

# Medico-Legal Update

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# The Myths of Hippocratic Oath

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## Abstract

HIPPOCRATES, the celebrated Greek physician, was a contemporary of the historian Herodotus. The works attributed to Hippocrates are the earliest extant Greek medical writings. Among these is the famous "Hippocratic Oath" which shows that in his time physicians were already organized into a corporation or guild, with regulations for the training of disciples, and with an esprit de corps and a professional ideal which, with slight exceptions, can hardly yet be regarded as out-of-date. It is the first of his 'Aphorisms': "Life is short and the Art long; the occasion fleeting; experience fallacious, and judgment difficult." The physician must not only be prepared to do what is right himself, but also to co-operate with the patient, the attendants and externals.

## Key Words

Hippocratic Oath, Advancement of Medicine

I swear by Apollo Physician and Asclepius and Hygieia and Panacea and all the gods and goddesses, making them my witnesses, that I will fulfill according to my ability and judgment this oath and this covenant:

To hold him who has taught me this art as equal to my parents and to live my life in partnership with him, and if he is in need of money to give him a share of mine, and to regard his offspring as equal to my brothers in male lineage and to teach them this art - if they desire to learn it - without fee and covenant; to give a share of precepts and oral instruction and all the other learning to my sons and to the sons of him who has instructed me and to pupils who have signed the covenant and have taken an oath according to the medical law, but no one else.

I will apply dietetic measures for the benefit of the sick according to my ability and judgment; I will keep them from harm and injustice.

I will neither give a deadly drug to anybody who asked for it, nor will I make a suggestion to this effect. Similarly I will not give to a woman an abortive remedy. In purity and holiness I will guard my life and my art.

I will not use the knife, not even on sufferers from stone, but will withdraw in favor of such men as are engaged in this work.

Whatever houses I may visit, I will come for the benefit of the sick, remaining free of all intentional injustice, of all mischief and in particular of sexual relations with both female and male persons, be they free or slaves.

What I may see or hear in the course of the treatment or even outside of the treatment in regard to the life of men, which on no

account one must spread abroad, I will keep to myself, holding such things shameful to be spoken about.

If I fulfill this oath and do not violate it, may it be granted to me to enjoy life and art, being honored with fame among all men for all time to come; if I transgress it and swear falsely, may the opposite of all this be my lot.<sup>1</sup>

The Hippocratic Oath is one of the oldest binding documents in history of medicine. Written in antiquity, its principles are held sacred by doctors even today: treat the sick to the best of one's ability, preserve patient's privacy, and teach the secrets of medicine to the next generation and so on. Today, most graduating medical-school students swear to some form of the oath, usually a modernized version. Indeed, oath-taking in recent decades has risen to near uniformity, with just 24 percent of U.S. medical schools administering the oath in 1928 to nearly 100 percent today.<sup>2</sup>

Yet paradoxically, even as the modern oath's use has burgeoned, its content has tacked away from the classical oath's basic tenets. Physicians have come to feel that the Hippocratic Oath is inadequate to address the realities of a medical world that has witnessed huge scientific, economic, political, and social changes; a world of legalized abortion, physician-assisted suicide, and pestilences unheard of in Hippocrates' time. In an environment of increasing medical specialization, should physicians of such different stripes swear to a single oath? With governments and health-care organizations demanding patient information as never before especially after introduction of Right to Information Act 2005, how can a doctor maintain a patient's privacy? Are physicians morally obligated to treat patients with such lethal new diseases as AIDS or the Ebola virus?<sup>3</sup>

The principles enshrined in the oath never constituted a shared core of moral values, that the oath's pagan origins and moral cast make it antithetical to beliefs held by Christians, Jews, and Muslims. The classical Oath makes no mention of such contemporary issues as the ethics of experimentation, team-care or a doctor's societal or legal responsibilities.<sup>3</sup>

With all this in mind, it is observed now that oath-taking as little more than a pro-forma ritual with little value beyond that of upholding tradition. "The original oath is redolent of a covenant, a solemn and binding treaty" "By contrast, many modern oaths have a bland, generalized air of 'best wishes' about them, being near-meaningless formalities devoid of any influence on how medicine is truly practiced." It is claimed what they call the "Hippocratic Oath" should be radically modified or abandoned altogether.

The first interesting point in the Hippocratic Oath is that one is swearing to teach the sons of one's own teacher for no charge. This means that if you are approached by a son of the

doctor who taught you, and this son requests that you teach him medicine, you have sworn in your oath that you will not charge this son of your teacher for any medical education you will provide to him. If we were to take the first version (of the three listed at the end of this posting) as the Oath, one could conceivably have to teach, for free, every single offspring of our teachers.<sup>4,5</sup>

Second interesting point in the Hippocratic Oath is that: in fact, two sections of the Hippocratic Oath are practically in opposition to each other, and it is only convenient that they are located right next to each other in the Oath:

"I will apply dietetic measures for the benefit of the sick according to my ability and judgment; I will keep them from harm and injustice."

"I will neither give a deadly drug to anybody who asked for it, nor will I make a suggestion to this effect. Similarly I will not give to a woman an abortive remedy. In purity and holiness I will guard my life and my art."

I will give no deadly medicine to anyone if asked, nor suggest any such counsel; and in like manner I will not give to a woman a pessary to produce abortion, or 'I will neither give a deadly drug to anybody if asked for it, nor will I make a suggestion to this effect. Similarly, I will not give to a woman an abortive remedy."

One may infer that the oath does not make any distinction between the 'practitioners of knife' (surgeons) and 'Physicians'.<sup>4</sup> Since a "pessary" (substance or device inserted into the uterus—in the context of the Hippocratic Oath for the purpose of terminating the pregnancy), surgical abortions, RU486 and other chemical methods are interesting abortion methods, when considered with the Hippocratic Oath surgical abortions are not mentioned but physicians cannot prescribe pessary for abortion.<sup>4</sup>

As for "deadly medicine", one can find all kind of poisons used as curatives in modern as well as ancient medical texts. The key word is the dosage of the poison: too high, and it is 'deadly medicine'; just right and it is a 'curative medicine'.

Third interesting point in the Hippocratic Oath is that: "I will neither give a deadly drug to anybody who asked for it, nor will I make a suggestion to this effect." "Whatever houses I may visit, I will come for the benefit of the sick."

But randomized clinical trials, a research tool are conducted for investigating safety and efficacy of new drugs, especially in conditions like cancer. Would we advise our patients to participate in a phase-III trial in which effectiveness of a new and unknown

drug is seen on a patient that might be worse than the drug that our patient requires? Our oath forbids us to do so! Yet modern medicine advocates clinical trials.<sup>7</sup>

## Conclusion

Hippocratic Oath is creating many dilemmas to physicians while performing routine duties. Physician should follow the basic principles of ethics, which are:

- Non-maleficence – primum non nocere
- Beneficence
- Respect for autonomy

There is one positive thing the World Medical Association has done by rewriting the Hippocratic Oath, by making Geneva Declaration, although that does not accomplish all the pitfalls of Hippocratic Oath. Therefore, new oath should be framed considering the advancement of medicine so that physicians do not face much dilemma in performing their duties.

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# Sex Determination from Tooth

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## Abstract

Teeth forms an excellent material for anthropological, genetic, odontologic and forensic investigations. The present study has been conducted in 400 patients (M:F, 240:260) in the age group of 17-25 years. Among the teeth, the mandibular canines and maxillary first molar is found to exhibit greatest sexual dimorphism. Statistically significant sexual dimorphism exist in the mandibular canine and maxillary first molars among all teeth weather measurements are taken on casts or intraorally. Mandibular canines and maxillary first molar may be used in gender determination.

## Keywords

Mandibular first molars mandibular canine, bucco-lingual (B-L), meso-distal (M-D), sex determination.

## Introduction

Odontometry has been performed on various tooth groups with the objective of establishing measurements that can act as standards and this may also facilitate some procedures of dental surgery, as well as in forensic odontology.<sup>1</sup> Identification of living person and the dead is of paramount importance in forensic practice routinely.<sup>2</sup> Sex estimation is one of the prime factors employed to establish identity. Teeth, are an excellent material in living and nonliving populations for anthropological, genetic, odontologic and forensic investigations being hardest and chemically the most stable tissue in the body, they are selectively preserved and fossilized, thereby providing for the best records for evolutionary change. Their durability in the face of fire and bacterial decomposition makes them invaluable for identification.<sup>3</sup> Tooth size standards based on odontometric investigations can be used in age and sex determination.<sup>2</sup> It has been reported that dental dimensions of males are larger as compared to female<sup>4</sup>.

