

CHAPTER 1

INTRODUCTION

A death caused by external causes like injury, poisoning, which includes death due to intentional injury, such as homicide, or suicide, and death caused by unintentional injury in an accident manner.

According to forensic medicine a death that is caused by external causes like injury or poisoning which include death due to intentional injury such as homicide, suicide, and death caused by unintentional injury in an accidental manner.^[1]

Suicide taken from Latin word “Suicidium”. It is an act of taking one’s own life. Or it is act of intentionally causing one’s own death, mental disorder, including depression, personality disorder, anxiety disorder, and substance abuse- including alcoholism.

Although attempted suicide is more frequent for women, men are more likely than women to commit suicide because they typically use more-lethal methods, such as a firearm.

Attempted suicide before are feel hopeless, worthless, agitated, socially isolated or lonely. Experience a stressful life event, such as the loss of a loved one, military service, a breakup, financial or legal problems.

Alcohol and drug abuse can worsen thoughts of suicide and make you feel reckless or impulsive enough to act on your thoughts .Have suicidal thoughts and have access to firearms in your home.Have an underlying psychiatric disorder, such as major depression, post-traumatic stress disorder or bipolar disorder.Have a family history of mental disorders, substance abuse, suicide, or violence, including physical or sexual abuse.Have a medical condition that can be linked to depression and suicidal thinking, such as chronic disease, chronic pain or terminal illness.Are lesbian, gay, bisexual or transgender with an un supportive family or in a hostile environment leads to commit suicide.^[1]

Common methods of suicide are Pesticide poisoning, Hanging., Fire arms, Drug overdose, Fatal injuries, Exsanguinations, Suffocation, Drowning.



Figure:1 Unnatural deaths

Homicide: it comes from the Latin word “homo” (man)and “cidi” (I cut). It is the act of one human killing another. A homicide requires only a volitional by another person that results in death, and thus a homicide may result from accidental, reckless, or negligent acts even if there is no intent to cause harm. a homicide can be divided into many overlapping legal categories, including murder, manslaughter, justifiable homicide. Depending on the circumstances of the death. these different types of homicide are often treated very differently in human societies, some are considered crimes, while others are permitted or even ordered by legal system.^[2]

Criminal homicide: Criminal homicide takes many forms including accidental killing or murder. Criminal homicide is divided into two broad categories, murder, and manslaughter, based upon the state of mind and intent of the person who commits the homicide.

Murder: it is the most serious crime that can be charged following a homicide. In many jurisdictions, homicide may be punished by life in prison or even capital punishment. Although categories of murder can vary by jurisdiction, murder charges fall under two broad categories:

First degree murder:

The premeditated, unlawful, intentional killing of another person.

Second degree murder: The intentional, unlawful killing of another person, but without any premeditation.

Manslaughter: it is a form of homicide in which the person who commits the homicide either does not intend to kill the victim, or kills the victim as the result of circumstances that would cause a reasonable person to become emotionally or mentally disturbed to the point of potentially losing control of their actions. The distinction between murder and manslaughter is sometimes said to have first been made by the ancient Athenian lawmaker Draco in the 7th century BC. The penalty for manslaughter is normally less than the penalty for murder. The two broad categories of manslaughter are: The intentional, unpremeditated killing of another person as the result of a disturbed state of mind, or heat of passion.

Involuntary manslaughter: the unintentional killing of another person through an act of recklessness that shows indifference to the lives and safety of others, or an act of negligence that could reasonably be foreseen to result in death. The act that results in death may be intentional, such as pushing somebody in anger, but their death (such as by their subsequently falling, striking their head, and suffering a lethal head injury) is not. Another form of manslaughter in some jurisdictions is constructive manslaughter, which may be charged in the event that a person causes a death without intention, but as the result of violating an important safety law or regulation.^[3]

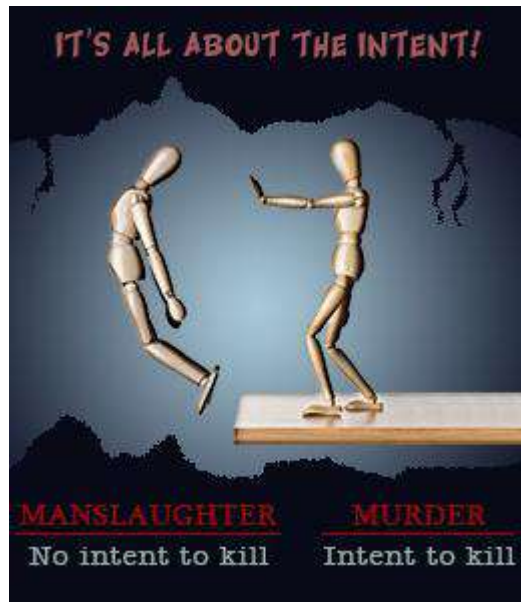


Figure: 2 Manslaughter

Accident: An accident is an unplanned event that sometimes has convenient or undesirable consequences, other times being inconsequential. The term implies that such an event may not be preventable since its antecedent circumstances go unrecognized and unaddressed. Most scientists who study unintentional injury avoid using the term "accident" and focus on factors that increase risk of severe injury and that reduce injury incidence and severity.

