done in Germany by van et al., (2018) and study done by Mohamed, Mohamed & Fathy (2023) found a highly statistically significant relation between total QOL of studied patients with PD and their level of independency.

Conclusion:

Depending on the present study findings of and answer the research question, it was concluded that majority of the studied geriatric patients were totally independent, and self-care was the highest mean score of motor domain which indicates the highest level of motor functioning while social

cognition was the highest mean score of cognitive domains which indicates the highest level of cognitive performance. In addition, the majority of the studied participants had poor QOL. Moreover, there was a highly statistically significant correlation between functional status and QOL among the studied geriatric patients with Parkinson's disease.

Recommendations

In the light of the results of this study, the following recommendations are suggested:

- Designing educational programs for the geriatric patients suffering from PD about the process management and how to cope with the disease to help patients in maintaining health and good functional status.
- Designing an educational program for geriatric patients with PD and their caregiver about the available services that could increase patients' quality of life such as physiotherapy and occupational therapy services.
- Designing an educational program for geriatric patients with PD about available mental health support services that could help them to manage anxiety and depression which may have improve their quality of life.
- Further research is needed to identify other factors that could affect QOL of geriatric patients suffering from PD taking into account local context and organizational factors

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