## Material and Methods

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The study was conducted on 400 patients (240:260, M:F) in the age group of 17-25 years, selected from the out patient Department of the Govt. Dental College, associated with Post Graduate Institute of Medical Sciences, Rohtak (INDIA). Teeth with marked wear or heavily restored were excluded form the study. An impression of mandibular and maxillary arch were taken with alginate and poured with type IV dental stone. Care was taken to pore the impression immediately to minimize the dimensional changes. The B-L (bucco-lingual) diameter and M-D (mesial distal) diameter of maxillary and mandibular teeth were measured with vernier calipers (resolution 0.02 mm) intraorally in patient as well as on the cast.

## BL-diameter of the crown

This measurement is the greatest distance between facial and lingual surface of the crown parallel to the long axis of tooth.

## M-D diameter of the crown

The width of teeth was taken as the greatest mesio-distal between the contact points of teeth on either side of the jaw. The sexual dimorphism in tooth size was calculated for each tooth suing following formula.<sup>5</sup>

$$\left[ \frac{xm}{xy} - 1 \right] \times 100$$

xm = mean value for males

xy = mean value for females

The results obtained were subjected to statistical analysis (SPSS version 7.0).

## Results

Mesiodistal diameter of both side maxillary and mandibular teeth were larger in males as compared to females, though statistically insignificant except mandibular canine. (Table I, p<0.001)

In buccolingual diameter of both side maxillary and mandibular teeth were larger in males as compared to females, though value statistically insignificant except maxillary first molar (Table I, p<0.001).

The sexual dimorphism as computed for intraoral measurements as well as on casts has been presented (Table II, table III).

individuals if the post-cranial skeleton is intact. But in young child and infant determination of sex from skeleton is difficult.<sup>6</sup>

**Table I: Statistical significance of difference parameters males versus females**

Parameters	Group	Sex	Mean(mm)	± SD	't' stat	'p' value	Significance
Left maxillary first molar (B-L diameter)	Casts	Males	11.56	0.053	205.796	0.0001	HS
		Females	9.50	0.044			
	Inter Oral	Males	11.72	0.051	202.107	0.0001	HS
		Females	9.69	0.048			
Right maxillary first molar (B-L diameter)	Casts	Males	10.95	0.014	434.49	0.0001	HS
		Females	9.36	0.023			
	Inter Oral	Males	10.69	0.157	64.15	0.0001	HS
		Females	9.24	0.017			
Left mandibular canine	Casts	Males	7.32	0.035	158.93	0.0001	HS
		Females	6.54	0.020			
	Inter Oral	Males	7.55	0.056	49.84	0.0001	HS
		Females	6.76	0.099			
Right mandibular canine	Casts	Males	7.54	0.069	49.29	0.0001	HS
		Females	6.63	0.100			
	Inter Oral	Males	7.72	0.023	70.45	0.0001	HS
		Females	6.89	0.077			

**Table II: Range (in mm) of Different Teeth (Intraorally as well as Cast) in Genders**

Groups	Sex	Right canine (M-D)	Left canine (M-D)	Right maxillary first molar (B-L)	Left maxillary first molar (V-L)
Casts	Males	7.5-7.7	7.2-7.5	11.5-11.9	10.9-11.0
	Females	6.5-6.7	6.5-6.7	9.4-9.5	9.3-9.4
Intraoral	Males	7.7-7.8	7.5-7.9	11.6-11.8	10.5-10.9
	Females	6.7-7.0	6.5-6.8	9.6-0.8	9.2-9.3

**Table III: Sexual Dimorphism in Teeth**

Groups	Right canine	Left canine	Right maxillary first molar	Left maxillary first molar
Casts	12.38%	13.04%	8.27%	7.91%
Intraoral	12.06%	12.34%	8.49%	7.79%

From the finding, it is interpreted that in both instances (intraoral and casts), the mandibular canines is found to exhibit greatest sexual dimorphism as compared maxillary first molar, though left canine have greatest sexual dimorphism (13.04% casts), 12.34% (intraoral) as compared to right canine and maxillary first molar.

Usually, the maxillary first molar have a mean eruption age of 6-7 years<sup>7,8</sup> and are less impacted compared to canines.<sup>9</sup> The mandibular canines are considered to demonstrate high sexual dimorphism among teeth in their mesio-distal width. Maxillary first molar (B-L diameter) especially right side have higher sexual dimorphism (8.49% casts, 8.27% intraorally) as compared left side, hence help in forensic dentistry during impacted canine.

## Discussion

The present study establishes the existence of a definite statistically significant sexual dimorphism in maxillary first molar and mandibular canine. Sex can be determined well in mature

## Conclusion

Sex estimation is one of the prime factors employed to establish identity. The present study establishes the impact on morphometry

of maxillary first molar and mandibular canines statistical analysis revealed sexual dimorphism exists in mandibular canines and maxillary first molar among all teeth. No literature is traceable found on sexual dimorphism as buccolingual diameter of maxillary first molar. More study will be required on buccolingual amounts of maxillary first molar for establishing use in determination of gender in forensic dentistry.

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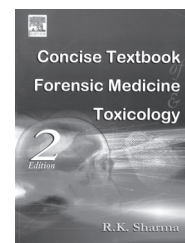
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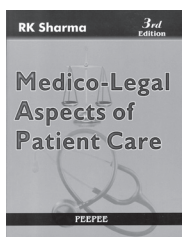
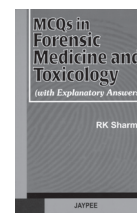
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# Extreme Cases of Child Abuse by Parents

## A Report on a Series of 4 Different Cases

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### Abstract

This paper focuses on four extreme cases of child abuse which resulted from the violent acts of their parents or caregivers. These four cases included: a case of throttling, a case of cut throat, a case of malnutrition and starvation, and a case of pregnant girl-child raped by her father. The parents of these children belonged to the lower socioeconomic group; poverty and conflicts between the parents were important triggering factors for such ghastly acts. These extreme cases of child abuse may be just the tip of the ice-berg, as many non-fatal cases of child abuse may have remained unreported. Reporting by health professionals of suspected child abuse and neglect cases is recommended. If the parents are found guilty, the revoking of parental rights should be considered and feasible rehabilitation measures for such children should be taken up.

### Key words

Lowersocioeconomic status, parents, troubled marriage, conflict, child abuse

### Introduction

Child abuse occurs in a variety of forms across the world. Reports of infanticide, mutilation, abandonment and other forms of violence against children date back to ancient civilizations.<sup>1</sup> The issue of child abuse started getting world wide recognition only after 'the battered child syndrome' was coined in 1962 by Kempe et al.<sup>2</sup> According to WHO Consultation on Child Abuse Prevention (1999), child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power<sup>3</sup>. The National Study on Child Abuse-2007 conducted across 13 states by the Ministry of Women and Child Development, India found that nearly two out of every three children in the 12,447 sample studied had

been physically abused. A recent WHO-estimate shows that 40 million children aged 0-14 around the world suffer from abuse and neglect. Child abuse or maltreatment is commonly divided into five categories: physical abuse, emotional abuse, sexual abuse, neglect and exploitation. Although any of these forms may be found separately, they often occur together but the cases of abuse frequently observed include physical abuse, sexual abuse and neglect<sup>4</sup>. This paper focuses on four extreme cases of child abuse which resulted from acts of parents or caregivers, highlighting the ugly face of child-abuse in a small State like Manipur.

### Report on a series of 4 cases

These cases were brought for examination to the Department of Forensic Medicine, Regional Institute of Medical Sciences, Imphal: -

#### Case No. 1

The dead body of a one and half - year old boy was brought with the history that his father throttled him to death. The parents of the boy were poor and they were having a troubled marriage.

On examination, the eyes were congested, and nails and lips were cyanosed. There was an old scar on the undersurface of the chin, 9 cm x 1 cm (almost horizontally placed) which was reported as a scar of a previous surgical procedure.

Abrasion and contusion on the left side of the mid-part of the neck and small contusions on the upper part of the right side of the neck were observed as shown in Fig 1 & Fig 2. An abrasion



**Fig-1: Showing Abrasion and contusion on the left side of the neck**

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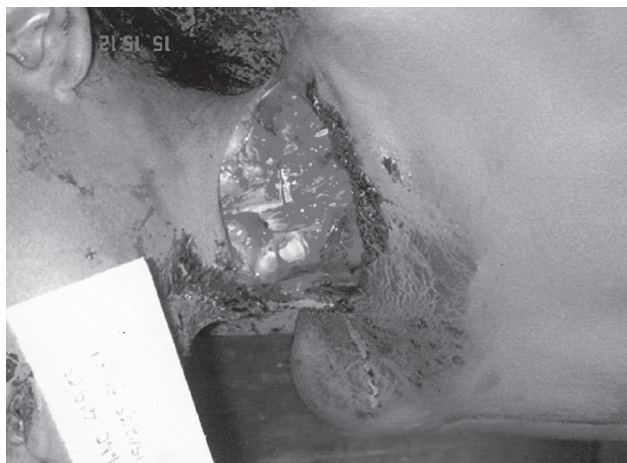
was also seen on upper part of the front of the neck; no other external injuries were seen on the body. The neck tissues were



**Fig-2 : Showing contusions on the right side of The neck and an abrasion on The front of the neck**

congested and there was extravasation of blood on both the sides of the neck corresponding to the external injuries. The larynx was also congested with extravasations. The heart was congested and was filled with dark blood (fluid), and all the internal organs were congested.