Types of accident are Physical and non-physical, Accidents by activity, Accidents by vehicles. Physical and non-physical accidents: it includes unintended motor vehicle collisions or falls, being injured by touching something sharp, hot, dropping a plate, accidentally kicking the leg of a chair while walking, unintentionally biting one's tongue while eating, accidentally tipping over a glass of water, contacting electricity or ingesting poison. Non-physical examples are unintentionally revealing

a secret or otherwise saying something incorrectly, accidental deletion of data, forgetting an appointment etc. Accidents are occurred due to the distracted driving, drunk driving, Speeding, reckless driving, Rain, running red lights, night driving, wrong way driving, tire blowout.^[4]



Figure: 3 Accident

Poisoning: A poison is a substance (solid, liquid or gaseous) which if introduced in the living body, or brought into contact with any part thereof will produce ill-health or death. It does not include adverse reactions to medications taken correctly. Types of poisoning are Intentional poisoning, Un-intentional poisoning, Undetermined. Intentional poisoning are A person taking or giving a substance with the intention of causing harm Eg: Suicide and assault. Un-intentional poisoning: if a person taking or giving a substance does not mean to cause harm. Eg: overdose Undetermined: when the distinction between intentional or un-intentional is unclear. The effect of posion may be none, mild or severe depending on The amount of poison ingested. The nature of the substances The age of the children. Plant materials. Pertoleum products.^[5]

Hanging are it is a form of asphyxial death which is caused by the suspension of the body by ligature which encircles the neck, the constricting force being the weight of the body.

Depending on the degree of suspension: Complete hanging: When the whole body is suspended from the ligature material and no portion of the

body is touching the ground. Partial hanging: As the name suggests, the body is partially suspended, the toe or feet or either part of the body touching the ground. The deceased may be in kneeling down position, sitting position etc.

Depending on position of the knot: Typical hanging: Where the ligature runs from the mid line, above the thyroid cartilage, symmetrically upwards on both sides of the neck, to the occipital region and the knot is placed over the central part of the back of neck. Atypical hanging: The knot is anywhere other than the central part of the back of neck.

Depending on the manner of hanging: Suicidal hanging, Homicidal hanging, Accidental hanging, Judicial hanging.^[6]

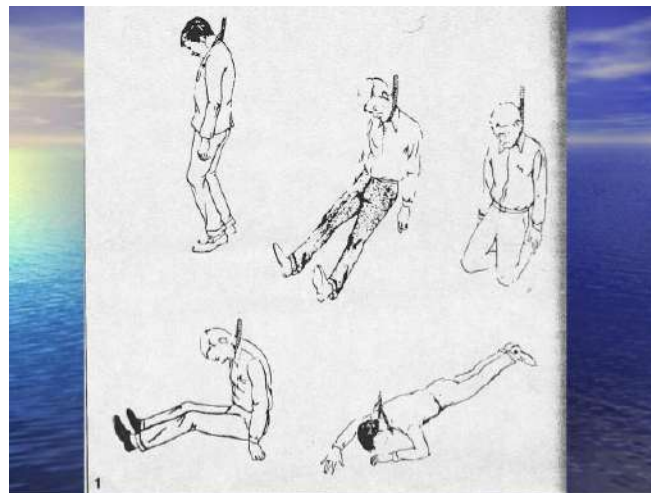


Figure: 4 Types of hanging.

