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## Study of prevalence of Parkinson's disease in elderly population in Rawalpindi, Pakistan

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### Abstract

Parkinson's disease is a progressive nervous disease occurring most often after the age of 50, associated with the destruction of brain cells that produce dopamine and characterized by muscular tremor, slowing of movement, partial facial paralysis, peculiarity of gait and posture, and weakness. The overall prevalence in the world is estimated at 6.5 million at present and expected to double in the next 10-20 years. In Pakistan alone, there are estimated to be 450,000 persons afflicted with the disease. The objective is to study the prevalence of Parkinson disease (PD) in the elderly population in Rawalpindi. For the present study I visit the Hospitals included in the Rawalpindi areas with a number of patients experienced by Parkinson disease. For this questionnaire based collection was made by questioning the patient's.

**Keywords:** Parkinson's disease, questionnaire

### 1. Introduction

Parkinson's disease is a common neurodegenerative disorder that can cause significant disability and decreased quality of life. The cardinal physical signs of the disease are distal resting tremor, rigidity, bradykinesia, and asymmetric onset. Levodopa is the primary treatment for Parkinson's disease; however, its long-term use is limited by motor complications and drug-induced dyskinesia. After levodopa-related motor complications develop in advanced Parkinson's disease, it is beneficial to initiate therapy with dopamine agonists, catechol *O*-methyltransferase inhibitors. Depression, dementia, and psychosis are common psychiatric problems associated with Parkinson's disease. Psychosis is usually drug induced and can be managed initially by reducing anti Parkinsonian medications. The judicious use of psychoactive agents may be necessary [1].

The progression of Parkinson's disease and the degree of impairment vary from individual to individual. Many people with Parkinson's disease live long and productive lives, whereas others become disabled much quicker. Premature death is usually due to complications such as falling-related injuries or pneumonia [2].

In 1817, a British scientist named James Parkinson first described "the shaking palsy" in an essay with a propensity to bend the trunk forwards and to pass from a walking to a running pace the senses and intellects being uninjured [3]. Less-developed countries are undergoing a demographic transition to aging societies faster than was historically the case in developed countries. Asia includes a number of less developed countries in which life expectancy is increasing rapidly. More than 385.4 million people in Asia are 60 years or older and more than 41.9 million people are 80 years or older [4]. These figures account for approximately 54.7% and 44.5% of the world population in these age groups. In 2007, 40% of the world population lived in China and India. An additional 8 countries account for a further 20% of the world population of which are in Asia (Indonesia, Pakistan, Bangladesh, and Japan). As a result of this growing older population, diseases and disorders of old age, especially chronic diseases, are a major concern [4]. Parkinson's disease is progressive and it is estimated with a prevalence of 0.3 percent in the U.S. population. The prevalence increases to 4 to 5 percent in those older than 85 years. Typically, anyone diagnosed under the age of 50 is considered as having young-onset Parkinson's disease. The overall prevalence in the world is estimated at 6.5 million at present and expected to double in the next 10-20 years. In Pakistan alone, there are estimated to be 450,000 persons afflicted with the disease [5].

In Pakistan it is estimated that 400,000 people are suffering from the Parkinson's disease [6]. Genetic susceptibility and environmental factors, combined with the effects of aging, play major roles in the etiology of Parkinson's disease. Asian and non-Asian populations have different genetic backgrounds and environmental exposures, which might influence their risk for Parkinson's disease [7]. The specific objective of this research is to find out the prevalence of Parkinson's disease in the elderly population in Rawalpindi, Punjab, Pakistan. The present study has also been designed to explore the prevalence of Parkinson's disease under the influence of various risk factors associated with illness.

**2. Materials and Methods**

**2.1 Study Area**

Benazir Bhutto Hospital (Rawalpindi General Hospital) is located in Murree Road Rawalpindi, Punjab, Pakistan and it is related with Rawalpindi Medical College. Benazir Bhutto Hospital place where Benazir Bhutto died on 27 December 2007 in Pakistan. It's provides health care facilities of the city of Rawalpindi. The present study was conducted in Central Hospital, Rawalpindi, Punjab, Pakistan. The data collected through questionnaire method and 50 samples were collected.

**2.2 Study Duration**

The study duration was 4 months from October, 2012 to January, 2013

**2.3 Experimental Design**

A survey was conducted to find out the prevalence of Parkinson's disease. All patients diagnosed with probable Parkinson's disease in a community were included. The main focus was on the population who visited the Benazir Bhutto Hospital, Rawalpindi. The questionnaire was specially designed which includes multiple choice questions, description of patient which is being examined, age of patient, specific sign and symptoms which can be examined easily, the name of every patient was also mentioned and gender was also mentioned for concluding whether Parkinson's disease effects males in high ratio or in females attached as appendices.