### **Case No. 2**



**Fig-3 : Showing an incised wound on The Neck.**

A 4-year old boy's neck was slit by his own father. The family belonged to low socio-economic group and the father was a known drunkard. There was history of frequent clashes between the father and mother. On examination, generalized pallor was observed and there was a bone deep incised wound, 10.5 cm in length on the lower part of the front of the neck (Fig. 3). It was almost horizontally placed and tailing was present on the right side of the neck. The left carotid artery, left jugular vein and left side of the body of the 5<sup>th</sup> cervical vertebra (up to half of its

thickness) and trachea were cut. The spinal cord was intact, and the heart was pale and empty.

### **Case No. 3**

A seven-month old, male infant's body was brought for autopsy as a case of suspected homicide. According to the police, the mother of the child filed a complaint against her husband and his second wife stating that her child was found dead in the house of the second wife under suspicious circumstances. It was further learnt that the husband left his first wife i.e. the mother of the infant and went to stay with his 2<sup>nd</sup> wife a few months ago. The family belonged to a lower socioeconomic group and the mother had no capability of bringing up the child all by herself. Thus, two days prior to the death of the child, the mother took the child to the house of the 2<sup>nd</sup> wife, where her husband was residing and asked him to take up the responsibility of the child's upbringing. However, shockingly on the third day, she was informed that the child died following a brief illness.

On examination, the body was thinly built and emaciated. Pallor and dehydration were present and the eyes were sunken. The facial bones were prominent; the hair growth was scanty, brownish in colour and lusterless. The skin appeared wrinkled with pitting oedema of lower limbs. The abdomen was protuberant and no external injury was observed on the body.

The head and neck tissues were intact on internal examination. The peritoneal cavity contained about 50 ml of clear yellowish fluid. The stomach wall was thinned out, and the gall bladder was distended with bile. The findings were consistent with malnutrition and starvation. The histopathological examination showed interstitial pneumonitis of the lungs.

### **Case No. 4**

Eight months after she was raped by her father, a 14-year old girl was brought for examination. The girl belonged to a poor family and her father, who was the sole earning member of the household, was a chronic alcoholic. A frequent clash between her parents was a regular event in her household. Later, after about one month following the incident, she was molested again by her father's friend who was staying with them in their house. The man told her that he was given the permission to have sex with her by her father. The young girl was so disturbed with the atmosphere at her house that she moved out of her house and started staying at a home run by some social workers.

It was observed that the girl was apparently depressed and on examination, her hymen showed an old tear at the 5 O'clock position. At the same time, it was detected that she was already 8 weeks pregnant and this finding was confirmed by ultrasonography. After the examination, MTP (Medical termination of pregnancy) was advised and she was referred for further physical and psychological rehabilitation.

### **Discussion**

According to the World Health Organization, there were an estimated 57,000 deaths attributed to homicide among children under 15 years of age in 2000. Global estimates of child homicide

suggest that infants and very young children are at greatest risk, with rates for the 0 to 4-year old age group more than double those of 5 to 14 - year olds<sup>5</sup>. This is holds true in the present series of cases as the 3 children belonged to the age group of 0 – 4 years.

Numerous studies across many countries have shown a strong association between poverty and child maltreatment<sup>6,7,8</sup>. This is in concurrence with the present series of cases, as all the parents belonged to a lower socioeconomic status and family feuds over monetary issues, and the burden of looking after the child was a common triggering factor for such cases of child abuse.

Among the fatalities attributed to child abuse, the most common cause of death is injury to the head, followed by injury to the abdomen<sup>9,10</sup>. Intentional suffocation has also been extensively reported as a cause of death<sup>11,12</sup>. However, such violent acts viz. throttling and throat-slitting, etc. reflect the intensity of hostility and aggression exerted by their own caregivers to these innocent children.

On the other hand, victims of rape may not report out of shame, distress or for fear of the offender or for fear of stigma and rejection. However, the sad side of the story is that a female is more likely to be raped by a close friend or family member than by a stranger; and this female will be least likely to make a formal report. According to Lessing JE<sup>13</sup>, an adolescent victim may delay the disclosure of such an assault and therefore experience detrimental, acute, and long-term effects because of developmental and psychological factors. The aftermath of rape and the thought of bearing her own father's child in the present case is indeed a matter of concern.

It is worth mentioning here that in the present series of cases of child abuse, fathers were the prime abusers. Many researchers include neglect or harm caused by a lack of care on the part of parents or other caregivers as part of the definition of abuse<sup>14,15</sup>. Abandonment, inadequate supervision, poor hygiene has been considered as evidence of neglect. The infant victim reported in the present case suffered from abandonment and neglect, as he had all the tell tale signs of malnutrition and starvation.

## Conclusion

Across the world, there is some degree of awareness of child abuse among the public or health professionals. Child abuse, as such, is not a major issue for a small State like Manipur. However, it is very disheartening to observe such ghastly acts being committed to such small innocent children. These cases of child abuse may constitute just the tip of the ice-berg, as many non-fatal cases of child abuse may have remained unreported. As a precautionary measure, reporting by health professionals of suspected child abuse and neglect should be recommended. If the parents are found guilty, revoking parental rights should even be considered and proper rehabilitation policies for such abused children should be considered.

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# Parasuicide: A Forensic Viewpoint

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## Abstract

Parasuicidal acts are the acts of non-fatal deliberate self-harm. Information about such attempted suicides is scarce in the forensic literature because most of the incidents are officially unreported. Parasuicide could not be taken as a lighter entity because of the residual temporary or permanent disability it leaves. The investigation of risk factors for parasuicide is of immense importance in order to prevent further such attempts and also completed suicides. This review presents the risk factors, socio-demographic profile and methods opted for parasuicide. The presentation is concluded with an emphasis on the legal liabilities of parasuicide.

## Key words

Disability, legal liabilities, parasuicide.

## Introduction

The tragedy of self-inflicted death has always attracted the attention of the medical as well as the legal fraternity. Although it is quite obvious that one has to 'attempt' suicide in order to 'commit' it, it could be held that the event of attempting suicide need not always have death as its objective. Parasuicide or attempted suicide is the problem of major concern in today's society, which sometime or the other affects the lives of a significant proportion of the population. It could not be taken as a lighter entity for it may prove as equally dangerous as suicide itself and sometimes more than that because of the residual temporary or permanent disability.

## Discussion

Parasuicidal acts involve those acts of intentional self-injury with the objective of death, but the result is not death. The term 'parasuicide' is used synonymously with 'attempted suicide' to express the fact that it is a phenomenon which is close to or similar to suicide but nevertheless different. It is defined as a

conscious and voluntary act which the individual has undertaken in order to injure himself, and which the individual could not have entirely be certain of surviving, but where the injury has not led to death.<sup>1</sup> The incidence of parasuicide is greatly influenced by the differences in age, sex, race, religion, culture, marital status, habitat, climate and social systems.<sup>2</sup>

Erwin Stengel suggests that persons who 'attempt' suicide and those who 'commit' suicide, even though represent two different categories, there do exists some 'overflow' from the former to the later.<sup>2</sup> The ratio between suicide 'attempt' and 'commits' varies widely as quoted in the literature. One committed suicide for every eight attempts (1:8). Figures vary from 1:3 to 1:10.<sup>3</sup> World Health Report puts that, the yearly global prevalence of parasuicidal acts varied between 2% to 20%.<sup>1</sup>

The prevalence of parasuicidal acts is estimated to be 10-20 times higher than that of completed suicides. Around 10 to 15 times as many people make non-fatal suicidal attempts or perform parasuicidal acts. In the young the ratio may be 20 to 40 attempts to one suicide and in the elderly this can be 3:1.<sup>1</sup>

All suicidal people are not death seekers. Some attempt to communicate pain, to reduce isolation, to avoid consequences of social status change, to seek revenge and convey a whole lot of other meanings that are essentially individualistic.<sup>4</sup> In a study conducted in Manipal, India, it was observed that out of the total 82 cases studied in a span of twelve months, 64% survived the attempt of suicide and 36% succumbed to it. Women have outnumbered men in non-fatal unsuccessful attempts.<sup>5</sup>

