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Evaluation of frequency of depression in a subset of population with idiopathic parkinsonism in a tertiary care hospital

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ABSTRACT

Objectives. To determine the frequency of depression in patients with idiopathic parkinsonism presenting to a tertiary care Hospital in Karachi.
Material and methods. This case study was conducted at the neurology department Jinnah Postgraduate Medical Centre, Karachi (JPMC). The duration of the study was six months from 22nd January 2019 to 2nd June 2019. A total of 114 patients of parkinsonism (idiopathic Parkinson's disease) were included in this study. Patients were assured of confidentiality. They were given questionnaire with Beck depression inventory while waiting in the neurology outpatient clinic. Questionnaire was taken back after 25 minutes. Patient score more than 9 was diagnosed as depression. The identified depressed patient was offered treatment.
Results. Frequency of depression in patients with idiopathic Parkinson's disease was observed in 48.25% (55/114) cases.
Conclusions. It is concluded that our study indicates the burden of depression in Parkinson disease (PD) patients. However, even with stable or mild deficit in motor function, the wide prevalence of depression indicates that it should be suspected and treated. Over the past several years, systematic studies of depression and its treatment have contributed significantly to this most challenging psychiatric problem in PD. Hence, there is a need of policy for screening and prompt treatment of such patients so they could lead to enhance quality of life.

Keywords: Parkinson disease, depression, frequency, quality of life

INTRODUCTION

Parkinson's disease (PD) is a neurodegenerative disorder that results in progressive extrapyramidal motor dysfunction primarily related to loss of dopaminergic nigrostriatal function. The loss of dopamine leads to difficulty with movement, including slowness or lack of movement, rigidity, and resting tremor. Though less acknowledged, non-motor symptoms (NMSs) in PD are common and were recognized by Parkinson himself [1]. He referred to urinary incontinence, constipation, sleep disturbance and delirium. PD patients also suffer from a variety of NMSs, including significant changes in emotional wellbeing that deleteriously impact their quality of life [2].

O'Sullivan et al. attempted to correlate NMSs in PD by reviewing medical histories of pathologically identified patients. Twenty-one percent of patient presented with NMSs including pain, urinary dysfunction, depression, and anxiety [3]. In addition, premorbid personality traits consisted of cautious-

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ness, inflexibility, introversion, and lack of novelty seeking, which also persist after the onset of motor illness. It has been suggested in the general population study that these traits, as well as premorbid rates of coffee drinking and alcohol consumption, may reflect an underlying to the mesolimbic dopaminergic pathways among individuals predisposed to PD [4].

However, the NMSs of PD are not well recognized in clinical practice and one US study reported that existing depression, anxiety, and fatigues are not identified by neurologists in 50% of consultations, and sleep disturbances are not identified in over 40% of consultations [5]. Psychiatric symptoms may be missed if a clinician's interest is mainly focused on motor impairment. Patients, reluctance to report psychological symptoms may also contribute to the limited detection of these disorders. The actual rate of depression in persons with PD unknown, but reported rated vary widely, from 7% to 76% [6-9]. This variation is due to inconsistent methodology used in different studies.

Therefore, the present study is designed to assess the actual burden of depression as there is wide variation' in the previous studies as mentioned above. Rationale of study is to devised screen such patients if the prevalence found to be high and prompt treatment could lead to enhance quality of life.

MATERIAL AND METHODS

This cross-sectional study was led from January 2019 to June 2019 at the department of Neurology, Jinnah Postgraduate medical Center, Karachi. Full history, clinical assessment, and research facility examinations (complete blood count, erythrocyte sedimentation rate, urea, creatinine and electrolytes levels, liver capacity tests, blood glucose levels) were done. Assuming the prevalence of depression in PD as 40% based on previous studies statistics, 6-10 with bound on error of 9% taking 95% confidence intervals, the sample size came out to be 114. Sampling technique was non probability consecutive sampling.

