



CODEN [USA]: IAJPBB

ISSN: 2349-7750

## INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.3244358>

Available online at: <http://www.iajps.com>

Research Article

### A CROSS-SECTIONAL RESEARCH TO ASSESS THE COST AND QUALITY OF LIFE AMONG PATIENTS AFFECTED WITH PARKINSON'S DISEASE

<sup>1</sup>Dr. Rooma Qasim, <sup>2</sup>Dr Sana Nadeem, <sup>3</sup>Dr Tayyaba Tahira  
<sup>1</sup>Fatima Jinnah Medical University, Lahore.

Article Received: April 2019

Accepted: May 2019

Published: June 2019

#### Abstract:

**Background:** The outcomes of treatment and treatment cost are very much helpful to ascertain the disease and treatment effects.

**Objective:** This research aims to assess the QoL (Quality of Life) and treatment cost on the patients of PD (Parkinson's Disease). Furthermore, it also aims to analyze the correlation of disease treatment, cost and quality of life.

**Methods:** This cross-sectional research was conducted at Jinnah Hospital, Lahore from March 2017 to April 2018 with the help of a survey that included a questionnaire to take the response of the participants. We documented PD associated resource consumption, clinical features and loss of productivity in the past twelve months timeframe. Statistical scales were also utilized in this research for the calculation of cost and communal perspective.

**Results:** Among a total of 110 patients there were 38 females (34.5% female) and 70 males (63.5%); moreover, the information about gender for two patients was missing. Mean age and disease duration were respectively  $(63.3 \pm 11.3)$  years and  $(8.2 \pm 5.8)$  years. PDQ-39 summary and EQ-5D score were respectively  $(48.1 \pm 13.4)$  and  $(0.59 \pm 0.28)$  which was lower than the age bracket from 45 years to 74 years. There was a significant association between EQ-5D & PDQ-39 ( $P$ -Values 20.47 & 0.000). In terms of cost the direct medical cost, direct non-medical cost and indirect cost was respectively 35.7%, 29.4% and 34.9%. There was an increase in the disease duration of one year and a decrease in the utility of EQ-5D of 0.1 which increased the yearly cost from 8% to 10% and 7.8% respectively. PDQ-39 score non-significantly effects the total cost.

**Conclusions:** General public health and severity of the Parkinson Disease highly affect the magnitude of quality of life loss. PD associated cost is enormous which are affected by EQ-5D, disease duration and cost.

**Keywords:** Disease, Parkinson's Disease (PD), Quality of Life (QoL), Medical, Cost and Disease Duration.

#### Corresponding author:

Dr. Rooma Qasim,

Fatima Jinnah Medical University, Lahore.

QR code



Please cite this article in press Rooma Qasim et al., A Cross-Sectional Research to Assess the Cost and Quality Of Life among Patients Affected with Parkinson's disease., Indo Am. J. P. Sci, 2019; 06(06).

**INTRODUCTION:**

Parkinson's disease is a well-known neurodegenerative disorder [1]. In hungry, more than twenty thousand people have PD [2]. Different countries have different PD treatment cost burden which is published and sometimes estimated as well [3 – 7]. Therefore, its estimation of the disease burden is not that much common. The only available source of information regarding costs estimation is locally collected evidence. Health-related economic studies and surveys are required for exact estimation. Therefore, our research aims to assess the QoL (Quality of Life) and treatment cost on the patients of PD (Parkinson's Disease). Furthermore, it also aims to analyze the correlation of disease treatment, cost and quality of life.

**METHODS:**

This cross-sectional research was conducted at Jinnah Hospital, Lahore from March 2017 to April 2018 with the help of a survey that included a questionnaire to take the response of the participants. We documented PD associated resource consumption, clinical features and loss of productivity in the past twelve months timeframe. Patient's informed consent and ethical approval of the hospital was taken before research commencement.

The questionnaire contained information about demographic data, major clinical features, employment status, PD related medication, healthcare services used in last twelve months, use of transportation and assisting others in the routine activities as informal care. The disease was categorized on the basis of its severity by using HY scale [8]. General health status was also measured by

VAS and EQ-5D [9]. PDQ-39 helped in the measurement of health-related QoL [10].

The unit price was multiplied with total visits for cost estimation which also based on reimbursement as well. Costs also included diagnostic procedure price, drugs cost, officials cost and price of used pharmaceuticals [6 – 7]. Non-reimbursed costs for medical services included transportation charges, mobilization and other miscellaneous charges utilized to reach the medical healthcare facility. Statistical scales were also utilized in this research for the calculation of cost and communal perspective.

