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Assessment Of Prevalence And Correlates Of Parkinson's Disease Among Elderly Patients Attending Selected Neurological Clinics In Agra UP, India

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Abstract:

Introduction: Parkinson's disease (PD) is a long-term degenerative disorder of the central nervous system that mainly affects the motor system. The symptoms generally come on slowly over time. Early in the disease, the most obvious are shaking, rigidity, slowness of movement, and difficulty with walking. Thinking and behavioral problems may also occur. Dementia becomes common in the advanced stages of the disease. Depression and anxiety are also common, occurring in more than a third of people with PD. Other symptoms include sensory, sleep, and emotional problems. The main motor symptoms are collectively called "parkinsonism", or a "parkinsonian syndrome".

Objectives: The objectives of the study were aimed to assess and determine the prevalence of PD and to find the association between the PD and with the selected demographic variables, among elderly patients attending selected neurological clinics in Agra UP, India.

Methods: A descriptive analytical study was conducted among 300 samples who are elderly patients attending selected neurological clinics in Agra UP, India. Samples were collected through convenience sampling method. The instruments used for data collection were a Performa form seeking information related to age, gender, socioeconomic status, area of living, and presence of co morbidity specially DM.

Results: The collected data was coded in a master data sheet and analyzed by using statistical package for the social sciences (SPSS) by using descriptive statistics of frequency and percentage. The prevalence of PD among the elderly who participated in the study was 30%. Majority of the respondents were aged 60 to 70 years old (54.7%), male (53.3%), upper economic class (56.7%), from urban locality (93.3%) and were not diabetic (68%). The inferential statistics showed no significant association between all the factors with PD although, the association between age and diabetes mellitus with PD were almost significant with P value 0.08 and 0.07 respectively.

Conclusion: This study results conclude that, the prevalence of PD among elderly who have attended the psychiatric clinic was less than 40% with no significance with factors under study, however with large sample size, possible significant association may be obtained between age and DM.

Key Terms: Assessment, Prevalence, Correlates, Parkinson's disease, Elderly patients, Neurological clinics.

I. INTRODUCTION

Parkinson's disease is the second most common neurodegenerative disorder and the most common movement disorder. Characteristics of Parkinson's disease are progressive loss of muscle control, which leads to trembling of the limbs and head while at rest, stiffness, slowness, and impaired balance. As symptoms worsen, it may become difficult to walk, talk, and complete simple tasks.

The progression of Parkinson's disease and the degree of impairment vary from person to person. Many people with Parkinson's disease live long productive lives, whereas others become disabled much more quickly. Complications of Parkinson's such as falling-related injuries or pneumonia can

cause premature death. However, studies of patent populations with and without Parkinson's disease suggest the life expectancy for people with the disease is about the same as the general population

The cause of Parkinson's disease is generally unknown, but believed to involve both genetic and environmental factors. Those with a family member affected are more likely to get the disease themselves. There is also an increased risk in people exposed to certain pesticides and among those who have had prior head injuries, while there is a reduced risk in tobacco smokers and those who drink coffee or tea. The motor symptoms of the disease result from the death of cells in the substantia nigra, a region of the midbrain. This results in not enough dopamine in these areas. The reason for this cell death is poorly understood, but involves the build-up of proteins into Lewy bodies in the neurons. Diagnosis of typical cases is mainly based on symptoms, with tests such as neuroimaging being used to rule out other diseases.

There is no cure for Parkinson's disease, with treatment directed at improving symptoms. Initial treatment is typically with the antiparkinson medication levodopa (L-DOPA), with dopamine agonists being used once levodopa becomes less effective. As the disease progresses and neurons continue to be lost, these medications become less effective while at the same time they produce a complication marked by involuntary writhing movements. Diet and some forms of rehabilitation have shown some effectiveness at improving symptoms. Surgery to place microelectrodes for deep brain stimulation has been used to reduce motor symptoms in severe cases where drugs are ineffective.

In 2015, PD affected 6.2 million people and resulted in about 117,400 deaths globally. Parkinson's disease typically occurs in people over the age of 60, of which about one percent are affected. Males are more often affected than females at a ratio of around 3:2. When it is seen in people before the age of 50, it is called young-onset PD.[1] The average life expectancy following diagnosis is between 7 and 14 years. This study aimed to assess and determine the prevalence of PD and to find the association between the PD and with the selected demographic variables, among elderly patients attending selected neurological clinics in Agra UP, India.