Drowning: it is a form of violent asphyxial death, caused by aspiration of fluid into air passages, caused by complete or partial submersion in water or other fluids. Thus death occurs either due to entry of the fluid in the respiratory passages or due to effects of severe water. Types of drowning: Wet Drownig, Dry Drowning, Secondary drowning, Immersion syndrome. Wet drowning: water inhaled into lungs and severe chest pain and if resuscitated: no pleasant recollections. Dry drowning: water not enter into

lungs and death occurs by immediate sustained laryngeal spasm and if resuscitated: panoramic views of past life. Secondary drowning (near drowning): Death occurs from 1/2 h to several days by cerebral anoxia and irreversible brain damage. Immersion syndrome: Death occurred by cardiac arrest caused by vagal inhibition.^[7]

CHAPTER 2

LITERATURE REVIEW

Karoline Lukaschek (2012) “comparison of traffic accidents and homicide deaths in Germany in the year 2010 and to compare years of life lost due to these unnatural deaths”. Mortality data were provided by the Federal Statistical Office giving death rates related to 100,000 inhabitants

and proportions related to 100 deaths of individuals for suicide, traffic accidents and homicide. total 14,441 unnatural deaths (suicide, traffic accidents, homicide) were reported in 2010 in Germany. Of those, 10,021 subjects 69.4% committed suicide, 3,942 27.3% died in traffic accidents, 478 3.3% were murdered. Suicide death rates were by far the highest, with rates for men 18.6 three times higher than for women 6.1. For both sexes, suicide rates increased with age, whereas suicide as a proportion of all causes of death was higher in younger age groups. In both sexes, in *Conclusions* Suicide is the leading cause of unnatural death. The sex- and age- specific patterns in suicide mortality call for different action plans to target high risk groups.^[8]

Sarah steeg (2019) “published risk of unnatural death from external causes such as accidents, suicide, and undetermined causes among people with a history of self-harm and violent crime, focusing specifically on those with co-occurring behavior”. And to estimated incidence rate ratios, adjusted for age and gender, to compare risks. We identified 2246 deaths from external causes during Jan 1, 1995–Dec 31, 2015, and these cases were matched to 44 920 living controls. In 1499 (66.7%) deaths occurred due to accidental and 604 (26.9%) were due to suicide The other 143 (6.4%) unnatural deaths were classified as deaths of undetermined .homicides (59(2.6%), and other unnatural deaths 15(0.5%) legal interventions involving discharge of firearms, operations of war, and complications of medical and surgical care. During the observation period, death by external causes occurred at a median age of 21 years.^[9]

J. Environ (2019), “unnatural death among treatment seeking substance users in Singapore”. Substance use carries high risk of unnatural death. A retrospective analysis of 42 treatment seekers between 2011–2015 was conducted through medical record review to understand the profile and circumstances leading to premature deaths. 90% are of males. The mean age at death was 44.9, Opioids 52.4%, benzodiazepines 45.2%, and alcohol 35.7% were the main substances used by the group. Suicide was the most

common cause of death 64.3% followed by accidents 35.7%, Among the suicide cases, alcohol was the main substance used 33.3%, followed by opioids 25.9%. A total of 58.5%, 24 people's deaths occurred within a year of their last visit. while 41.5% where 17 were dead more than a year after their last visit. Of the total cases 41 (61%) had a history of mental illness with depressive disorder (53.8%) being the most common. History of suicide attempts were reported in 34.1% ($n = 14$) of cases and 50% of the subjects ($n = 21$) had a history of suicidal ideation. Drug related offences were reported in 57.1% of the subjects, of which 60% ($n = 18$) committed suicide. The findings support the need for appropriate treatment resources to reduce the untimely deaths among substance users the study also highlighted more unnatural deaths among alcohol and opioid users compared to other substance users and these deaths occurred within the first 12-month period. these findings align with other previous studies and reiterate the importance of early identification of risky substance.^[10]

Thomas Heiberg brix (2019), "death by unnatural causes, mainly suicide, is increased in patients hashimoto's thyroiditis".it is associated with excess psychiatric in addition to reduced quality of life. However, little is known about risk of unnatural manners of death in HT. We investigated the risk of death by accidents, suicide, violence/homicide, and unknown causes in patients with HT, compared to a matched control population. HT patients had an increased frequency of death by suicide 0.10% to 0.07%, and unknown manners 0.05% to 0.02%, There were no significant differences

between controls and HT patients in risk of death by accidents (0.36% to 0.37%, violence 0.004% to 0.005%. After adjustment for pre-existing somatic and psychiatric morbidity HT patients still had an increased risk of suicide and death by unknown causes, whereas risk of death caused by accidents was reduced. Mortality due to suicide and unknown causes, but not accidents and violence, was increased in HT. This indicates that HT may have a significant role in the pathophysiological mechanisms of suicidal behavior. This suggests that physicians caring for HT patients

should be vigilant when facing expressions of suicidal ideation or signs and symptoms of self-harm as a first step towards prevention.^[11]

