Prevalence of Depression in patients of Parkinson disease at District Bannu

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Abstract

Depression is most common non-motor symptom which is mostly associated with Parkinson's disease (PD) with high negative impact on functional level of the patient life. There are limited reports available on asian population especially from Pakistan. The present study was designed to investigate the prevalence of depression in PD patients of district Bannu, KPK, province of Pakistan. Fifty one PD patients already diagnosed by clinical neurophysicians were recruited to current study. A standard and well-defined questionnaire was used which helps in collection and sensitively evaluation of the data and then score was assigned using Beck Depression inventory- II (BDI-II) to depression evidences. BDI-II contains twenty one items questions and the scores may range from 0 to 63. The scores are higher, severe is the depression. We found the (37.2%) prevalence of depression in fifty one PD patients of district Bannu, in which total forty four were male and seven were female participants. Among them total nineteen depressed patients were found in which twelve (23.5%) were males and total seven females (13.7%). Depression has statistically significant relationship with gender (p-value: 0.00). While no significance relationship was found with age, disease duration, education and handedness. Depression is significantly present in number of PD patients in Pakistani population. This finding will help the clinicians to do psychiatric evaluation of depression in all PD patients for proper management and early detection.

Key words: Parkinson's disease, Depression, District Bannu

Introduction

Parkinson's disease (PD) is known to be the most familiar neurological degenerative illness and having both motor as well as non-motor symptoms which includes arousal troubles, autonomic symptoms muscular rigidity, psychiatric turbulence and cognitive and sensory indications. PD is also linked with many psychiatric troubles such as sleep problems, psychotic indications, anxiety but depression is known non- motor symptom in PD which can affect 10-70% of PD patients. Psychiatric troubles impact negatively on illness management especially depression have a great negative role on patients disability, quality of life and results in decline of cognitive functioning [1-4]. Both hospital-based [5-7] and community based [8-9] reports have established the link between depression and Parkinsonism.

In PD patients the diagnosis of depression is extremely difficult because of overlap between two diseases. At initial momentary look indications of both diseases give the impression alike. The relationship found between high plasma homocysteine levels, cognitive harms, and depression in PD. The study found that the development of PD is at risk in depressed people as compare to osteoarthritis and diabetics although one more study found that 9.2% diagnosis of depression in idiopathic PD compare with 4.2% of controls. There are facts that diverse cognitive styles and coping approaches can boost the hazard of depression in PD [10-12].

One most prevalent threat factor of PD is growing age. Various studies shown that approximately 5% of patients have onset before the age of 50 years and 2% of those aged 65% year and above. Various studies also shown that the high risk of PD in males was 1.5 to 2 fold as compare to females however other studies shown no gender differences. In PD the prevalence of depression varies from 20 to 50% with depressive indications are observed in all PD stages of severity. In early stages of PD, depression can observe in up to 27.6% of patients [13-14]. In PD the prevalence of depression varies from moderate to mild is 24.1– 45.5% in community-based reports [15] while in hospital based reports is 71%, particularly in women. A recent systematic review indicates that depression or dysthymia is present in 52% of PD patients.[16] In PD patients, prevalence of depression considerably varies in different available studies from 2.9% to more than 90% of the patients [17-18]. We have searched diverse prevalence in different reports and reached to the conclusion that following reasons are involved such as type of population studied, depression type and diagnosis tool for depression [19-20]. Our best of knowledge no prevalence rate of depression among PD patient at district Bannu is available so this present study was planned to evaluate the prevalence rate of depression in PD patients at district Bannu. This study will help the people in treatment and future diagnostic and preventive strategies could be done.

Material and Method

Ethical approval

Formal Ethical approval was taken before initiating the study from the bioethical committee of Hazara University Mansehra Pakistan with the reference/File no 73/HU/ORIC/IBC/2016/1058.