**RESULTS:**

Among a total of 110 patients, there were 38 females (34.5% female) and 70 males (63.5%); moreover, the information about gender for two patients was missing. Mean age and disease duration were respectively ( $63.3 \pm 11.3$ ) years and ( $8.2 \pm 5.8$ ) years. PDQ-39 summary and EQ-5D score were respectively ( $48.1 \pm 13.4$ ) and ( $0.59 \pm 0.28$ ) which was lower than the age bracket from 45 years to 74 years. There was a significant association between EQ-5D & PDQ-39 (P-Values 20.47 & 0.000). In terms of cost the direct medical cost, direct non-medical cost and indirect cost was respectively 35.7%, 29.4% and 34.9%. There was an increase in the disease duration of one year and a decrease in the utility of EQ-5D of 0.1 which increased the yearly cost from 8% to 10% and 7.8% respectively. PDQ-39 score non-significantly effects the total cost.

Detailed outcomes are presented in Table – I (PD Patients Characteristics), Table – II (PD Patients' Resource utilization and Costs) and Table – III (Regression Analysis Outcomes).

**Table – I: PD Patients Characteristics**

Variables	Number	Mean	$\pm$ SD
Age (Years)	110	63.3	11.3
Disease Duration (Year)	108	8.2	5.8
Weight (Kg)	109	74.1	13.1
Height (cm)	108	169.7	8.9
Body Mass Index	108	25.6	3.7
Variables	Number	Percentage	
Gender	Male	38	34.5
	Female	70	63.6
	Missing Data	2	1.8
Hoehn & Yahr Scale	I	20	18.2
	II	30	27.3
	III	41	37.3
	IV	11	10
	V	0	0
	Missing Data	8	7.3

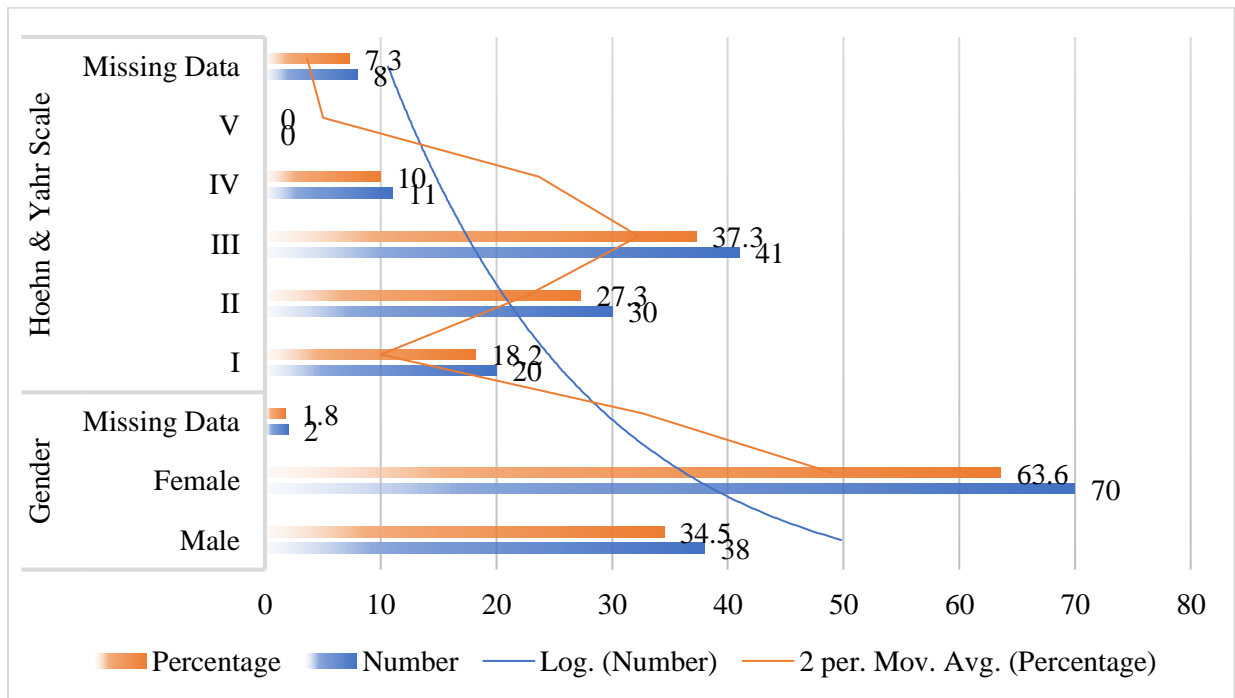
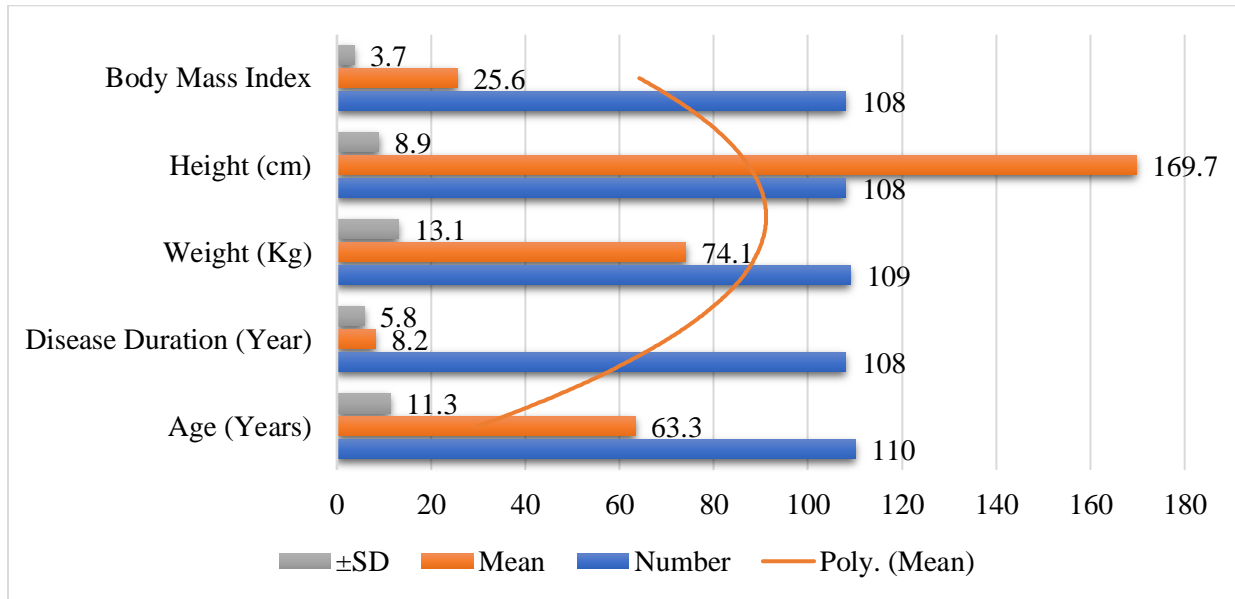