Mohammad Nasir Siddiqui (2017), “Analysis of Autopsy of Unnatural Deaths among Study Population”. The unnatural deaths may be due to unintentional or intentional injuries. The present study was conducted to assess the type of unnatural deaths among young adults. It included 84 cases of unnatural deaths. General information such as gender, age, methods and causes of deaths were assessed. Males were 38 and females were 46. The difference in Age group 13-15 years had 12 males, 7 females, age group 16-18 years had 18 males and 26 females, age group 19-21 years had 8 males and 13 females. The methods of suicides were hanging 12, burn 20, poisoning 42 and jumping from height 10. Unnatural deaths are quite common in youngsters. The most common methods of suicides were hanging, burn, poisoning and jumping from height. Reasons for suicides were failure in examination, love affairs, mental illness, family problem and dowry.^[12]

Ummara Munir (2019), “Demographic Profile of Unnatural Deaths; Autopsy Study at Tertiary Care Hospital of Southern Punjab”. 138 autopsies conducted by the Department of Forensic Medicine, The cases labeled as natural deaths by the hospital’s authorities, intra operative deaths, exhumations and those died in police encounters / custodial deaths were excluded. The information were collected from police papers, hospital record & autopsy reports analyzing Ages, Gender, residential background, cause & manner of death. The frequency and percentage of these parameters with regard to year wise was calculated. Out of the total 138

cases autopsied during the study period of three years, 46(33.3%) autopsies were conducted in 2015 and 40(28.9%) postmortem examination were conducted in 2016 while 52(37.6%) cases were autopsied in 2017. Gender distribution showed (79.8%) males and (20.2%) females. Age group of 21-30 year was the most common victim of unnatural deaths involving 49(35.5%) cases. The extreme ages were least vulnerable to unnatural

deaths and involved 6.5% cases of the age less than 10 years. Most significant cause of death was road traffic accidental in (63.27%) drowning cases (24.48%), railway accidents (6.1%) cases, electric shocks (4.08%) and burn (2.04%) cases. Homicide was found more prevalent implicating (39.85%) cases while accident contributed (35.5%) and suicide was (9.42%) cases of unnatural deaths while manner of death remained undetermined cases is 15.21%. Males are the predominant victims of unnatural deaths probably due to social interaction and outdoor activities. Younger age group is the common victim of unnatural deaths. The most significant cause of death was trauma in road traffic accidents & the most prevalent manner of unnatural death was homicide.^[13]

H. Bergen (2011), “characteristics of suicides and other unnatural deaths following non-fatal self-harm Mortality, including suicide and accidents, is elevated in self-harm populations”. Although risk factors for suicide following self-harm are often investigated, Our aim was to compare risk factors for suicide and accidents, 1833 individuals are died in that 378 (20.6%) are suicide and 242 (13.2%) are died due to accidents. Independent of both suicide and accidents were Factors differentiating suicide from accident risk were previous self-harm, last method of self-harm and mental health problems. A risk factor specific to accidental narcotic poisoning was recreational illicit drug problems, and a risk factor specific to accidental non-narcotic poisoning and non-poisoning accidents was alcohol involvement with self-harm.^[14]

CHAPTER 3

AIM AND OBJECTIVES

AIM:

To analyze the statistical analysis of Unnatural death in Rajahmundry, under II- Town police station during 2016-2019.

OBJECTIVES:

- To determine the Unnatural deaths occurred in the area over the past 4 years.
- To estimate the death rate whether it is increasing or decreasing in the past 4 years.
- To estimate the ratio of males and females whether it increasing or decreasing.
- To estimate the different type of Unnatural death occurred in past 4 years.

CHAPTER 4

MATERIALS AND METHODOLOGY

Materials Required:

Data base of Unnatural deaths from 2016-2019 was collected from II-Town police station, Rajahmahendravaram district.

Methodology:

The data related to Unnatural death was collected from II- Town police station, Rajahmundry and got the case details through C.D (case dairy) files. This data was analyzed and determined the rate and type of Unnatural deaths occurred between 2016-2019. This data was divided into suicidal, accidental, and prison deaths according to the males and females' rate of death. The known data or the collected data was shown in a graphical presentation.

CHAPTER 5

OBSERVATION

The II Town police station has come across various deaths over the 4 years and has solved most of the cases.