Studies have revealed that young women attempt suicide more frequently than any other group.<sup>6</sup> Bluementhal gives the woman – man ratio as 5:1 for parasuicide.<sup>7</sup> But a study from Chicago puts that elderly patients who attempted suicide were more likely to be males.<sup>8</sup> As observed by Platt et. al, the highest frequency of parasuicide is among females between 15 to 19 years of age.<sup>9</sup> Tuzun et.al, reports that poisoning (83%) was the most frequent method used in parasuicide, followed by jumping (8%) and gunshot (6%).<sup>6</sup>

Information about the parasuicidal acts are not detailed satisfactorily in the literature. One of the reasons is that not all parasuicidal acts are reported officially. Suicide patients apply to the health care centers only when there is a serious threat to life but often without registering the cause as suicide attempt officially to avoid the various medico-legal hassles. Nevertheless, from the available data, the ratio of parasuicides to suicides in many countries has been estimated as about 10: 1.<sup>10</sup>

Low education is an important risk factor in parasuicidal acts, more so in adolescence.<sup>7</sup> This view was shared by Crepet et.al.<sup>11</sup> But the study of Tuzun et. al states that, 23% of the cases of parasuicide were university graduates.<sup>6</sup> The other important risk factors for parasuicide are lower socio economic status,

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unemployment, singletons during adolescence, widow or widower and the people in the geriatric age group.<sup>12</sup> The lifetime risk for suicide is about 2 to 4 times higher for men than for women, whereas women are 3 to 9 times as likely to attempt suicide compared to men.<sup>13</sup> Wunderlich U. points out males to be more success oriented who tend to show more aggressive, risk taking and injury producing behaviour than their female counterparts.<sup>13</sup> It was also pointed out that adolescent males use more lethal suicide methods, which increases the probability of completed suicides and at the same time decreases the likelihood of humiliation, which probably would correspond with a failure of the suicide.<sup>13</sup>

Women might have a less access to more lethal means of suicide compared to men. This could probably explain the higher rate of suicide attempts in women, while the risk for completed suicide resulting in death is greater for men. A further hypothesis is that suicide attempts in women are tolerated more easily and is viewed with more sympathy by the society than for men.

It has been observed that the female suicide attempters showed suicidal thoughts and suicide attempts significantly more often, and at a much younger age than the males. Furthermore, the females experienced sexual abuse followed by anxiety disorders much more often, which in turn makes them more vulnerable than males for attempting suicide between the ages of 14 to 17 years. On the other hand, the male suicide attempters showed higher rates of alcohol disorders and financial problems.<sup>13</sup>

Various studies have shown gender differences in suicide attempters with regard to the type and extent of mental and addiction disorders. One such study points out that panic disorders and depressive syndrome were the major risk factors for suicide attempts in females than in the males. Alcohol dependence and illegal drug consumption was found as nearly twice the rate in men than in women.<sup>13</sup> In a study conducted on alcohol dependent patients, females attempted suicide more often than males.<sup>14</sup>

Anuj Mittal et al, in their study on 50 consecutive patients of parasuicide, reports that 74% of the patients had psychiatric morbidity and majority were diagnosed with a spectrum of 'depressive disorders'.<sup>15</sup> It has been said that depression prior to suicide is probably a universal phenomenon and it could be emphatically stated that the suicide is the mortality of depressive illness.

As per Section 309 of the IPC, 'whoever attempt to commit suicide and does any act towards the commission of such offence, shall be punished with simple imprisonment for a term which may extend to one year, or with fine, or with both'. In many countries, attempt to commit suicide is regarded more as a manifestation of diseased condition of mind deserving a treatment and care rather than as an offence to be visited with punishment. In this context, the constitutional validity of Section 309 was challenged and the Supreme Court observed that the provision for punishing the attempt to commit suicide is irrational. It also held that the act of attempted suicide neither has any baneful effects on the society, nor is harmful to others. However, this decision was subsequently reversed and it has been held again that the provision for penalizing the attempt to commit suicide is not unconstitutional.<sup>16</sup>

It needs to be emphasized that easy and quick accessibility to various means of suicide attempts increases the number of attempts. Parasuicidal acts are powerful predictors for both

further suicide attempts and for completed suicides. Hence the investigation of risk factors for suicide attempts is of paramount importance, particularly for issues pertaining to prevention of further such attempts and also completed suicides.

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# Medicolegal Evaluation of Sex Assault Cases Admitted at Sardar Patel Medical College & P.B.M. Hospital, Bikaner, India

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## Abstract

Rape is a serious offence, causing tremendous physical, mental and emotional trauma to the victim. Attitudes to sexuality and the taboos associated with issues of sexual nature have limited our understanding of this most vital aspect of our humanity. Medical text, teaching, and research in the area of human sexuality and the genitalia have been severely lacking, especially those relating to female.

Of all forms of sexual assault the most heinous and that arousing the most passionate response is the sexual abuse of children. Burgess and Holmstrom (1974) first used the term 'rape trauma syndrome' to describe the psychological reactions experienced by victims of rape. Statistics show a persistent rise in sex assault cases with poor conviction rates. Victim in many cases, decide not to report these offences for fear of embarrassment a sense of deep shame and considering her future life. This knowledge, along with vast multitude of emotional sequel of rape and self perceived inferior legal status of involved females results in a high percentage of unreported cases. Medical examiner has only a corroborating role in establishing the allegation of rape.

## Keywords

Sex assault; Consent; Medical examination; injury; victim; accused.

## Introduction

Sexual violence is a serious problem that affects millions of people every year. Its victims are at increased risk of being abused again (Elliott, Mok, and Briere 2004; Jewkes, Sen, and Garcia-Moreno 2002; Rickert et al. 2004). Sexual violence perpetrators are also at increased risk of perpetrating again (Lisak and Miller 2002).

Statistics about sexual violence vary due to differences in how it is defined and how data is collected. Sexual violence data usually come from police, clinical settings, nongovernmental organizations, and survey research.

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Available data greatly underestimate the true magnitude of the problem. Rape is one of the most underreported crimes. Reporting rates for rape vary across studies. The National Violence against Women Survey (NVAWS) found that only 1 in 5 adult women (19%) reported their rapes to police (Tjaden and Thoennes 2006). Estimates of rapes reported to the police from the National Crime Victimization Study (NCVS), conducted by the Department of Justice (DOJ), vary widely from year to year, from 39% in 2002 to 54% in 2003 (DOJ 2002, DOJ 2003). The difference between the NCVS and NVAWS rates is most likely due to different survey methods used in these two studies, so these differing results should not be directly compared.

A man is said to commit rape, if he has sexual intercourse with a woman<sup>1</sup> against her will<sup>2</sup> without her consent<sup>3</sup> with her consent when her consent has been obtained by putting her or any other person in whom she is interested in fear of death, or of hurt<sup>4</sup> with her consent, when at the time of giving such consent, by reasons of unsoundness of mind or intoxication or by administration of stupefying agent, she is unable to understand the nature and consequences of that to which she gives consent<sup>6</sup> with or without her consent when she is under the age of sixteen years.

"Will" and "consent" are different. Every act done against the will of a person is done without his consent, but an act done without the consent of a person is not necessarily against her will.

The woman must have voluntarily participated in the sexual act, after the exercise of intelligence and also her choice between resistance and assent, for the consent to be valid. Submission is not necessary consent, though consent necessary involves submission. The material facts to be considered are the conduct and behavior of the victim. It is not a rape where a woman initially objects, but subsequently gives her consent to sexual act.

Consent or its absence can be presumed from the accompanying circumstances of each case. The chief evidence of lack of consent is signs of resistance, which is naturally expected from a woman unwilling to a sexual intercourse forced upon her. Such a resistance may cause the tearing of cloths, and injuries on the body, and even on her private parts. It is necessary to prove that maximum resistance was offered by the woman, and that all means had been tried to prevent sexual intercourse, ex: shouting, crying, biting, beating etc. The woman may surrender from fear or exhaustion, in which case it is regarded as rape. The resistance offered depends upon the type of woman, her age, development and social status.

The slightest penetration of the penis within the vulva, such as the minimal passage of glans between the labia with or without emission of semen or rupture of hymen constitutes rape. Rape can be committed even when there is inability to produce penile erection.

Rape can occur without causing any injury, and as such negative evidence does not exclude rape. The prosecution has to prove all elements of the offence. In many cases of rape, there are no signs of injury or intoxication by stupefying drugs, and the entire allegation of lack of consent is based on fear and fraud. As per section 114 A of Indian evidence act, if the victim states in her evidence before the court that she did not give consent for sexual intercourse, the court presumes that she did not consent in a custodial situation or when she is a victim of gang rape. The burden of proof of the consent rests on the accused.