Table – II: PD Patients' Resource utilization and Costs

Resource Utilization	Resource utilization		Average yearly cost, EUR/patient/year	
	Rate of patients with at least one occasion (%)	Mean of the quantity used in the past 12 months (n=109)	Cost per patient (total sample)	Cost category (total sample)
Consultations (outpatient)	-	-	50.9	Direct medical cost: 2149.3 Euro/patient/year (35.7%)
GP visit	68 (62.3%)	3.3	17.8	
Specialist visit	100 (91.7%)	4.9	33.1	
Hospital admission	37 (33.9%)	0.4	348.4	
Diagnostics	-	-	42.5	
CT scan	68 (62.4%)	0.4	8	
MRI scan	54 (49.5%)	0.2	11.4	
SPECT	17 (15.6%)	0.04	17.8	
Laboratory tests	67 (60.5%)	0.8	0.7	
X-ray	28 (25.7%)	0.1	0.5	
Neuropsychology	41 (37.6%)	0.3	3.4	
Doppler	21 (19.3%)	0.1	0.4	
Tremor analysis	18 (16.5%)	0.1	0.2	
Tests of autonomic functions	21 (19.3%)	0.2	0.1	
Drugs (present users)	-	-		1614.3
MAO-B inhibitor	35 (32.1%)		179.1	
Amantadine	29 (26.6%)		33.5	
Anticholinergic drug	4 (3.7%)		3.9	
Dopamine agonist	50 (45.9%)		484.7	
Levodopa + decarboxylase inhibitor	59 (54.1%)		117.9	
Levodopa + decarboxylase inhibitor + COMT inhibitor	34 (31.2%)	-	535	
COMT-inhibitor	18 (16.5%)	-	260.2	
Other health care services	--		93.2	
Not reimbursed services	19 (17.4%)	-	57.2	
Ambulance	8 (7.3%)	0.2	36	
Non-medical cares	-	-	1774.6	Direct non-medical cost: 1774.6 EUR (29.4%)
Transportation	92 (84.45%)	-	69.9	
Informal care	47 (43.1%)	12.6 hours/week	1704.7	
Productivity loss	-	-	2106.3	Indirect cost: 2106.3 EUR (34.9%)
Work disability pension	19 (17.4%)	NA	2002.7	
Sick leave	5 (4.6%)	1.6 days/year	75.1	
Part time job due to PD	1 (0.9%)	NA	28.5	
Total	NA	NA	NA	6030.2 EUR