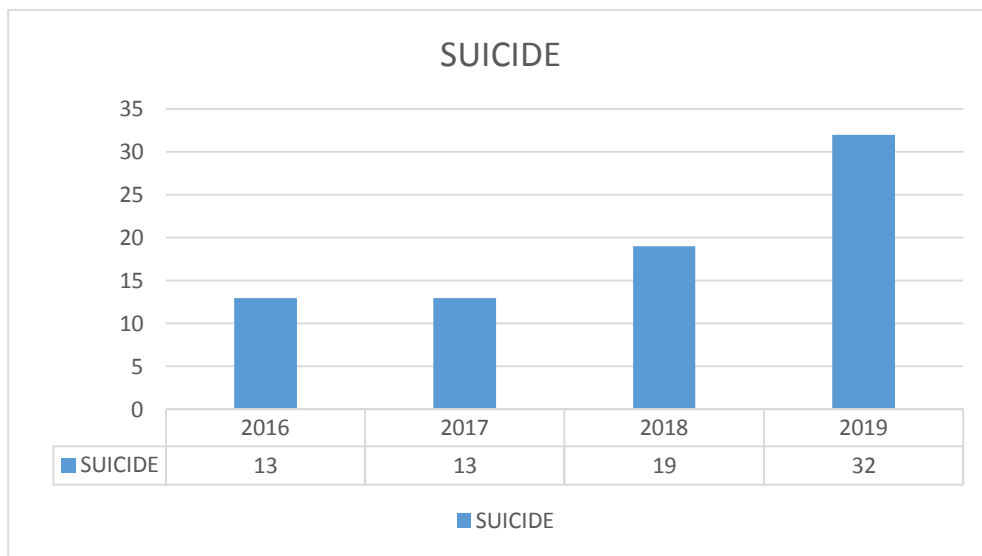
- **Statistical analysis of rates of male population:**

DEATH OF MALES IN YEAR 2016-2019

S.NO	MODE OF UNNATURAL DEATH	NUMBER OF CASES	YEAR
1	SUICIDAL	13	2016
2	SUICIDAL	13	2017
3	SUICIDAL	19	2018
4	SUICIDAL	32	2019

Table 5.1: Number of cases of suicidal deaths in male population from 2016-2019

The number of deaths in males from 2016-2019 is given on X-axis and no of person's death rate is given on Y-axis, as shown below.



Graph 5.1 This graph shows the suicidal death of male's during 2016 - 2019

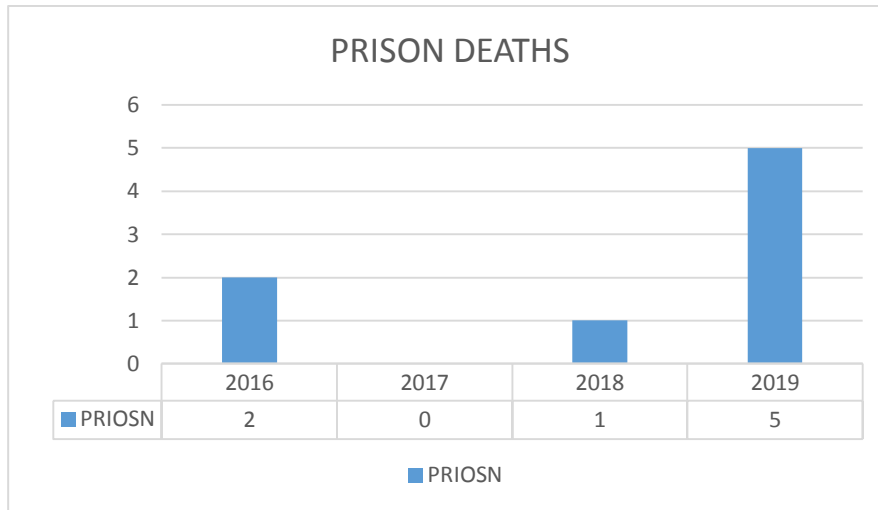
- **Statistical analysis of rate of male population in prison death**

DEATH IN MALES FROM 2016-2019

S.NO	MODE OF UNNATURAL DEATH	NUMBER OF CASES	YEAR
1	PRISON DEATH	2	2016
2	PRISON DEATH	0	2017
3	PRISON DEATH	1	2018
4	PRISON DEATH	5	2019

Table 5.2: No of cases of prison death in male population from 2016-2019

The no of prison death in males from 2016-2019 is given on X-axis and no of person's death rateis given on Y-axis as shown below.