In India under the prevailing law, rape can be committed by a man only, and a woman cannot rape a man, she can only be tried in court for indecent assault. There is no age limit under which a boy is considered physically incapable of committing rape; the court decides the question of his potency, even old men commit rape on very young girls.

## Materials & Methods

Medical examination was undertaken of the alleged victims of rape brought by police to the Department of Forensic Medicine & Toxicology, at Sardar Patel Medical College & P.B.M hospital, Bikaner, Rajasthan, India from January 2006 till December 2006. A total of 32 cases were Medico legally evaluated, relevant history was obtained from the victim, their accompanying relatives and police personal.

## Observations

### 1. Age of victim

	Age in years	No of cases	Percentage
1	0 to 5	0	0%
2	6 to 10	4	12.5%
3	11 to 15	6	18.75%
4	16 to 20	10	31.25%
5	21 to 25	12	37.5%
6	26 & above	0	0%

### 2. Occupation of victim

1	Student	5	15.75%
2	Domestic work	5	15.75%
3	House wife	14	43.5%
4	Laborer	8	25%
5	Service	0	0%

### 3. Relation of victim with accused

1	Relative	8	25%
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2	Neighbor	15	46.75%
3	Friend	5	15.75%
4	Unknown	4	12.5%

### 4. Place of rape

1	Home	15	46.75%
2	Farm	9	28.125%
3	Canal	2	6.25%
4	Railway yard	3	9.5%
5	Hotel	2	6.25%
6	Jungle	1	3.125%

### 5. Time period between rape and medical examination

1	0 to 12	6	18.75%
2	13 to 24	19	59.25%
3	1 to 3 days	3	9.5%
4	One week	2	6.25%
5	One month	2	6.25%

### 6. Distribution of injuries on body of victim

1	Cheeks	25%
2	Lips	12%
3	Chest	0%
4	Breast	55%
5	Wrist & hands	3%
6	Thighs	0%
7	Legs & feet	5%

## Results & Discussion

Out of total 32 victims of rape, the numbers of Pediatric victims of rape were 4 (12.5%). Sahoo et al (2000), Observed in his study that of the total rape victims, 10% of them are children. In our study 68.75% were, in the age group between 16 to 25 years. Leslie et al (2002) stated that mean age of rape

victim was 23.3 years. 43.5% of victims were house wife followed by laborers (25%), 15.75% of students were also victim. 62.5% of rape victims were from lower socio-economic group having monthly income of less than Rs 2000. 9.5% were from upper class having monthly income of Rs 10,000 or more. 40.5% of victims were literate and 6% of them had completed their graduation.

Majority of victims (56.5%) were married and only 6% were divorce and widow. 75% of women were from rural background as majority of cases brought to our hospitals were from

surrounding villages. In 87.5% of cases the rapist knew the victim (46.75% neighbored, 25% relatives, and 15.75% were friends). In one case due to property dispute, the victim was kidnapped by his relative and kept in a room for a week, where he and his two sons repeatedly raped her. Groth and Burgess (1977) stated that rape is not so much about sex as it is about other issues such as power and aggression. Lim et al stated in his study of sex assault cases in Singapore, that, slightly more than half (53%) of rape victims were strangers to the offender, and majority of known offenders were boyfriends, followed by ex lover, ex spouses and relatives. This change in pattern is due to different life style and social custom. As per prevalent Indian traditions and culture a girl/women usually does not go out alone with unknown person or entertain them when they are alone at home.

Austin (1981) stated that victims are chosen not for their attire but rather more for their vulnerability, in his study eight victims were related to the rapist, two were daughters aged 12 and 13 years, two were step daughters aged 9 and 14 years, two were cousins aged 16 and 18 years, one was the perpetrators wife's niece aged 9 years and another a relatives daughter aged 14 years. All these victims were sexually assaulted in the home of the perpetrator except for one, who was assaulted on a beach. In our study 46.75% of victims were sexually assaulted at their home, 28.125% at farm where they were working alone, 18.875% at canal, jungle and railway yard. Only two victims (6.25%) had sexual intercourse at hotel, where they had gone for consensual sex, after which they were caught by police, on the complain of girls parent as her age was less than 16 years. In two cases victim who were staying alone, stated that she was sexually assaulted while sleeping in night and the accused ran away when her children woke up due to noise. In one case victim was offered juice after which she became drowsy then she was taken to a farm and then raped.

In our study 41% of victims were threatened by the accused of dire consequence if they reported the case to police, or informed their relatives.

In 41% of cases, patient had taken bath and washed her cloths before the medical examination was conducted; as result of it valuable trace evidences were lost. This can be attributed due to delay in reporting the case to the Police. Only 18.75% of victims were brought before us for medical examination within 12 hours of rape, 59.25% victims were brought between 13 to 24 hours after rape. This delay may be due to lack/absence of Gynecologist at Primary level Hospitals (75% of cases reported were from rural areas) as a result; patients are referred to higher centers, for medical examination. 22% of victims took days to months to get them medically examined, this delay was seen to due to indecisiveness on the part of victim's parent, relatives or the victim to report the case to Police, due to fear of Indian male dominated society and considering the future life of victim and her sisters, and in some cases the patient had voluntarily ran away to some other city, with the accused due to love affair and were caught by the Police after some days, as the parents of the victim had reported kidnapping of their daughter.

In 75% of cases the perpetrator of assault was alone but in 13% of cases three or more than three persons were involved in the act. Brown & Froth, (1997) stated that in a five member gang rape all of them blamed another member for initiating the idea. Seto and Kuban (1996) stated in their study of gang rape, that

the two accused were drunk and other reportedly being higher on drugs, they said that their motive was only robbery, and during robbery they molested her, but when the victim became aggressive then they raped her so as to cause the victim to be too ashamed to report robbery.

In 53% only one sexual act was done, as the victim was only for few minutes with the assailant, but in 25 % of the cases multiple sexual acts were done, as the victim was in custody of the assailant for days, until she ran away from his custody or were caught by the police.

In 12.5% of cases pregnancy had resulted due to rape.

In 37.5 % of cases injuries and signs of struggle were present on the body of victim, and majority of them (55%) were seen on breast, 25% were on cheeks, 77% of them were finger nail abrasions and bite marks. Ramin et al (1992), found an injury rate of 18% in comparison group of 129 females aged 14 to 49 years, injuries seen were abrasions edema, haematoma and lacerations.

In our study 12.5% of cases genital injuries were seen of which 82% were contusions, 2% cases laceration of genitals were seen. Slaughter et al. (1997) included in her comprehensive study of genital injuries in sexual assault patients, the colposcopic examination of 75 women (aged 13 to 48) within 24 hours of consensual penile penetration of the vagina. Trauma (defined as tears, ecchymosis, abrasion, redness, swelling) was seen in 11% cases and was limited to one site and had resolved by the follow up visit in those who returned.

In 25% of cases bite marks were present, and were found on breast (67%) and cheeks (33%) of victims. The presence of injury marks on breast and genitals of victims lends further support to the concept of rape being a method of violent offence rather being for sexual enjoyment. Groth et al. (1977) attempted to categorize rape into three categories – power rape (sexuality used primarily to express power), anger rape (sexuality used to express anger), sexual rape (sexuality used to enjoy rape). In our study 4 patients (25%) were from urban area (city), in which no signs of struggle or injuries were seen on their body, except for bite marks on breast, as all these cases were of consensual sexual intercourse.

In only 6% of cases trace evidence in form of blood, was found on victim's body. Half of rape victims (50%) were sexually assaulted between 6 pm to midnight, and in 9.5% they were assaulted between 6 am to 12 noon as the victim was in custody of accused for several days, and they used to have sexual intercourse 3 to 4 times a day. Leslie Lim et al hypothesized that timing of assault was significantly different; rape was more likely to be committed under the cover of darkness, after midnight and in secluded places, whereas molestation occurred in crowded places, inside public transport, or along staircase, other places such as hotels were significantly more likely to be chosen for rape than molestation.

22% of victims were in state of mildly mentally unstable condition, while two patients (6.25%) were ready to marry the accused as they were in love with him, but were caught by police after few days, on complain of kidnapping by their parents. 12.5% of rape victims were not able to give any opinion on, proposed punishment to rapist.

Although rape victims have often been portrayed as young, attractive, sexually provocative females, this notion was dismissed



by Groth and Birnbaum (1990) and Taylor (1992) who observed that there is no typical victim profile, young females, elderly females, and even pregnant females have been raped. Having studied sexual violence in Singapore, Ward and Inserto (1990) noted that victims were not extraordinarily striking in appearance and almost never dressed in seductive clothing. In our present study, victim's attractiveness did not seem an important reason for rape, however there was an element of opportunism. Brown and Froth (1997) reported that psychopath were more likely to be opportunistic rapist. According to Rodabaugh and Austin (1981) victims are chosen not for their attire but rather more for their vulnerability, a view we are in agreement with.

