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# MORTALITY BECAUSE OF CVD, LUNG DISEASE & CANCER IN THE YOUNG POPULATION SUFFERING FROM CEREBRAL PALSY

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**Abstract:**

***Objective:*** *The purpose of this research work is to compare the rates of mortality for CVDs (Cardiovascular Disease), cancer & lung disorder with young population suffering from cerebral palsy a disease of mental disability and healthy controls.*

***Methodology:*** *This research work conducted with the use of information from young population suffering from cerebral palsy which diagnosed in Indus Hospital Manawan Lahore. The categorization of the deaths carried out with the help of international codes of classification of the disorders. The calculations of the SMRs (Standardized Mortality Ratios) carried out for the comparison of the rates of mortality among the young patients suffering from cerebral palsy & healthy population managed for gender, age and the year.*

***Results:*** *About 958 young people with cerebral palsy diagnosed in which 52.50% were males & 47.50% were females. The mean age at the start of the study was 31 years with a range from 22 to 43 years. About 142 patients lost their lives during the treatment. The youngsters with cerebral palsy had the high danger of mortality because of CVDs and lungs respiratory diseases but without the malignant neoplasms.*

***Conclusion:*** *We concluded that young population with cerebral palsy in our country has a high danger of mortality due to the disorders of CVDs & lungs. This finding has a support of two studies carried on the same subject in USA. There is a requirement of further research in the inhibition of the CVDs & lungs diseases in the primary and secondary stages on the young population with cerebral palsy in the whole world to decrease the high rate of mortality.*

**Key Words:** *Cerebral Palsy, Neoplasms, Malignant, Mortality, Cardiovascular Disease, Healthy, Lungs Respiratory.*

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## INTRODUCTION:

In recent times, we found an increase in the rate of survival among the children suffering from CP [1]. The death rate of the children with less than fifteen year of age of USA has decreases to 1.5 percent from 15% after 1980s [1]. Now a days, most of the children with this disease are able to get adulthood [2, 3]. But the rate of survival has not increased in the young population suffering from this disease. Strauss [4] stated that adults with cerebral palsy in USA had a high danger of mortality due to CVDs, cancer and some digestive diseases. Lungs respiratory disorders are the main cause of death of children with cerebral palsy [3, 5]. A further research work in USA concluded that adults with cerebral palsy CP are at high danger of death because of cancer [6]. Some research works concluded the disorders of the respiratory system as the main cause of the mortality [7, 8].

CVDs, cancer & lungs disorders are the main causes of deaths in the whole world [9]. The physical inactivity is also the contribution factor with the above mentioned diseases. It is reality that adults with cerebral palsy are the habitual of less physical activity in their full lives [10] which leads them to mortality. Before this research work, organizations have not interrogated the relation between the cerebral palsy and above mentioned diseases in populations other than the residents of USA. The main purpose of this research work is to provide a comparison of the rates of mortality for CVDs, cancer & lungs diseases among adults suffering from cerebral palsy and general public.

## METHODOLOGY:

This was a cohort research work. CPRD (Clinical Practice Research Datalink) a data set was in use for the identification of patients with cerebral palsy in Indus Hospital Manawan Lahore Information in Clinical Practice Research Datalink gathered from electronic record of about seven hundred across every region of the city [11]. This datalink included the millions of the people in the record. The main gatekeepers of the care of health are the common general practitioners of the country. More than 90 percent people of the country are available with registration from general practitioner [12]. They can refer the patients to the secondary healthcare departments. The common practices are not the all experiences conducted in the country [11, 13, 14]. Read code was in use for the record of practices on all medical events. There are five letters & numbers in every read code. This data matched with the data of the death registration. Clinical practitioner provided the reason of the death of the patient [15]. ICD version 10.0 (international classification of diseases) was in use for the coding of the disease.