All 114 patients of either gender, age 40-75 years, have duration of disease greater than 1 year. Patients with idiopathic (without cause) Parkinson disease with presence of tremors as involuntary shaking limbs at rest, presence of robotic movements bradykinesia and presence of limb muscle stiffness during movement on examination as rigidity were included in the study. Diagnosed cases of depression and on antidepressants prior to development of parkinsonism. Patients of epilepsy, stroke, mental retardation, Alzheimer disease, cancer, human immunodeficiency virus infection, diabetes mellitus, chronic hepatitis on Interferon therapy, hypothyroidism, Cushing syndrome and Non consenting patients were excluded from the study.

Patients meeting inclusion criteria were enrolled from outpatient department of neurology, after informed consent. Patients were assured of confidentiality. They were given questionnaire with Beck depression inventory while waiting in the neurology outpatient clinic. They requested to read each item carefully prior to encircling the numbers (0, 1, 2, or 3). The assigned questionnaire would collect the demographic data of age, gender, occupation and residence was noted besides duration of disease. Questionnaire was taken back after 25 minutes. The numbers encircled were sum up after patient's completion of questionnaire. Patient score more than 9 was diagnosed as depression. The identified depressed patient was offered treatment.

All the analysis was conducted on Statistical Package for Social Sciences SPSS (release 15.0, standard version, copyright© SPSS; 1989-02). Mean + standard deviation was calculated for continuous variables (age, inventory score, duration of Parkinsonism. Frequencies and percentages were calculated for gender, and depression in Parkinsonism patients. Effect modifiers were controlled through stratification of age, gender and duration of disease to see the effect of these on outcome, chi square test was applied and $p < 0.05$ was taken as significant.

RESULTS

114 patients of parkinsonism (idiopathic Parkinson's disease) were included in this study. Most of the patients were above 50 years of age. The average age of the patients was 59.56±9.28 years. Mean duration of parkinsonism was 3.78±1.19 years and mean Beck depression inventory score was 11.61±8.32 as shown in Table 1. Out of 114 cases, 65(57.03%) were males and 49(42.09%) females.

Frequency of depression in patients with idiopathic Parkinson's disease was observed in 48.25% (55/114) cases as presented in Figure 1. Rate of depression was 41 to 57% in all age groups and it was also insignificant among different age groups ($p = 0.67$) as shown in Table 2. Rate of depression was also not significant between male and female ($p = 0.81$). Frequency of depression in patients with idiopathic parkinsonism according to duration of parkinsonism is also presented in Table 3 which is also insignificant ($p = 0.54$).

DISCUSSION

Idiopathic Parkinson's disease (PD) affects approximately 1% of the population over the age of 50, and affects up to 2.5% of the population over the

TABLE 1. Descriptive statistics of patients (n = 114)

Variables	*Mean*	*Std. Deviation*	*95% Confidence Interval for Mean*		*Median*	*Inter quartile range*	*Variables Range*
			Lower Bound	*Upper Bound*			
Age (Years)	*59.56*	*9.28*	*57.84*	*61.28*	*60*	*15*	
Duration of parkinsonism (Years)	*3.78*	*1.19*	*3.56*	*4*	*3*	*2*	
Beck Depression Inventory score	*11.61*	*8.32*	*10.06*	*13.15*	*8*	*11*	

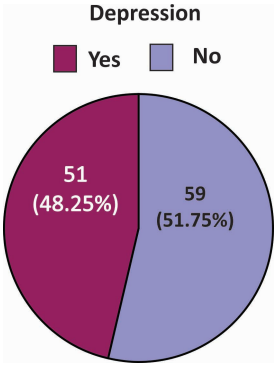

FIGURE 1. Frequency of depression in patients with idiopathic parkinsonism

TABLE 2. Frequency of depression in patients with idiopathic parkinsonism according to age groups (n = 114). Chi-Square = 1.53; (p = 0.67)

Age Groups (Years)	DEPRESSION		**Total**
	Yes	**No**	
41 to 50 years	13(54.2%)	11(45.8%)	**24**
51 to 60years	17(48.6%)	19(51.4%)	**35**
61 to 70years	17(41.5%)	24(58.5%)	**41**
>70 years	8(57.1%)	6(42.9%)	**14**