Methods: The study is a cross sectional descriptive survey study using secondary data which is hospital based. A list of elderly patients aged 60 years old and above attended the selected neurological clinics in Agra city was collected and identified. A proforma was developed for the purpose of data collection, seeking information related to the diagnosis of PD age, gender, economic class, residential area and presence of other co-morbidity specially DM was developed prior to data collection. 300 samples were selected for the study by using convenience sampling method. The data was entered and analyzed using statistical package for the social sciences (SPSS) by using descriptive statistics of frequency and percentage. The significance level was set at $p<0.05$.

II. RESULTS

The results of the study clarifies only 30% of the study participants were found to have PD. Majority of the participants were aged 60 to 70 years old (54.7%), male (53.3%), upper economic class (56.7%), from urban locality (93.3%) and were not diabetic (68%) as shown in table 1 while table 2 is showing factors associated with Parkinson's Disease. although, the association between age and diabetes mellitus with PD were almost significant with P value 0.08 and 0.07 respectively.

Sample characteristics	Frequency	Percentage (%)
Age in years		
60-70	164	54.7
71 and above	136	45.3
Gender		
Male	160	53.3
Female	140	46.7
Economic class		
Upper	170	56.7
Middle	94	31.3
Lower	36	12.0
Residential area		
Urban	280	93.3
Rural	20	6.7
Diabetes Mellitus		
Yes	96	32.0
No	204	68.0

Table 1: Socio-demographic characteristics of participants (N=300)

Sample characteristics	Parkinson's disease (%) Yes	Parkinson's disease (%) No	P-value χ^2
Age			
60-70	50(16.6)	114(38)	0.080
71 and above	60(20)	76(25.3)	
Gender			
Male	54(18)	106(35.3)	0.827
Female	38(12.7)	102(34)	
Economic class			
Upper	64(21.3)	106(35.3)	0.720
Middle	26(8.7)	68(22.7)	
Lower	12(4)	24(8)	
Residential area			
Urban	80(26.7)	200(66.6)	0.754
Rural	8(2.7)	12(4)	
Diabetes mellitus			
Yes	20(6.7)	72(24)	0.072
No	60(20)	148(49.3)	

Table 2: Factors associated with Parkinson's Disease (N=300)

III. DISCUSSION

PD usually progresses slowly, eventually daily routines may be affected—from socializing with friends to earning a living and taking care of a home. These changes can be difficult to accept. Support groups can help people cope with the disease's emotional impact. These groups also can provide valuable information, advice, and experience to help

people with PD, their families, and their caregivers deal with a wide range of issues, including locating doctors familiar with the disease and coping with physical limitations. A long-term the National Institute of Neurological Disorders and Stroke (NINDS) research and planning strategy led to the NINDS-hosted January 2014 conference, "Parkinson's Disease 2014: Advancing Research, Improving Lives," at which neuroscientists, physicians, public and private organization representatives, and people with Parkinson's disease discussed the highest research priorities, ranging from lab discoveries to developing new therapies for PD. The incidence of PD seems to be higher in men than in women. A meta-analysis of 7 door-to-door incidence studies showed a male to female ratio of 1.49 (95% confidence interval (CI) 1.24–1.95) [55]. Similarly, another meta-analysis based on 17 incidence studies of PD reported a pooled age-adjusted male to female ratio of 1.46 (95% CI 1.24–1.72) with significant heterogeneity between studies [56]. Suggested explanations for the male preponderance include protective effects of estrogens, higher frequency of intensity of occupational toxin exposure as well as minor head trauma in men, and recessive susceptibility genes.

The prevalence estimates of PD vary widely across studies and countries and are inconsistent in same countries that lead to the conduction of systematic reviews of prevalence of PD. The finding of this study revealed that among the elderly participants who attended the neurological clinic for various reason, 30% of them were found to have PD. A lower prevalence may be expected if the study was conducted among the community dwelling elderly rather that in a hospital setting. A study among the Navajo people on incidence and prevalence of PD among the general population with 524 of the Navajo people with median age at onset of 74 years was diagnosed with PD during the study period.

This study also found that, although none of the factors were significantly associated with PD, significant relationship could be obtained between age and presence of DM if a bigger sample size is used. The increase in prevalence of PD with age has been reported in many studies. Van De Vijver et al in their study which was also using secondary data from the pharmacy records revealed, the unadjusted prevalence (per 100,000) for those aged 55-64 years was 111, 65-74 years 598, 75-84 years 1551 and for persons aged 85 years and older 1847, which indicate a positive linear relationship between PD and age. Another similar finding was also shown in a study by De Rijk et al with the prevalence of 0.3% for those 65 to 74, 3.1% for those 75 to 84, and 4.3% for those 85 to 94. The corresponding age-specific figures for men were 0.4%, 1.2%, 2,7% and 3.0%, and for women, 0.2%, 0.6%, 3.4%, AND 4.8%. ADDITIONALLY, IN A COLLABORATIVE STUDY INVOLVING 5 Europian populations also reported that the prevalence of parkinsonism and PD increased with age in all five surveys for both men and women, with no decrease at higher ages. This suggests that the prevalence, and probably also the incidence, of PD continues to increase beyond the age 85 to 90 years.