Graph 5.2: This graph shows the Prison death of female's during 2016-2019

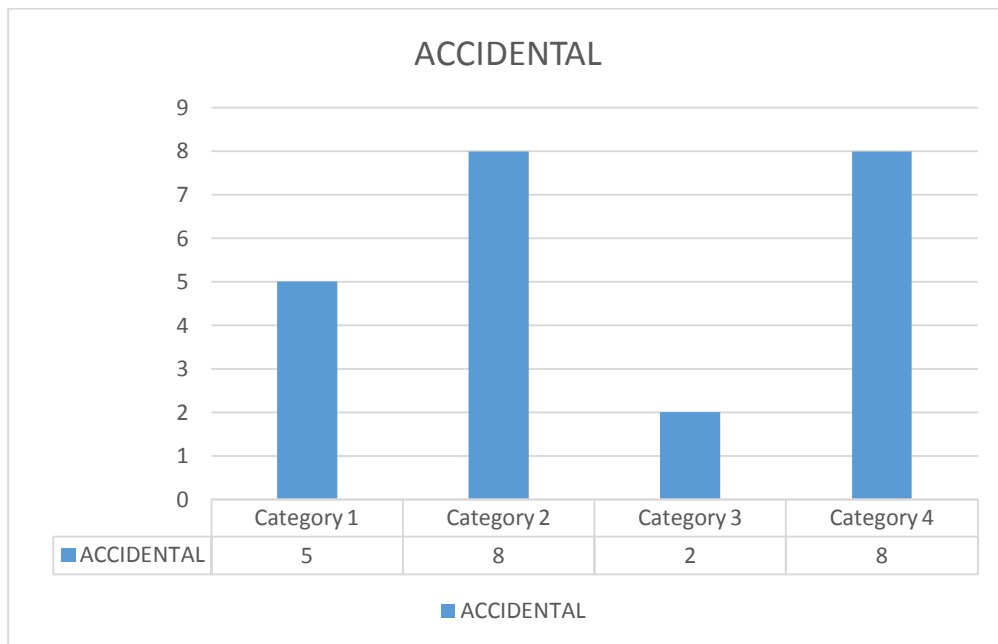
- **Statistical Analysis Of In Male Population Of Accidental Death**

ACCIDENTAL DEATHS OF MALES IN THE YEAR 2016-2019

S.NO	MODE OF UNNATURAL DEATH	NUMBER OF CASES	YEAR
1	ACCIDENTAL	5	2016
2	ACCIDENTAL	8	2017
3	ACCIDENTAL	2	2018
4	ACCIDENTAL	8	2019

Table 5.3 Number of cases of accidental deaths in male population during 2016 - 2019

The number of accidental deaths in males from 2016-2019 is given in X-axis and no of person's death is given on Y-axis as shown below.



Graph 5.3 This graph shows the Accidental death of female's during 2016 - 2019

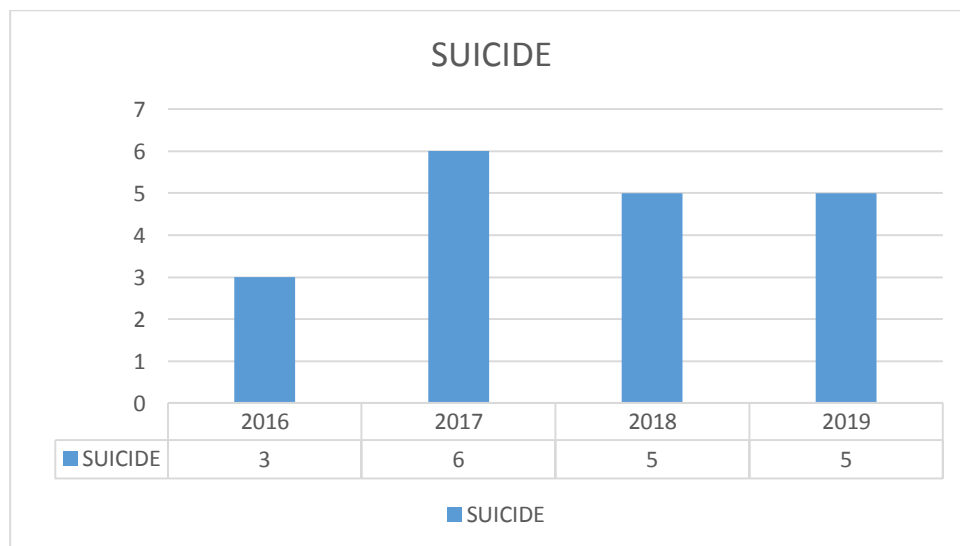
- **STATISTICAL ANALYSIS OF FEMALE POPULATION UNDER II-TOWN POLICE STATION, RAJAHMUNDRY.**

DEATH RATE IN FEMALES IN THE YEAR 2016-2019

S.NO	MODE OF UNNATURAL DEATH	NUMBER OF CASES	YEAR
1	SUICIDAL	3	2016
2	SUICIDAL	6	2017
3	SUICIDAL	5	2018
4	SUICIDAL	5	2019

Table 5.4 Number of cases of suicidal deaths in female population from 2016-2019

The number of suicidal deaths in female from 2016-2019 is given on X-axis and no of person death rate is given on Y-axis shown below