TABLE 3. Frequency of depression in patients with idiopathic parkinsonism according to duration of parkinsonism (n = 114). Chi-Square = 1.21; (p = 0.54)

Duration of of parkinsonism	**DEPRESSION**		**Total**
	Yes	**No**	
2 to 3years	32(45.7%)	38(54.3%)	**70**
4 to 5years	18(56.3%)	14(43.8%)	**32**
>5 years	5(41.7%)	7(58.3%)	**12**

age of 70 [10]. Several recent studies call attention to the role of psychiatry in the management of PD. Early in the disease process, adult-onset anxiety and depressive disorders precede the obvious onset of motor symptoms in up to 30% of patients and are associated with an increased risk of developing PD [11,12]. Once PD is diagnosed, neuropsychiatric symptoms, especially depression, can influence health-related quality of life more than motor deficits, yet they tend to be overlooked or not reported by patients [13,14]. A central issue is whether the major depressive syndrome in PD is a reaction to the motor disability or whether the syndrome is intrinsic to the disease processes of PD. Research examining the theory that depression is integral to disease process has evaluated the impact of disease severity, disease duration, age of onset, and gender on depression, with no consistent relationship found between these variables and depression [15]. The evidence that depression can precede the development of motor symptoms also suggests that depression in itself is a neurological symptom of PD [16]. Other studies suggest that depression is a reaction to the disability, on the basis of correlations between depression severity and motor impairment [17].

Depression is common in PD, but reported incidence and prevalence rates vary widely depending on the definitions, assessment instruments, and the population studied [18]. A recent review of all published studies between 1922 and 1998 found an average prevalence rate for depression of 31% when all diagnostic methods were used [19]. The frequency of depression 48.25% recorded in the present investigation is in keeping with the current literature data [20,21]. In our study Most of the patients were above 50 years of age. The average age of the patients was 59.56±9.28 years. Out of 114 cases, 65 (57.03%) were male and 49 (42.09%) female. Our data is in accordance with the data of a study done by Prado and Barbosa [22]. 60 consecutive PD subjects were included in his study. There were 34 males (56.6%) and 26 females (43.30%) and average age was 64.83 ± 11.64 years (age range from 44 to 85 years old).

The present study revealed no statistically significant correlation between depression and gender. This was also reported by Ehmann et al. [23]. However, Warburton [24] found a female predominance for depressive symptoms in a group of 140 PD patients selected for thalatomy and 140 controls. An important point in an investigation pertaining to PD and depression concerns the most adequate instruments to assess the affective symptoms. Shulman et al. [25] have assessed the local staff neurologist's accuracy rate of the diagnosis of depression and other psychiatric symptoms in PD patients. Clinical impression based on a routine consultation was compared with specific data obtained from specific clinical scales for depression, and other psychiatric

symptoms. Clinical assessment accuracy was 35% for depression. In our study we use Beck depression inventory, patients were given questionnaire and requested to read each item carefully prior to encircling the numbers (0, 1, 2, or 3). Questionnaire was taken back after 25 minutes. The numbers encircled were sum up after patient's completion of questionnaire. Patient score more than 9 was diagnosed as depression.

The relation between depression and PD presents two clinically relevant points according to Starkstein et al. [26]. Firstly, the treatment for depression bears the potential to arrest the cognitive decline and secondly, the life expectancy of the PD patients with cognitive decline becomes significantly shorter.

CONCLUSIONS

We conclude that as the frequency of depression is found to be 48.25% in our study which indicates the burden of depression in PD patients. However, even with stable or mild deficit in motor function, the wide prevalence of depression indicates that it should be suspected and treated. Over the past several years, systematic studies of depression & its treatment have contributed significantly to this most challenging psychiatric problem in PD. Hence, there is a need of policy for screening and prompt treatment of such patients so they could lead to enhance quality of life.

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