Population area

The current study was carried out in KPK province of Pakistan, having the total area 74,521 km2 of the province and its projected 2017 population was 35,525,047. Bannu is the southern district of KPK province. The total population of the Bannu district is 1,167,892 with both rural (1,117,927) and urban regions (49,965) populations. Most of the participants were included from rural area with some participant from urban area (Pakistan Bureau of statistics).

Selection instrument

A standard and well-defined questionnaire was used which helps in collection and sensitively evaluation of the data and then score was assigned using Beck Depression inventory- II (BDI-II) to depression evidences. BDI-II contains twenty one items questions and the scores may range from 0 to 63. The scores are higher, severe is the depression. Elucidations of the depression scoring are: normal is (1 - 10); mild mood disturbance (11 – 16); borderline clinical depression (17 -20); moderate depressive mood (21 – 30); severe depressive mood (31 - 40); extreme depression (over 40).

Study arrangement

The whole population of the Bannu district was surveyed for already diagnosed PD patient and interview was conducted in face to face participation. All those individuals were selected for study which has confirmed PD diagnosed by one or more than single Neurophysicians. The study was conducted between December 2018 and June 2019. The Participants were randomly selected within the region. PD patients provided verbal consent and showed the active interest to take part in the study. The complete personal, demographic Information included in questionnaires was taken from participants personally as well as from the relative of the participants. For participants who were not capable (illiterate) to read, the interviewers asked the questions in local language (Pashto) and fill the questionnaires by it.

Valid participants

All those participants were valid for the study which has complete results prescribed medication forms. The entire participants were diagnosed by doctor specialist of neurophysician at hospital or private clinics. All the participants have symptoms of PD with response to Levopoda therapy diagnosed by expert of Neurology.

Sample size and statistical analysis

Total 51 PD patients were collected from District Bannu, in which 7 were female and 44 were male. All the data was analyzed using SPSS version 20. For qualitative variables Mean ± SD were calculated while for quantitative variables frequencies and percentages were calculated.

Results

In the current study, Descriptive statistics was calculated for gender, education and duration of disease as shown in Table 1. Figure 1 shows the prevalence of depression levels in Parkinson's diseases patients. Level of depression was calculated between genders as shown in the Table 2, while Table 3-7 shows the comparison between depressions with respect to gender, age, disease duration, education and handedness.

Table 1: Demographic information of Parkinson's samples of District Bannu

Variables	Frequency	Percentage
Gender Male Female	44 7	86.3 13.7
Education Illiterate Primary school Grade 10 Grade 12 Bachelor degree Graduate degree	34 8 6 1 1 1	66.7 15.7 11.8 2 2 2
Duration of Disease (in months) <12 >12	10 41	19.6 80.4

Table 2: Shows Level of depressions with respect to gender

Levels of depression	Male N	Female N	Total %
Normal	5	0	5 (9.8)
Mild mood	26	0	26 (50.9)
Borderline clinical depression	0	1	1 (1.9)
Moderate depression	5	0	5 (9.8)

| Severe depression | 6 | 3 | 9 (17.6) |
| Extreme depression | 1 | 3 | 4 (7.8) |

Table 3: Shows the association between depression and gender

| Gender group | Depression | | Total | p-value |
	Yes N (%)	No N (%)	N (%)	
Male	12 (23.5)	32 (62.7)	44 (86.2)	
Female	7 (13.7)	0 (0)	7 (13.7)	0.00
Total	19 (37.2)	32 (62.7)	51 (100)	

Table 5: Shows the association between depression and disease duration

| Disease duration | Depression | | Total N (%) | p-value |
	Yes N (%)	No N (%)		
<12	6 (11.76)	4 (7.8)	10 (19.6)	
<12	13 (25.4)	28 (54.9)	41 (80.3)	0.19
Total	19 (37.2)	32 (62.7)	51 (100)	

Table 6: Shows the association between depression and education

| Education | Depression | | Total N (%) | p-value |
	Yes N (%)	No N (%)		
Illiterate	14 (27.4)	21 (41.1)	35 (68.6)	
Educated	5 (9.8)	11 (21.5)	16 (31.4)	0.34
Total	19 (37.2)	32 (62.7)	51 (100)	