ICD codes were in use for the categorization of the reasons of death. ICD version was 10. The categorization with all types of the diseases which caused death carried out with the number of the deaths caused by that disease. Due to the anonymity, we stated only 5 deaths if found by any particular disease. We identified all the data related to the mortality as sex, age and year for each cause of death [16]. Averages, deviations, ranges percentages & rates were in use for the statistical analysis of the collected information to describe the division of the gender, age & follow ups. Stata V.14 was in use for the conduction of the analysis. .

## RESULTS:

We discovered 958 patients suffering from cerebral palsy as mentioned in Table-1. Males were 52.5% & females were 47.5%. The range of their age was from 22 to 43 years. One hundred and forty two patients died during the follow ups. The median age of the patients who faced death was forty years.

**Table I: Patient Characteristics Before and After One Year of Follow Up**

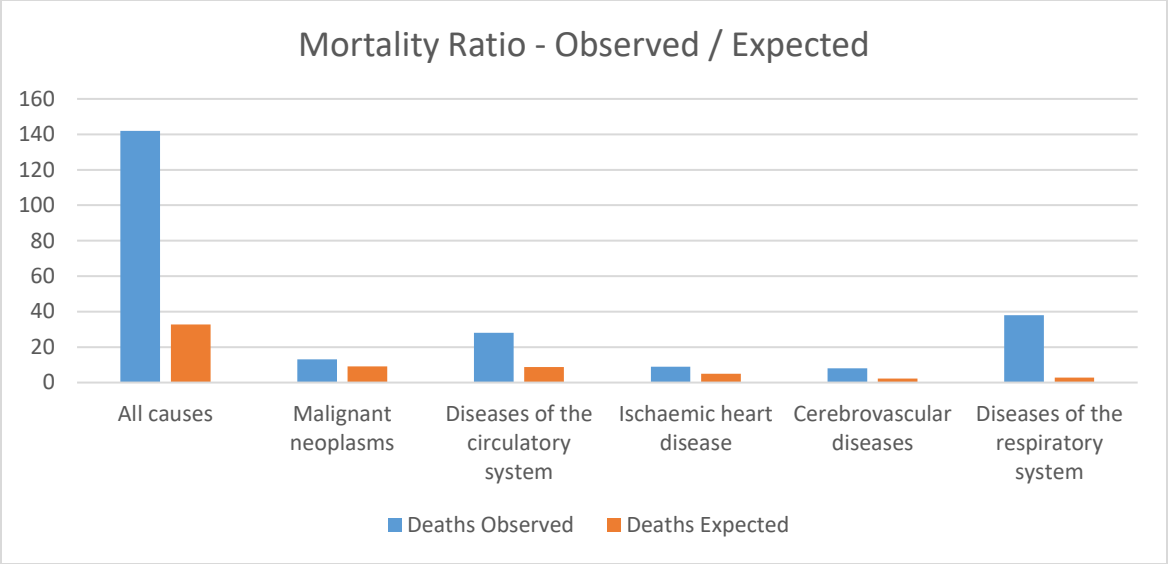
| Characteristic | | Total (n=958) | | Total person-years of follow-up |
|---|---|---|---|---|
| | | n | % | |
| Sex | Males | 503 | 52.5 | 4182.0 |
| | Females | 455 | 47.5 | 3511.0 |
| Age (yrs) | Median (IQR) | 31 | 22.43 | - |
| | <30 | 452 | 47.2 | 3463.0 |
| | 30 to 39 | 206 | 21.5 | 1875.0 |
| | 40 to 49 | 133 | 13.9 | 1191.0 |
| | 50 to 59 | 98 | 10.2 | 787.0 |
| | >60 | 69 | 7.2 | 376.0 |
| Region | Badami Bagh | 265 | 27.7 | 2384.0 |
| | Johar Town | 256 | 26.7 | 2052.0 |
| | Model town | 437 | 45.6 | 3258.0 |

Cerebral palsy was the reason of death for thirty-seven patients. About 26.8% deaths occurred because of the disorders of respiratory system, 19.7% deaths were because of coronary diseases & 9.2% deaths occurred because of neoplasms. Cerebral palsy patients faced 4.3 times the mortality number with respect to the general people during the same period of the case study as displayed in Table-2. We found evidence that they had high danger of death because of the disorders of circulatory system & disorders of lungs system but not because of the neoplasms. Specifically, cerebral palsy patients had high danger of mortality because of CVDs vascular diseases (SMR: 3.450, 95% Confidence Interval 1.730–6.9) & IHDs (SMR: 1.790, 95% Confidence Interval 0.930– 3.450) as elaborated in Table-2.