Table – III: Regression Analysis Outcomes

Variables	Model -EQ-5D In (Total Cost)	Model -EQ VAS In (Total Cost)	Model 3 - PDQ-39 In (Total Cost)	Model 4 - HY In (Total Cost)
Age	-0.021 (0.013)	-0.027 (0.014)	-0.0168 (0.013)	-0.0338 (0.012)
Male	-0.325 (0.317)	-.356 (0.328)	-0.274 (0.311)	-0.466 (0.277)
Disease Duration	0.076 (0.028)	0.094 (0.027)	0.0885 (0.027)	0.0194 (0.032)
EQ-5D	-1.530 (0.561)	-	-	-
EQ VAS	-	-0.023 (0.008)	-	-
PDQ-39	-	-	0.0142 (0.011)	-
HY I	-	-	-	-2.457 (0.450)
HY II	-	-	-	-0.366 (0.189)
HY IV	-	-	-	-0.112 (0.115)
Constant	15.42 (0.977)	16.14 (1.162)	13.44 (0.971)	16.60 (0.899)
Observations	95	91	101	99
F	5.81	5.89	4.10	9.21
P	0.0003	0.0003	0.0041	0.000
R-Squared	0.205	0.215	0.146	0.375
P < 0.1	P < 0.05	P < 0.01	-	-

**DISCUSSION:**

This cross-sectional survey assessed 110 PD patients for costs and HRQL; it also made a comparison of costs and various health measures. We came to know through PDQ-39 questionnaire that patients suffered due to highest bodily deterioration, discomfort, impairments and emotional well-being in routine activities and mobility. PDQ-39 average summary index was similar to the score as reported by a Spanish author and few other countries like Poland, Norway, Croatia, France and Germany having similar mean disease duration and mean age ( $48.1 \pm 13.4$ ) [12 – 17]. Various factors are involved for the difference such as chronic care access, co-morbidities and social support [18].

PD patients presented lower score of EQ-5D in various affected healthcare dimensions in terms of usual activities and mobility. Martinez-Martin also reported similar EQ-5D average scores for disease duration and age [19]. We also report a moderate association between EQ-5D utility index and PDQ-39 summary score; whereas, the association with VAS was not that much strong which is in agreement with other studies [20]. A moderate and significant association was also available between stages of Hy and three health indices; the outcomes confirm that limited HY capacity is important for the aspects of HRQL; therefore, there is a need to evaluate cost-effectiveness

of HY based models through EQ-5D utility values for suitable analysis of the sensitivity [21].

This research confirmed a significant association between total costs and EQ-5D in regression analysis. A decrease of 0.1 in utility score of EQ-5D increased by 7.8% yearly cost and the annual increase in the disease duration was from 8% to 10%. More research works included patients with poor HY stages and also considered clinical factors as well in order to extract required observations and refinements. A cost of the patients every year in schizophrenia and multiple sclerosis was about 2.3 and 1.7 higher than dementia and PD costs [23 – 25]. Similar trends have also been reported in various series; however, the average cost of PD was reduced [26].

**CONCLUSION:**

General public health and severity of the Parkinson Disease highly affect the magnitude of quality of life loss. PD associated cost is enormous which are affected by EQ-5D, disease duration and cost.

**REFERENCES:**

- Schrag A, Selai C, Jahanshahi M, Quinn NP (2000) The EQ-5D—a generic quality of life measure is a useful instrument to measure the quality of life in patients with Parkinson's disease. *J Neurol Neurosurg Psychiatry* 69: 67–73.