**2.4 Statistical Analysis**

Total 50 samples were taken prior permission was granted by the hospital administration for collection of data from Parkinson's patients. The samples included information about the occurrence of Parkinson's disease in male and female individuals, clinical features of Parkinson's disease in the study subjects and age distribution of Parkinson patients.

The data were analyzed by using suitable statistical formulas to find the prevalence of Parkinson's disease in Benazir Hospital, Rawalpindi. The graph was plotted to check the prevalence gender wise.

The clinical features of Parkinson's disease in the study subjects are documented in the table. 1.

Age distribution of Parkinson patients in the study population is also documented in the table. Age distribution of Parkinson patients showed that the majority of the cases were in the age group of 48-57 years.

**3. Results and Discussions**

**3.1 Gender-Wise Prevalence**

50 individuals were analyzed in the present study. Among the 50 individuals 31 were males and 19 were females. Prevalence was more common in males 62 percent as

compared to 26 percent females. The higher occurrence of Parkinson's disease in males may be due to toxicant exposure, head trauma [8], neuroprotection by estrogen, mitochondrial dysfunction and X-linkage of genetic risk factors [9]. Results were shown in figure 1 the obtained result may be compared with the previous study and concluded that Rawalpindi areas with number of patients experienced by Parkinson disease [8, 10-12].

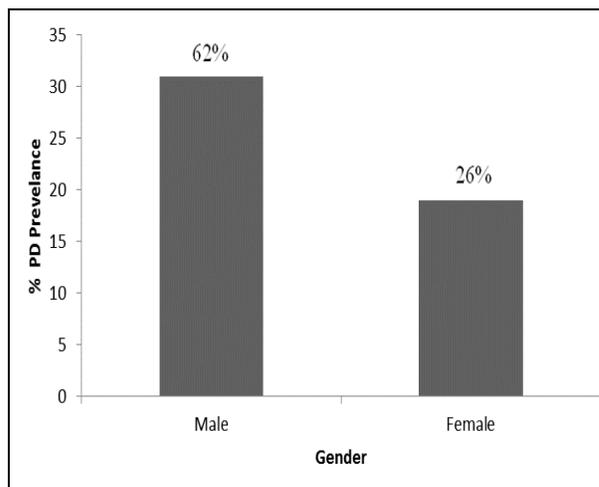
**3.2 Age-Wise Prevalence**

Among the 50 examined patients maximum Parkinson's patients were belonging to age group of 48-47 years (40%) followed by 58-67 years (34%). Results showed a correlation between age and the occurrence of the Parkinson's disease [12, 13]. From the patient's examination it was also reported that the occurrence of Parkinson's disease increases with age. Age wise prevalence of Parkinson's disease patients is shown in table. 1.

**3.3 Clinical Features of Parkinson's Disease N=50 (%)**

The clinical features of Parkinson's patients which were inquired from their physicians included tremors, rigidity in their muscles, bradykinesia, walking difficulty, dementia, weakness, frequent falls, difficulty in speech, insomnia, dyskinesia, apathy and dysphagia. Among the Parkinson's patients the most frequently occurring symptoms were tremor (82%), rigidity (64%), bradykinesia (64%) and walking difficulty (54%). Other symptoms occurred less frequently. The present results correlate with the reports of early studied [11, 14]. Clinical features of Parkinson's disease are given in table, 2.

From the current survey it was concluded that the incidence of Parkinson's disease is greater in males than in females and is correlated with age. The worse effect of the disease is tremors and rigidity. The prevalence of Parkinson's disease is maximum between the age group of 48-57.



**Fig 4.1** Gender wise prevalence of Parkinson's disease (PD).

**Table 4.1:** Age wise prevalence of Parkinson's disease in population understudy

Age (Years)	N (%)
48-57	20(40)
58-67	17(34)
68-77	11(22)
78-87	1(2)
88-97	1(2)

**Table 2:** Clinical manifestations of Parkinson's disease exhibited by the patients under study

Sr. No	Parameters	N (%)
1	Tremors	41(82)
2	Rigidity	32(64)
3	Bradykinesia	32(64)
4	Walking Difficulty	27(54)
5	Dyskinesia	23(46)
6	Dementia	14(28)
7	Insomnia	7(14)
8	Weakness	5(10)
9	Difficulty in Speech	5(10)
10	Apathy	4(8)
11	Dysphagia	4(8)
12	Frequent Falls	3(6)

#### 4. Summary

Present study was designed to determinate the prevalence of Parkinson's disease in elderly population of Rawalpindi district who have visited Benazir Bhutto Hospital Rawalpindi. The present survey aimed to study the age, gender and clinical features of Parkinson's disease. The age limit of patients was 30 to 80 years. The data obtained was analyzed for gender, age and clinical features wise prevalence of Parkinson's disease. The survey showed that Parkinson's disease is more common in male than in female. Data was collected through self-designed multiple choice questionnaire and interpretation of data revealed that incidence of Parkinson's disease is greater in males than in females and is correlated with age. The worse effect of the disease is tremors and rigidity.

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