Graph 5.4 This graph shows the suicidal death of female's during 2016 - 2019

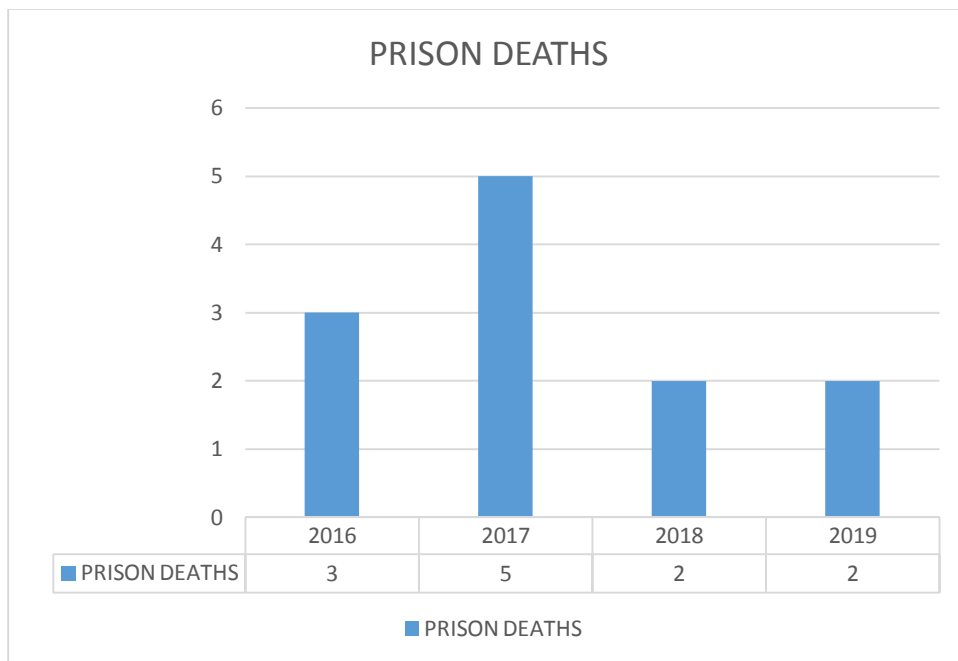
- **STATISTICAL ANALYSIS OF FEMALE POPULATION IN PRISON DEATH**

DEATH RATE IN FEMALE FROM YEAR BETWEEN 2016-2019

S.NO	MODE OF UNNATURAL DEATH	NUMBER OF CASES	YEAR
1	PRISON	3	2016
2	PRISON	5	2017
3	PRISON	2	2018
4	PRISON	2	2019

Table 5.5 Number of cases of prison deaths in female population from 2016-2019

The number of prison deaths in female from 2016-2019 is given on X-axis and no of death person rate is given on Y-axis shown below:



Graph 5.5 This graph show the prison death of female's during 2016-2019

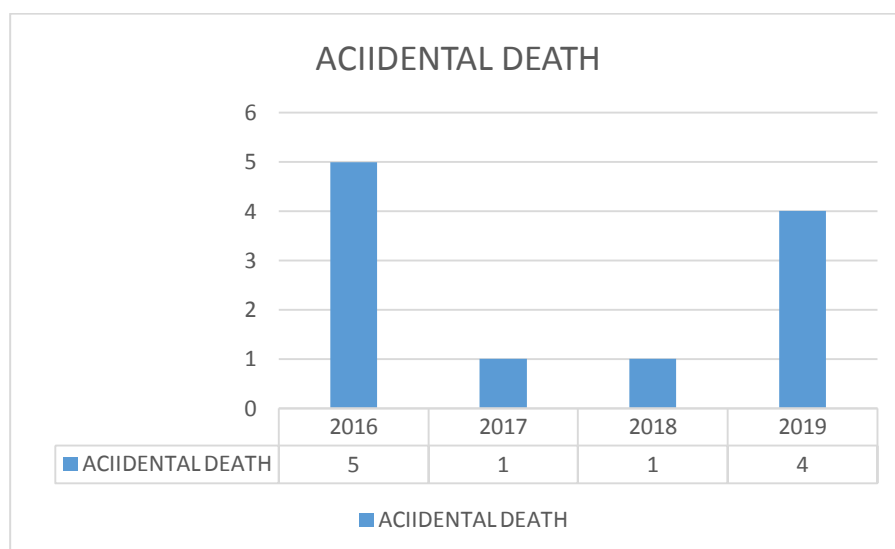
- **STATISTICAL ANALYSIS OF FEMALE POPULATION IN CASE OF ACCIDENTAL DEATHS**

DEATH RATE OF FEMALE IN THE YEAR BETWEEN 2016-2019

S.NO	MODE OF UNNATURAL DEATH	NUMBER OF CASES	YEAR
1	5	3	2016
2	1	5	2017
3	1	2	2018
4	4	2	2019

Table 5.6 Number of cases of accidental deaths in female population from 2016-2019

