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**Dr. Ferdous Khan**  
Department of Forensic  
medicine, Shah Mokhdum  
Medical College and Hospital,  
Bangladesh

## Assessment of cases of sudden deaths in forensic department

**Dr. Ferdous Khan**

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### Abstract

**Background:** Sudden death is defined as a death which is not known to have been caused by any trauma, poisoning or violent asphyxia, and where death occurs all of a sudden or within 24 hours of the onset of the terminal symptoms. The present study was conducted to assess sudden deaths in forensic department.

**Materials & Methods:** The present study was conducted on 108 cases of autopsies of sudden deaths of both genders. Cause of death and clinical diagnosis was considered from medical records.

**Results:** Out of 108 cases, males were 60 and females were 48. Age group 10-20 years had 17, 20-40 years had 42, 40- 60 years had 32 and >60 years had 9 cases. The difference was significant ( $P < 0.05$ ). CVS was involved in 46, CNS in 24, renal in 30, GIT in 5 and genitor- urinary in 3. The difference was significant ( $P < 0.05$ ).

**Conclusion:** Authors found that main cause of sudden death was due to involvement of CVS and CNS system followed by renal system. Maximum male cases were seen.

**Keywords:** Sudden death, poisoning, violent asphyxia

### Introduction

World Health Organization (WHO) defines sudden death as “death within 24 hours from the onset of the symptoms”. It can also be defined as deaths which are sudden, unexpected, clinically unexplained, or otherwise obscure even though there needs to be no unnatural element in their causation<sup>[1]</sup>. Sudden death is defined as a death which is not known to have been caused by any trauma, poisoning or violent asphyxia, and where death occurs all of a sudden or within 24 hours of the onset of the terminal symptoms<sup>[2]</sup>. It is worth mentioning that emphasis is given to the unexpected character, rather than suddenness of death<sup>[3]</sup>. The incidence of Sudden death is approximately 10 percent of all deaths where diseases of Cardiovascular system account for about 45-50%, Respiratory system 15-23%, Nervous system 10-18%, Alimentary system 6-8%, Genito-urinary system 3-5% and 5-10% are of miscellaneous cause<sup>[4]</sup>.

Sudden cardiac death among children and young adults is a devastating event for the family and wider community<sup>[5]</sup>. Coronary artery disease is the predominant cause of sudden cardiac death in older persons, whereas among persons 1 to 35 years of age, sudden cardiac death is more often caused by structural heart disease, including hypertrophic cardiomyopathy, dilated cardiomyopathy, arrhythmogenic right ventricular cardiomyopathy, myocarditis, and primary arrhythmogenic disorders<sup>[6]</sup>. The present study was conducted to assess sudden deaths in forensic department.

### Materials & Methods

The present study was conducted in the department of Forensic medicine. It comprised of 108 cases of autopsies of sudden deaths of both genders. The study protocol was approved from institutional ethical committee. Data such as name, age, gender etc. was recorded. Cause of death and clinical diagnosis was considered from medical records. Results were tabulate and subjected to statistical analysis. P value less than 0.05 was considered significant.

**Corresponding Author:**  
**Dr. Ferdous Khan**  
Department of Forensic  
medicine, Shah Mokhdum  
Medical College and Hospital,  
Bangladesh

## Results

**Table I:** Distribution of victims

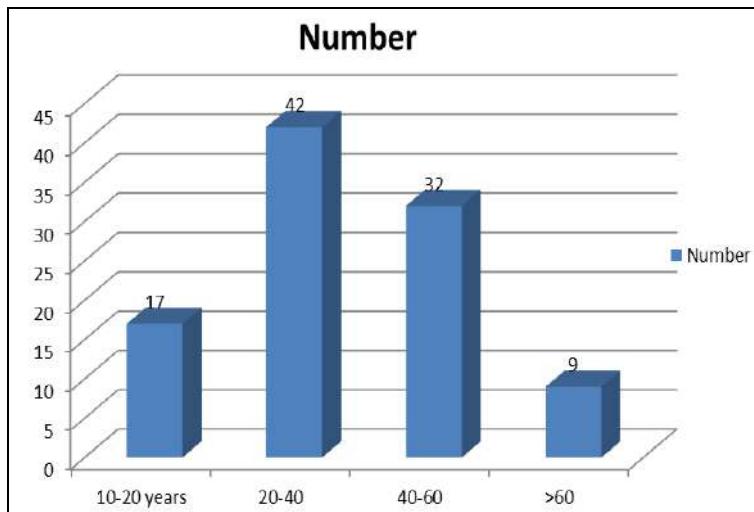
Total- 108		
Gender	Males	Females
Number	60	48

Table I shows that out of 108 cases, males were 60 and females were 48.