## Conclusion

Majority of rape victims were in the age group of 11 to 20 years, they were assaulted when they were alone, and the victim knew the accused, most of the victims were married and from rural areas, in one third cases, signs of struggle were seen on the body of victim.

In One-fourth cases, victim was brought for medical examination after 24 hours of assault. Absence of male has been a provocative factor in cases of widow and divorce patient.

Young victims who ran away with their boyfriend did not know about its legal implications as they did not have any knowledge about age of consent for sexual intercourse and marriage.

Pregnancy was seen in patients who were subjected to multiple sexual assaults.

All of victims when asked said, that the accused should be punished, but none of them said that the accused should be hanged, on suggestion by the examiner, regarding this punishment, than all the victims stated that the accused should be hanged to death for their crime.

All the victims refused to marry the accused except for the victims who had voluntarily ran away with them.

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# Misinterpretation of An Autopsy Surgeon due to Unusual Transportation of The Medico-Legal Cases

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## Abstract

Hanging is always suicidal in nature unless it is proved otherwise. Proper diagnosis of a medico-legal case depends on the proper history, inquest of the police officer, transportation or handling and examination by forensic expert. A 25 years unmarried male dead body was found hanging in an isolated place and he was a LIC Agent by profession. Relatives of the victim complained that he was killed first than hanged and police officer was also in favour of homicidal hanging. Confusion arose in this case to give opinion due to irresponsible transportation of the deceased by the police officer from the site of the incident to mortuary. But the case was finally diagnosed as a suicidal hanging depending on the history, scene visit and post-mortem examination findings.

## Keywords

Hanged in an isolated place, complained homicidal hanging, diagnosed as a suicidal hanging.

## Introduction

Postmortem artefacts are the physiologically unrelated changes or features caused in a body after death, which is likely lead to misinterpretation of medico-legal cases. The responsibilities of forensic expert or pathologist are very important. Very often doctors are the chief source of evidence upon which legal decision is made. Freedom or imprisonment of life or death of an accused person depends on his evidence. Hence, doctor should learn to draw conclusion logically, correctly and not to give hasty judgement . If the doctor misinterprets the artefacts, he will have to face lots of problems in the court during cross examination.

A 25 years unmarried male dead body was brought by police of West Agartala PS. to the mortuary of Dr. BRAM Hospital, State Forensic Medicine & Toxicology Department, Agartala with a history of found dead resulting from hanging from the iron grill of the boundary wall of Akashvani Bhavan. The investigating police officer brought the body to mortuary after removing the ligature material. The site of the incident was isolated, surrounded by scanty jungle, 10 to 12 feet away from the road side. The residence of the deceased was about 3 km. away from the site of the incident. He was a LIC Agent by profession. He was last seen on 30/9/04 at about 6 P.M ., the dead body was recovered on 1/10/04 at 2 PM., brought to mortuary and kept in cool room at 0 to 8 degree temperature . Postmortem was conducted on 2/10/04 at 1.05 PM. The relatives of the victim complained that

he was killed first and then hanged. Investigating police officer was also in favour of homicidal hanging.

## Postmortem Examination Findings

On examination of the deceased, clothes were found fresh, no tear, no digging mark was found. Rigormortis was present all over the body; postmortem staining was present on the dependent parts, more prominent and fixed on the lower limbs and lower parts of both hands. A deep dark-brown, single ligature mark was found on the upper part of the neck, placed obliquely upwards and backwards. On dissection of the neck, there was no extravasation of blood found under the soft tissues of the neck. Thyroid complex was intact. At around the wrist joints of both hands three ligature marks were found which the striking features for homicidal hanging were. No struggle or any other injury mark was found on the body.

Fig- A & B: At the site of the scene (before transportation of the body to mortuary)

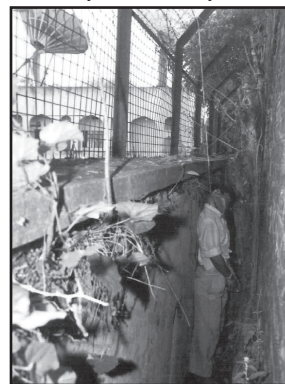


Fig-A

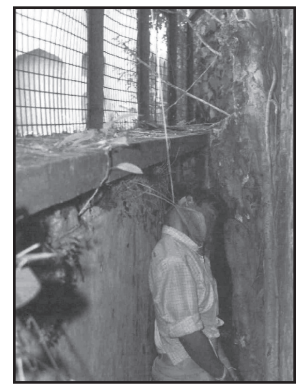


Fig-B

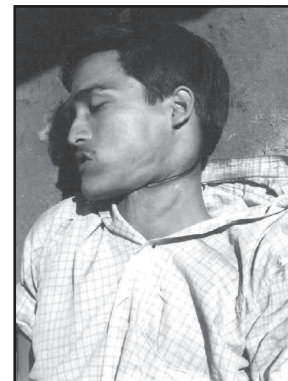


Fig-C

Fig- C: Police transported the body to mortuary after removing the ligature material

## Opinion Of The Case

Giving the opinion of the case was confusing and very difficult because, postmortem examination findings especially the ligature marks around the wrist joints are strongly suggestive in favour of homicidal hanging. The investigating police officer was asked to produce the photographs, details about the case, ligature material and arrange for scene visit. The photographs produced by the police officer found that the mouth including nostrils were covered with a handkerchief without any tie, both the hands were tied together with the same rope which was used for the hanging. After taking detailed history of the victim from the relatives, we came to know that he had misused some money from LIC premium which he could not recover and deposit in due time which was responsible for his financial crisis. The case was finally diagnosed as suicidal hanging depending upon the proper history, postmortem examination findings, examination of the photographs and scene visit.

## Indent Of Poisons For Teaching Programe

	NAME OF POISON	AMUNT REQUIRED
1	Sulphuric acid	2 Liters
2	Nitric acid	2 Liters
3	Hydrochloric acid	2 Litres
4	Carbolic acid	2 Litres
5	Salicylic acid	1kg
6	Tartaric acid	1kg
7	Ammonia	2Litres
8	Phousrous ( Red & Yellow )	1kg each
9	Folidol	250 ml
10	Malathion	250 ml
11	Parathion	250 ml
12	Paraxon	250 ml
13	Methyl Parathion	250 ml
14	Chlorine	250 ml
15	Bromine	250 ml
16	Iodine	1 litre
17	Boric acid	1kg
18	Arsenic	1 kg
19	Mercury	1 kg
20	Copper Sulphate	500g
21	Lead acetate	500g
22	Lead Monoxide	500g
23	Thallium	500g
24	Zinc Sulphate	500g
25	Zinc oxide	500g
26	Bismuth	500g
27	Ferrous Sulphate	500g
28	Potassium permanganate	1kg
29	Potassium Nitrate	500g

30	Aluminum phosphide	500g
31	Magnesium sulphate	500g
32	Barium chloride	500g
33	Barium sulphate	500g
34	Cadmium	500g
35	Castor oil plant ( Ricinus Compound )	1kg
36	Croton seeds ( Jamal Gota )	1kg
37	Abrus Precatorius ( Plant + Seeds )	1kg
38	Bitter Apple ( Plqant + Seeds )	1kg
39	Ergot	1kg
40	Capsicum	200g
41	Marking –Nut ( Semicarpus Anacordium )	1kg
42	Calotropis Gigantia ( Plant + Flower )	1 kg
43	Powder Glass	1kg
44	Opium Capsule	10 nos.
45	Morphine	10 vials
46	Heroin	250g
47	Codine	250g
48	Ethyl alcohol	1Litre
49	Methyl alcohol	1Litre
50	Ethylene Glycol	1Litre
51	Amyl nitrate	1Litre
52	Formaldehyde	10 Litres
53	Ether	10 Litres
54	Chloroform	10 Litres
55	DDT	1 kg
56.	Endrine	250 ml
57	Chloral Hydrate	1 Litre
58	Paraldehyde	1 Litre
59	Barbiturate	10 Tables
60	Benzene	10 Litres
61	Nitroglycerine	10 Litres
62	Petroleum ( Rock oil )	5 Litres
63	Oil of Turpentine	2 Litres
64	Dhatura ( Plant + Fruits )	1 kg
65	Atropa Beladona ( Plant + Fruits )	1 kg
66	Cannabis India ( Ganja ) Plant + Leaves	500g
67	Cocaine	250 g
68	Mushroom	1 kg
69	Khesari Dal	1kg
70	Nux vomica (Plant + Fruits )	1 kg
71	Strychnine ( Plant + Root )	1 kg
72	Jasmine ( Plant + Roots )	1kg
73	Tobacco ( Leaves )	1kg
74	Betal Nut ( Plant + Roots )	1 kg
75	Digitalis ( Plant + Roots )	1 kg

76	Quinine ( Bark + Crystal )	1kg
77	White oleander ( Fruits + Leaves )	1kig
78	Yellow oleander ( fruits + Leaves )	1 kg
79	Aconite ( Plant + Leaves )	1 kg
80	Hydro-cyanic acid	1 Litre

### List of Weapons

	NAME OF WEAPONS	AMOUNT REQUIRED
1	Da	1 no.
2	Ram Da	1 no.
3	Tangi	1 no.
4	Single edges word	1 no.
5	Double Edges word	1 no.
6	Axe	1 no.
7	Khukri	1 no.
8	Gupti	1 no.
9	Arrow	1 no.
10	Spear	1 no.
11	Dagger	1 no.
12	Razor	1 no.
13	Knife	1 no.
14	Hammer	1 no.
15	Stick / Lathi	1 no.