As for the presence of DM, an almost significant relationship was also obtained from the study. Changes in human behaviour and lifestyle have globally increased the prevalence of DM which closely related to mitochondrial function. Many diseases of mitochondrial dysfunction affect more than 1 system in human body, and commonly affect organs that require a lot of energy, including the heart, skeletal muscle, and brain. A study by Schapiro on specific gene mutations that causes PD has reinforced the relevance of oxidative stress and mitochondrial dysfunction in the familial and the sporadic forms of the disease. The results of the study indicate that the PD associated proteins are either mitochondrial protein or associated with mitochondria, and all interfere with the pathways of oxidative stress and free radical damage. Many studies in the literature indicate that PD and DM, age related chronic diseases, share remarkably similar pathways of mitochondrial dysfunction and suggest the association of PD and DM. The relationship between DM and PD was inconsistent with several epidemiological reports. A meta analysis study from 14 reports and concluded that evidence from case control studies suggested that diabetic individuals may have a decreased incidence of PD despite significant heterogeneity. Meanwhile, in the other meta analysis exploring this line of question including cohort and case control studies, the pooled results of 4 cohort studies with large sample size demonstrated that diabetes was associated with a significant 37% increased risk of PD. To clarify the role of type 2 DM on the risk of PD incidence, a large cohort study of Chinese patients with and without type 2 DM in Taiwan was conducted by yang et al. which revealed DM increased the risk of PD.

LIMITATIONS OF STUDY: This study is limited to the samples of one city only i.e. Agra UP. It was a cross sectional study, it can only discovered the association variable, without any causal relationship to be surveyed. Another limitation of this study was that a history of psychiatric disorders in the target group was not assessed.

RECOMMONDATION: It is suggested for the future studies that research can be conducted on larger sample. Longitudinal research design can be adopted for the future studies. A comparison stud can also be conducted between rural and urban residential areas. In future studies more detailed questionnaire to be used to assess and identify mental disorders.

The issues of lack of funding and administrative support which continue to plague researchers, along with the delays caused by difficulties in patient recruitment, can also be addressed by involving the patient community. Partnering with patient organization is, in fact vital for the scientific community. These organizations can assist with funding, communication and promotion of research opportunities to the Parkinson's community, and provide recruitment and practical assistance. The voice of Parkinson's patients may be utilized to instill increased teamwork within the Parkinson's community and encourage a culture of partnership between patients, patient organizations, scientists and industry.

IV. CONCLUSION

Parkinson's disease clinical studies offer an opportunity now, and hope for the future, for researchers to find better ways to safely detect, treat, or prevent Parkinson's. This study results conclude that, the prevalence of PD among elderly who

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have attended the psychiatric clinic was less than 40% with no significance with factors under study, however with large sample size, possible significant association may be obtained between age and DM. Research in Parkinson's disease has made remarkable progress. There is very real hope that the causes, whether genetic or environmental, will be identified and the precise effects of these causes on brain function will be understood. Researchers continue developing new treatments for Parkinson's disease, treatments that give real hope for people suffering with the disease. Some treatments currently being studied involve fetal cell transplantation, the use of stem cells, and gene therapy. There are currently no blood or laboratory tests that diagnose sporadic PD. Therefore the diagnosis is based on medical history and a neurological examination. In some cases PD can be difficult to diagnose accurately early on in the course of the disease. Early signs and symptoms of PD may sometimes be dismissed as the effects of normal aging. Since many other diseases have similar features but require different treatments, making a precise diagnosis is important so that people can receive the proper treatment.

The average life expectancy of a person with PD is generally the same as for people who do not have the disease. Fortunately, there are many treatment options available for people with PD. However, in the late stages, PD may no longer respond to medications and can become associated with serious complications such as choking, pneumonia, and falls.

PD is a slowly progressive disorder. It is not possible to predict what course the disease will take for an individual person. One commonly used scale neurologists use for describing how the symptoms of PD have progressed in a patient is the Hoehn and Yahr scale.

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