**Table II:** Age wise distribution

Age group (Years)	Number	P value
10-20	17	0.01
20-40	42	
40-60	32	
>60	9	

Table II, graph I shows that age group 10-20 years had 17, 20-40 years had 42, 40- 60 years had 32 and >60 years had 9 cases. The difference was significant ( $P < 0.05$ ).

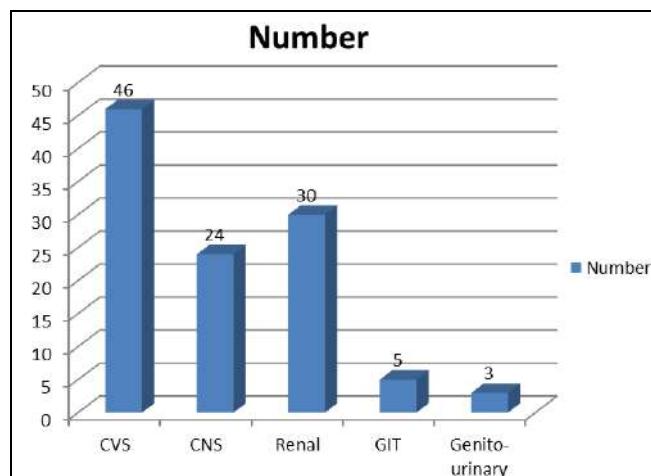


**Graph I:** Age wise distribution

**Table III:** System wise distribution of cases

System	Number	P value
CVS	46	0.04
CNS	24	
Renal	30	
GIT	5	
Genito- urinary	3	

Table III, graph II shows that CVS was involved in 46, CNS in 24, renal in 30, GIT in 5 and genitor- urinary in 3. The difference was significant ( $P < 0.05$ ).



**Graph II:** System wise distribution of cases

## Discussion

Sudden deaths in apparently healthy persons might raise doubt of foul play. Hence medico-legal autopsy is necessary in such cases to satisfy the aggrieved relatives and it also

gives a systemic view of various causes of deaths in such cases which ultimately improve mortality statistic.<sup>7</sup> In up to one third of cases of sudden cardiac death among children and young adults, a cause of death is not found after a comprehensive autopsy examination that includes toxicologic and histologic studies; these deaths are termed unexplained sudden cardiac deaths<sup>[8]</sup>. The present study was conducted to assess sudden deaths in forensic department.

In this study, out of 108 cases, males were 60 and females were 48. Age group 10-20 years had 17, 20-40 years had 42, 40-60 years had 32 and >60 years had 9 cases. The difference was significant ( $P < 0.05$ ).

Doolan *et al.*<sup>[9]</sup> found that the incidence of sudden natural death is 16.01%. Most common age group involved was 41-50 years followed by 31-40 years. Male predominance (77.42%) was noted. Most commonly affected system was cardiovascular system (53%) followed by respiratory system (33.64%). Among the cardiovascular system causes Coronary artery disease was accounted in 88.7% of cases. Among the respiratory system causes pneumonia was predominant with 50.69% cases. The incidence of sudden natural death is 16.01%. Males having age 41-50 years are most commonly affected. Cardiovascular diseases contribute to most of the sudden natural deaths of which Coronary artery disease is the leading cause. Increased awareness with regular health checkups is needed among the population at risk so as to improve quality of life.

We found that CVS was involved in 46, CNS in 24, renal in 30, GIT in 5 and genitor- urinary in 3. Kuller *et al.*<sup>[10]</sup> found that a total of 490 cases of sudden cardiac death were identified. The annual incidence was 1.3 cases per 100,000 persons 1 to 35 years of age; 72% of the cases involved boys or young men. Persons 31 to 35 years of age had the

highest incidence of sudden cardiac death (3.2 cases per 100,000 persons per year), and persons 16 to 20 years of age had the highest incidence of unexplained sudden cardiac death (0.8 cases per 100,000 persons per year). The most common explained causes of sudden cardiac death were coronary artery disease (24% of cases) and inherited cardiomyopathies (16% of cases). Unexplained sudden cardiac death (40% of cases) was the predominant finding among persons in all age groups, except for those 31 to 35 years of age, for whom coronary artery disease was the most common finding. Younger age and death at night were independently associated with unexplained sudden cardiac death as compared with explained sudden cardiac death.

Chaudhari *et al.*<sup>[11]</sup> in their study found that out of the 115 cases of sudden natural deaths due to the cardiovascular system, in 102 cases (88.70%) the cause of death was Coronary Artery Disease. Coronary artery disease is the main cause of cardiovascular deaths and also of tops among all causes of sudden natural deaths. Histopathological examination helps in determining the cause of death.

### Conclusion

Authors found that main cause of sudden death was due to involvement of CVS and CNS system followed by renal system. Maximum male cases were seen.

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