**Table II: The Mortality Ratio with Respect to Observed / Expected Deaths**

| Cause of death | Deaths | | SMR (95% CI) |
|---|---|---|---|
| | Observed | Expected | |
| All causes | 142 | 32.8 | 4.330 (3.67-5.10) |
| Malignant neoplasms | 13 | 9.1 | 1.420 (0.83-2.45) |
| Diseases of the circulatory system | 28 | 8.8 | 3.190 (2.20-4.62) |
| Ischemic heart disease | 9 | 5 | 1.790 (0.93-3.45) |
| Cerebrovascular diseases | 8 | 2.3 | 3.450 (1.73-6.90) |
| Diseases of the respiratory system | 38 | 2.8 | 13.590 (9.89-18.67) |

SMR, standardized mortality ratios; CI, confidence interval.




## DISCUSSION:

The outcome of this research work shows that young population with cerebral palsy have 14 time high risk of mortality due to lungs problems & 3 times high risk of mortality because of CVDs than general population in our country. We found no proof of any high risk of mortality due to cancer. The risk of the IHDs in the young population was about 2 times greater than the general people. Only one case work supported this evidence [7]. Hemming presented the amounts of mortality in the ten years age groups because of lung diseases, neoplasm & heart diseases. The amount of mortality because of neoplasm was much lower in the patients with CP. The amount of the deaths was higher in the age group of 30 to 39 years because of heart diseases but in all other age groups it was lower. The amount of mortality because of lungs disorders was higher in the age groups of 20-29 & 30 to 39 years (50.0% vs 3.0% & 42.0% vs 3.0% accordingly), but it was similar in other age groups in the patients and general population.

A research work conducted in France also proved the outcome of previous research that death rate was much lower due to neoplasm in the patients of CP [8]. There are very less case studies in the whole world about this very subject. Most of such studies are prone to bias and amounts of the mortality provided to their self-created diseases. Strauss [4] in 1999 provided a comparison of rates of mortality with suitable methods and the findings of this research work are very much supporting that case study. Strauss [4] concluded a high danger of deaths because of the respiratory system disorders among population with cerebral palsy and he stated high SMRs for the diseases related to respiratory system. SMRs for the IHDs & CVDs are very same as discovered by this case study. In opposition to the outcome of this research work, Strauss & a later case study concluded the proof of high danger of deaths related to cancer diseases [4, 6]. A very low mortality rate occurred in this research work because of cancer. It was in contrast to the past case studies conducted on the same subject.

In the previous three years, research works are in progress to report the high risk of the MI (myocardial infarction) & stroke between the people suffering from cerebral palsy [17–19]. The management of the mentioned diseases can decrease the mortality rate. A current systematic research work gave the inconsistent proof about the danger aspects foe the CVDs in the young with cerebral palsy [20]. There are also some evidences about the enhanced danger of asthma & pulmonary disease in the people suffering from cerebral palsy [17–19]. It is recognition that danger of mortality because of respiratory diseases is very great in cerebral palsy [3, 5]. Our outcome support this finding. It shows the light on the vaccination to tackle these respiratory problems. A current case study in USA showed that only 60% children with cerebral palsy were under vaccination during their early stage [21]. The small number of samples and very low number of observed mortalities are the limitation of this research work. We were also unable to monitor the modification with the improvement of the age.

## CONCLUSIONS:

The outcome of this study proved that there is with cerebral palsy. Physical inactivity [10], less awareness about the risk factors of CVDs & less access to the

services in the young age are able to increase the risk. There should be a primary attention to tackle these diseases. Further research work is also the requirement to handle this issue.

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