2. Dodel R, Jo'nsson B, Reese JP, Winter Y, Martinez-Martin P, et al. (2014) Measurement of costs and scales for outcome evaluation in health economic studies of Parkinson's disease. *Mov Disord* 29: 169–176.
3. Costa N, Ferlicq L, Derumeaux-Burel H, Rapp T, Garnault V, et al. (2013) Comparison of informal care time and costs in different age-related dementias: a review. *Biomed Res Int* 2013: 852368.
4. Pentek M, Gula'csi L, Ro'zsa C, Simo' M, Iljicsov A, et al. (2012) Health status and costs of ambulatory patients with multiple sclerosis in Hungary. *Ideggyogy Sz* 65: 316–324.
5. Pentek M, Harangozo' J, Egerha'zi A, Kelemen O, Gula'csi L, et al. (2012) Health-related quality of life and disease burden of patients with schizophrenia in Hungary. *Psychiatr Hung* 27: 4–17.
6. E'risk K, Kova'cs T, Wimo A, Ka'rpai K, Brodszky V, et al. (2010) Costs of dementia in Hungary. *J Nutr Health Aging* 14: 633–639.
7. Gustavsson A, Svensson M, Jacobi F, Allgulander C, Alonso J, et al. (2011) Cost of disorders of the brain in Europe 2010. *Eur Neuro psycho Pharmacol* 21:718–779.
8. Winter Y, von Campenhausen S, Brozova H, Skoupa J, Reese JP, et al. (2010) Costs of Parkinson's disease in eastern Europe: a Czech cohort study. *Parkinsonism Relat Disord* 16: 51–56.
9. Hoehn MM, Yahr MD (1967) Parkinsonism: onset, progression and mortality. *Neurology* 17: 427–442.
10. Euro Qol—a new facility for the measurement of health-related quality of life. The Euro Qol Group. (1990) *Health Policy* 16: 199–208.
11. Jenkinson C, Fitzpatrick R, Peto V, Greenhall R, Hyman N (1997) The Parkinson's Disease Questionnaire (PDQ-39): development and validation of a Parkinson's disease summary index score. *Age Ageing* 26: 353–357.
12. Szende A, Williams A (2004) Measuring self-reported population health: an international perspective based on EQ-5D. *Euro QoL Group Monographs Volume 1*. London: Spring Med publishing.
13. Cubo E, Rojo A, Ramos S, Quintana S, Gonzalez M, et al. (2002) The importance of educational and psychological factors in Parkinson's disease quality of life. *Eur J Neurol* 9: 589–593.
14. Klepac N, Pikija S, Kraljic' T, Relja M, Trkulja V, et al. (2007) Association of rural life setting and poorer quality of life in Parkinson's disease patients: a cross-sectional study in Croatia. *Eur J Neurol* 14: 194–198.
15. Reuther M, Spottke EA, Klotsche J, Riedel O, Peter H, et al. (2007) Assessing the health-related quality of life in patients with Parkinson's disease in a prospective longitudinal study. *Parkinsonism Relat Disord* 13: 108–114.
16. Chapis S, Ouchchane L, Metz O, Gerbaud L, Durif F (2005) Impact of the motor complications of Parkinson's disease on the quality of life. *Mov Disord* 20:224–230.
17. Herlofson K, Larsen JP (2003) The influence of fatigue on health-related quality of life in patients with Parkinson's disease. *Acta Neurol Scand* 107: 1–6.
18. Michałowska M, Fiszer U, Krygowska-Wajs A, Owczarek K (2005) Falls in Parkinson's disease. Causes and impact on patients' quality of life. *Funct Neurol* 20: 163–168.
19. Soh SE, Morris ME, McGinley JL (2011) Determinants of health-related quality of life in Parkinson's disease: a systematic review. *Parkinsonism Relat Disord* 17:1–9.
20. Martinez-Martin P, Rodriguez-Blazquez C, Abe K, Bhattacharyya KB, Bloem BR, et al. (2009) International study on the psychometric attributes of the non-motor symptoms scale in Parkinson disease. *Neurology* 73: 1584–1591.
21. Olesen J, Gustavsson A, Svensson M, Wittchen HU, Jo'nsson B, et al. (2012) The economic cost of brain disorders in Europe. *Eur J Neurol* 19: 155–162.
22. Bokor M (2001) Epidemiology of movement disorders. In: Taka's A, editor. *Parkinson's disease and other movement disorders*. Budapest, Melania Kiado'. pp. 59–72.
23. Lo'kk J, Borg S, Svensson J, Persson U, Ljunggren G (2012) Drug and treatment costs in Parkinson's disease patients in Sweden. *Acta Neurol Scand* 125: 142–147.
24. Jennum P, Zoetmulder M, Korbo L, Kjellberg J (2011) The health-related, social, and economic consequences of parkinsonism: a controlled national study. *J Neurol* 258: 1497–1506.
25. Findley LJ, Wood E, Lowin J, Roeder C, Bergman A, et al. (2011) The economic burden of advanced Parkinson's disease: an analysis of a UK patient dataset. *J Med Econ* 14: 130–139.
26. von Campenhausen S, Winter Y, Rodrigues e Silva A, Sampaio C, Ruzicka E, et al. (2011) Costs of illness and care in Parkinson's disease: an evaluation in six countries. *Eur Neuro psycho Pharmacol* 21: 180–191.