### Conclusion

1. Hanging is always suicidal in nature unless it is proved otherwise.
2. Proper diagnosis of a medico legal case depends upon the proper history, inquest of the police officer, transportation or handling and examination by forensic expert.

3. Investigating police officer should be skilled and careful to handle and transport the case.
4. Majority of the hanging cases are suicidal, a few cases are accidental and very rarely homicidal in nature.
5. In this case confusion was aroused to give the opinion due to absence of care and skill of the investigating police officer.
6. Hence, doctor should be careful about the history, scene visit, and postmortem examination and not to depend on investigating police officer.

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# Detection of Cefadroxil by Thin Layer Chromatography Technique

V. Dhingra\* and J. Pandey\*

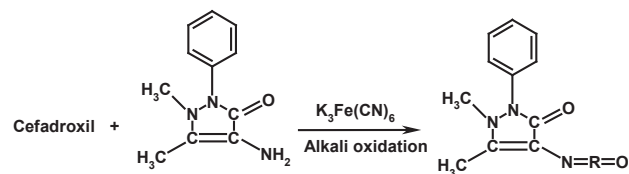
\*Scientific Officer \*\*Senior Scientific Officer  
Forensic Science Laboratory, Sagar (M.P.)

Cefadroxil is a basic cephem antibacterial drug being received in this laboratory in connection with a medicolegal case for chemical analysis. This drug is used as an antibacterial in various infections. In one of the case we received a unknown white tablet from scene of crime from urban area along with visceral material.

After conducting elaborate chemical tests and instrumental analysis no data were found similar to previous reported drugs then it was thought worthwhile to concentrate on latest drugs used in therapy and we screened several drugs along with this unknown tablet. For this purpose we purchased several other tablets of similar shape, colour and approximately of same size and performed thin-layer chromatographic tests on them. Along with this we took into consideration certain physical parameters

also Few of those tablets are listed here (Table). Finally it was found that tablet recovered from scene of crime was cefadroxil.

As far as chemical aspects of this drugs are concerned its 7-[(R)-2-amino-2-(4-hydroxy phenyl)acetamido]-3-methyl-3-cephem-4-carboxylic acid monohydrate having molecular formula  $C_{16}H_{17}N_3O_5 \cdot H_2O$  and molecular weight 381.40 and its structure are as follows.



Structure of Cefadroxil

Table: Physical Description Of Tablets

S. No.	Active Product	DIMENSIONS		Net weight per tablet*	Form	Colour	Imprint Design
		Diameter mm	Thickness mm				
1.	Unknown Tablet	10.0	4.0	0.4520 gm	Circular	White	
2.	Cefadroxil	10.0	4.0	0.4527 gm	Circular	White	
3.	Penicillin	10.0	4.0	0.6368 gm	Circular	White	
4.	Erythromycin	10.1	4.0	0.5410 gm	Circular	White	
5.	Rofecoxib	10.0	4.0	0.3999 gm	Circular	White	
6.	Theophylline+ Salbutamol+ Bromhexine	10.0	4.0	0.4520 gm	Circular	White	
7.	Cefadroxil	10.0	4.0	0.4520gm	Circular	White	

\*Average weight per 20 tablets



After conducting a brief survey of literature a reproductive method for the identification of this compound was not reported. Colour test with Ninhydrin reagent and crystal tests described for its detection were not able to produced satisfactory conclusive results. Hence it was thought worthwhile to apply 4-amino antipyrine solution reagent for crystal test, as a chromogenic reagent on TLC plate, which yielded brick red, coloured spot.

## Experimental

All reagents used were of analytical reagents grade. Distilled water was used though out.

- 1 4-Amino antipyrine reagent: Dissolve 1.5g of 4-amino antipyrine, 3 g of sodium carbonate and 3g of sodium bicarbonate in 100 ml distilled water.
- 2 Potassium ferricyanide reagent: Dissolve 4g of potassium ferricyanide [ $K_3Fe(CN)_6$ ], 3 g of sodium carbonate and 3g of sodium bicarbonate in 100 ml distilled water.

## Procedure

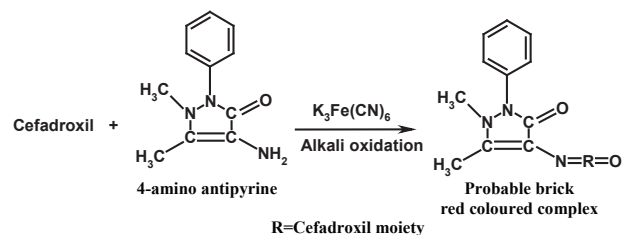
A standard glass TLC plates was coated with slurry of silica gel G in water (1:2) to a thickness of 0.25 mm and the plates was activated at 110oC for about 1h. An amount of 1  $\mu$ l of each cefadroxil and standard cefadroxil (Procured from market) was spotted on the plates which was then developed in a previously saturated TLC chamber using chloroform: methanol (9:1) as solvent system up to a height of 10 cm. The plate was removed from the chamber dried in air and sprayed with 4-amino antipyrine reagent followed by potassium ferricyanide reagent. Brick red spot for cefadroxil were observed immediately on TLC plates.

## Extraction Of Cefadroxil From Biological Materials

In a portion of about 100 g each of various biological tissues (stomach, intestine, liver spleen and kidney) containing the above mentioned drug, 10g ammonium sulphate was added and were minced in an aqueous solution. Then biological sample was made alkaline with the help of ammonia and sample was extracted in a separating funnel with chloroform: ether (1:3) ratio. The extract was transferred into an evaporating dish. The aqueous phase was re-extracted two to three times with chloroform ether. The extracts were combined and the solvent was evaporated at room temperature. The residue was dissolved in 2 ml ethanol. A known volume (10  $\mu$ l) of the solution was spotted on an activated TLC plates together with standard solution of cefadroxil. The plates were then developed as described under procedure and sprayed with 4-amino antipyrine reagent and followed by potassium ferricyanide reagent.

## Results And Discussions

4-amino antipyrine withy oxidizing agent potassium ferricyanide was reported for the detection and determination of phenols. We utilized this reagent for the detection and determination of cefadroxil using TLC technique in biological tissues, since cefadroxil contains phenolic moiety, which condense with 4-amino antipyrine and are oxidized by potassium ferricyanide to brick red coloured complex  $R_f$  0.75. The proposed reaction mechanism can be given as



## Proposed reaction for the formation of coloured complex

The reported reagent for the formation of coloured complex of cefadroxil is simple, sensitive and can be routinely used in forensic casework.

## Conclusion

Thus, not only chemical tests, but physical parameters are also helpful for identification of unknown tablets up to some extent. Our study is helpful for I.O.'s to correlate the identity of drugs, which might be the cause of death in few cases. Also, prescription (medical treatment slip), wrappers of tablets and other relevant articles from suspected places (like dustbin, drainage etc.) if found and seized by I.O.'s might be quite helpful for analysis as well as speedy disposal of the cases.

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# Victimologic Study of Female Suicide

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## Abstract

As per figures and facts about suicide by WHO in Geneva, 1999 there is a rise in trends of suicide showing vast gender differences worldwide.

The purpose of the study was to identify the risk groups among females. 144 total female victims of suicide studied. Information was obtained by interviewing the accompanying persons, autopsy findings and perusal of hospital records. The peak age of female suicide was in between 16-25 years. Hanging (33.3%) and Burn (29.2%) constituted the two major methods of suicide. Majority of the victims were Hindu by religion (93.7%), mentally sound, married and were of rural origin. Victims were mostly drawn from low socio-economic status (57%). Illiterate followed by less educated ones were usually the victims. Suicidal note was not found in any case. Suicidal tendency (13%) and alcohol intake could be encountered in 13% and 5.5% cases respectively. Indoor incidence (84.7%), rainy season (44.4%) and day light occurrence (62.5%) were more common. Housewives were mostly the sufferers. Marital disharmony (55.5%) was the principal reason behind suicide.