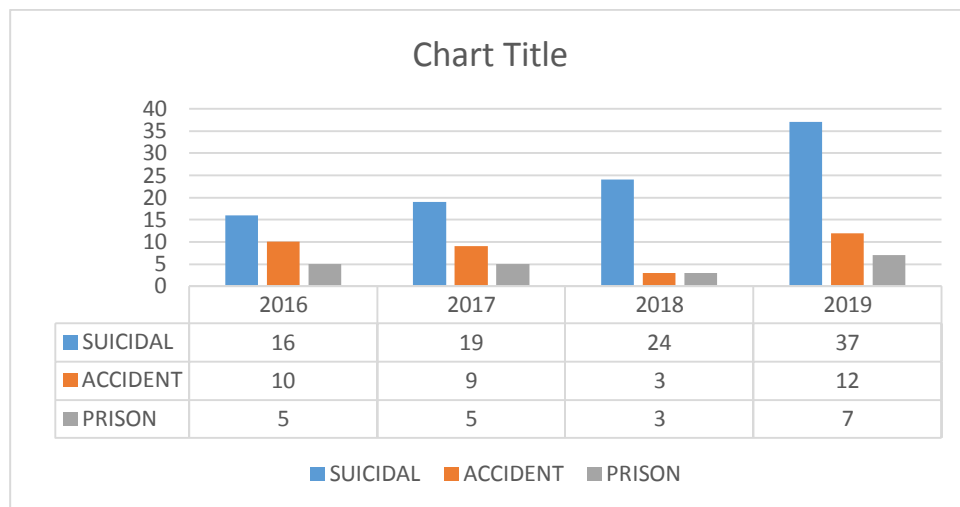
The number of accidental deaths in females from 2016-2019 is given on X-axis and no of death person's rate is given on Y-axis shown below:



Graph 5.6 This graph shows accidental deaths of female's during 2016-2019

- **OVERALL DEATH RATE BETWEEN 2016-2019**

Overall death of Unnatural deaths during 2016-2019 is given on X-axis and the overall no of death rate is given on Y- axis is shown on the graph below:



Graph 5.7 Annual graph of suicidal, Accidental, Prison death during 2016-2019

CHAPTER 6

RESULT AND CONCLUSION

RESULT:

In Rajahmundry city the suicidal deaths are more in the year 2019 are and that is mainly high in case of males (80.34%). In the year 2017 the suicidal deaths are more in females (48.48%). In case of accidental deaths

in 2017(24.24%) and 2019 it is more in males (14.28%) and in 2017 it is more in females (15.15%). In case of prisoner's death in 2019 it is more in males (80.34%) and in 2017 it is more in females (15.15%). By comparing both males and females, death rate is more in males than females in suicidal death (280.58%), accidental death (61.3%), prisoner's (18.7%) death during 2016-2019.

CONCLUSION:

In Rajahmundry City under II- Town Police Station the overall deaths are 150 cases. While taking the overall graph of Rajahmundry city it is clear that in unnatural deaths suicidal deaths are high. So, the conclusion is the death rate is more in males in Rajahmundry city.

CHAPTER 7

REFERENCE

1. <https://www.slideshare.net/DRARMANHOSSAIN/death-in-forensic-medicine>
2. https://en.wikipedia.org/wiki/Manner_of_death
3. <https://en.wikipedia.org/wiki/Accident>

4. <https://www.slideshare.net/SUDESHNABANERJEE10/poisoning-75320024>
5. <https://en.wikipedia.org/wiki/Hanging>
6. <https://en.wikipedia.org/wiki/Drowning>
7. <https://www.slideshare.net/MISHRA8931/drowning-death>
8. <https://www.mdpi.com/1660-4601/9/3/924>
9. <https://www.sciencedirect.com/science/article/pii/S2468266719300428>
10. <https://www.mdpi.com/1660-4601/16/15/2743>
11. https://www.researchgate.net/publication/263093078_Causes_of_unnatural_deaths_among_children_and_adolescents_in_northern_India_A_qualitative_analysis_of_postmortem_data
12. <http://www.indianjournals.com/ijor.aspx?target=ijor:jiafm&volume=26&issue=4&article=004>