Table 7: Shows the association between depression and handedness

Handedness	Depression	Total	p-value

	Yes N (%)	No N (%)	N (%)	
Right	16 (31.3)	26 (50.9)	42 (82.3)	
Left	03 (5.8)	06 (11.7)	09 (17.6)	0.49
Total	19 (37.2)	32 (62.7)	51 (100)	

Table 4: Shows the association between depression and age

Age group	Depression		Total	p-value
	Yes N (%)	No N (%)	N (%)	
<50	3 (5.9)	3 (5.9)	6 (11.7)	
>50	16 (31.3)	29 (56.8)	45 (88.2	0.516
Total	19 (37.2)	32 (62.7)	51 (100)	

Discussion

Previous research shows that depression is the non-motor symptom in PD and the prevalence of depression varies greatly depend on population studied. There are different studies shows different prevalence rates in different races and population. In Asian population the prevalence also varies, Even in Pakistan the depression prevalence also varies, as most of the study includes random and different races of population [21-23]. In our study Therefore we collected data from only Pakhtun population with only one district to minimize the chances of errors. Similarly different methods are available in literature studies which is used to calculate depression associated with PD patients [24].

There are about nine different tools being used for (Identified and compared by Williams et al.) identification and comparison of depression in PD patients [25]. They also found that most of the methods used for depression have high sensitivity. In our study we used BDI- II which has 95% sensitivity.

In our study the mean age of the patients was 58.6± 9.3 years and age of onset of PD was found The mean age of PD patients found in our study was 60.75 ± 9.06 years and age of onset of PD was found as 55.2 ± 10.24 years. Our finding coincides with other study [26].

In this study fifty one PD patients from whole district of Bannu were participated, in which 44/51 (86.2%) were males and 7/51 (13.7%) were females. The overall prevalence of depression in PD patients of district Bannu was calculated to be (37.2%). In the current study the

prevalence of depression in PD patients of district Bannu was high as compare to previous studies reported [22]. The Possible reasons for differences in prevalence of depression includes, the use of different methods, the way of diagnosis and selected population nature used to calculate depression. This present study have similar rate of depression in PD patients as reported in most of the western and Asian populations [23,27-29]

The studies show that depression is the one non-motor symptom in PD patients which have negative effect on the quality of life (Qol) [30]. Depression is not supposed to occur as a cause of illness or disability, but it is measured to be shortest consequences of all the progression going in the brain of PD patients [31]. In past, depression are not considered and being treated with PD, due to this ignorance in past may be the etiological differences of depression in PD patients and other common populations [32]. In previous study, depression in PD shows more as somatic and cognitive indications rather as dysphoric indications such as guilt and suicide tendency [33].

In PD patients, depression is measured about 20-50%. There are several hazardous factors for depression was described, such as female sex, onset of PD indications before age 40 years, history of depression and cognitive impairment. For investigation of prevalence of depression and effect of gender, motor types and stages of disease study was conducted, which suggest that depression was more common in advance stages of illness and no significance difference in the genders and motor subtypes was founded [34]. In our study we found significance p-value in relationship between depression and gender, while in age, duration of illness, education and handedness no significance p-value is obtained.

Previous research shown that the chemical changes in the brain of PD patients may lead to depression as itself caused by the illness which is shown by positron emission tomography (PET) that depressed PD patients have reduced cortical 5HT1A receptor binding with small amount of cerebrospinal fluid (CSF) 5-hydroxyindolacetic acid (5HT1A) levels as contrast with non-depressed patients [10]. Therefore more advanced research is needed to explain the biological basis of depression patients associated with PD [35].

Conclusion

In the PD the prevalence of depression in patients of district Bannu was observed, in which total nineteen patients (37.2%) among fifty one have depression. All the seven female participants have depression (13.7%). This finding will help the clinicians to screen for symptoms of depression associated with PD and treatment would do appropriately.

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