## Key words

Suicide, female victims, autopsy and marital disharmony

## Introduction

Suicide is defined as the deliberate taking of one's own life. It is one of the ten leading causes of death in the world accounting for more than a million deaths annually. The incidence and pattern of suicide vary from country to country. Cultural, religious and social values play some role in this regard. As per WHO [1], there is one suicidal death in 40 seconds throughout the world and there is an increase of suicidal rate by 60% worldwide in the last 50 years. As also in India as per the report of NCRB [2], there is one suicide in every 5 minutes, and an increase of 175% of suicidal rate in the last three and half decades in spite of the fact that attempt to commit suicide is still considered a crime under section 309, Indian Penal Code.

Although authoritative work in this regard has already been done in other parts of India [3] in other regional countries like Pakistan [4], Singapore [5] and in South Carolina, USA [6], no work in this field gender wise has been undertaken so far in this area. Keeping in view of its inadequacy, the present study has been taken up with an aim to identify the vulnerable female victims, their age, marital status, mental status, socioeconomic status,

occupational status and educational background. In addition to that the risk factors like seasonal distribution, diurnal variation, location of crime, reason behind the crime and methods used for suicide are also noted. The data collected were compared with the previously published literature.

## Materials And Methods

This study was conducted retrospectively over a period of two years from 1<sup>st</sup> January 2002 to 31<sup>st</sup> December 2003 in the Department of Forensic Medicine and Toxicology, M.K.C.G. Medical College, Berhampur, India.

This center receives cadavers from the whole of Berhampur city and the adjacent rural areas of the Southern Orissa. Out of 294 total suicidal deaths, which came for postmortem examination, 144 were females, which formed the cohort of the present study. Each such case was examined, evaluated during autopsy both externally and internally and analyzed for different sociological aspects. In addition to this, information regarding circumstances was obtained by interviewing the accompanying investigating officer, relatives of the victims, and examination of the scene of crime. Simultaneously hospital records were also reviewed, if the victims were found to be treated prior to death.

The features like extramarital affair, large family, drug addiction commonly alcohol, ill treatment by the in laws and disease/disability of family members were taken into account in assessing marital disharmony.

In the ongoing study, socio-economic status was categorized into three, depending on the income per family per year i.e. up to Rs.50, 000/- lower, Rs.50, 001/- to Rs.1, 50, 000/- middle and more than Rs.1, 50, 000/- upper.

## Result

Out of 294 cases of total suicides, 144 cases were female suicides (49%). Considering the sociological aspect of the victims, amongst 144 female victims, 135 belonged to Hindu religion followed by 9 cases of Christian. The commonest age group of the victims was between 16-25 years (Fig. 1). Hanging (33.3%), Burn (29.2%) and Poisoning (27.8%) were the common methods adopted by the females for committing suicide (Table-I). Only 6% of the victims were of unsound mind. Rural females (51%) and married (76%) were the usual sufferers. Illiterate followed by less educated ones belonging to low socio-economic status were the vulnerable victims (Table-II). Not a single case left a suicidal note. History of suicidal tendency and intake of alcohol could be encountered in fewer cases. Indoor incidence represented



**Table-I Methods of Suicide**

Methods	No. of cases	Percentage (%)
Hanging	48	33.3
Burn	42	29.2
Poisoning	40	27.8
Railway run over	10	6.9
Drowning	4	2.8
<b>Total</b>	<b>144</b>	<b>100</b>

**Table-II Sociological aspects of the victims**

	No. of cases	Percentage (%)
<b>Mental status</b>		
Sound	136	94
Unsound	8	6
<b>Total</b>	<b>144</b>	<b>100</b>

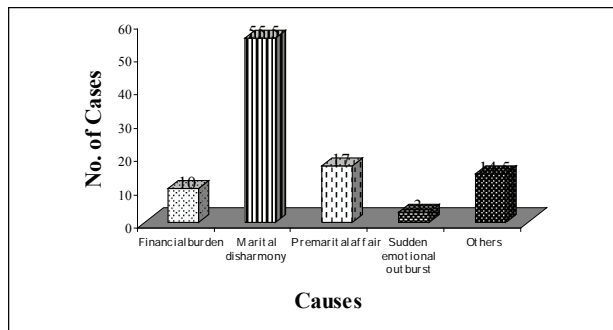
<b>Marital Status</b>		
Married	110	76
Unmarried	34	24
<b>Total</b>	<b>144</b>	<b>100</b>

<b>Area Distribution</b>		
Rural	74	51
Semi-urban	36	25
Urban	34	24
<b>Total</b>	<b>144</b>	<b>100</b>

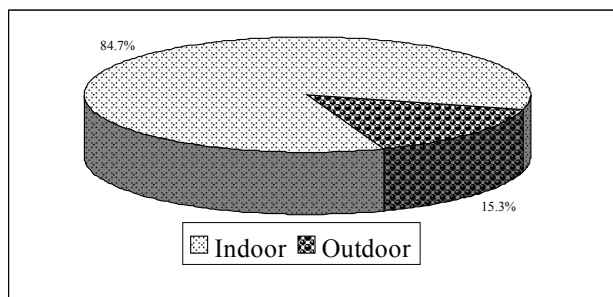
<b>Socio-economic status</b>		
Higher	3	2
Medium	44	31
Low	97	67
<b>Total</b>	<b>144</b>	<b>100</b>

<b>Educational Status</b>		
Higher	11	7
Primary (Less)	40	28
Illiterate	93	65
<b>Total</b>	<b>144</b>	<b>100</b>

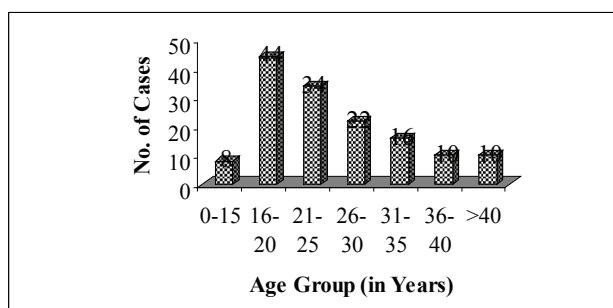
maximum number of cases (Fig.2). Females did commit suicide more often in rainy season (44.4%) and in the daylight (62.5%). Marital disharmony (55.5%) constituted the chief cause of suicide (Fig. 3). As regards the occupation of the victims, housewives (78%) formed the bulk of the sufferers (Fig.4).



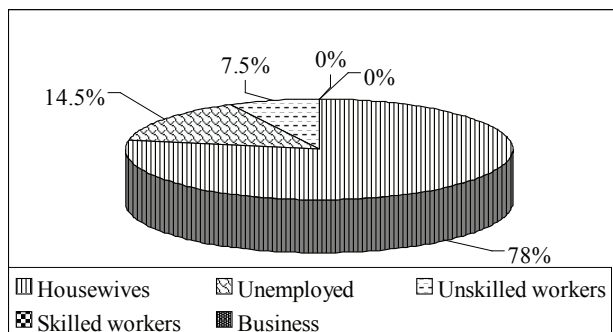
**Fig. 1 : Age Distribution**



**Fig. 2 : Place of Occurrence**



**Fig. 3 : Causes of Suicide**



**Fig. 4 : Occupation of the Victims**

**Discussion**

Deaths by suicide are a challenge to investigate. As death investigators, it is necessary to be aware of the common scenario, risk factors, methods and victims, as well as pitfalls that may be encountered. Only with thorough analysis and investigation specifically tailored to each case, the proper cause and manner of death can be certified.

In the current study, out of total 294 suicidal victims, 144 (49%) were females with female male ratio 1:1.04. This finding varies from the finding obtained in Southern parts of India [3] (1:1.4), so also in other regional countries like Thailand [7] and Hong Kong [8]. Studies in other parts of the world also showed an absolute decrease in female suicide rather than any distinct absolute increase in male suicide like in Singapore [9], Cork City [10], South Carolina, USA [6] and in Geneva [11]. The reason being that the population of female is lower than that of males worldwide. Besides some sporadic cases of Christians almost all the victims belonged to the Hindu religion (93.7%). Not a single case of Muslim women dying of suicide could be encountered. The reasons being most of the population of this locality belong to Hindu religion. The present study shows the females of all age groups were involved. The highest incidence was amongst 16-25 years. These figures are identical with the study in Faisalabad, Pakistan [4] and in Georgia [12]. This might be expected, as this age group comprises the bulk of female population. But studies in Cork City [10] in Japan [13] and in Geneva Canton [11] the age group of over 45 years were the common victims, which were the least sufferers in our study. Hanging (33.3%) is the most common method adopted by the females for suicide followed by burning (29.2%) and poisoning (27.8%). The reason attributed for this is the easy availability of the ligature material and common household use of inflammable substance like Kerosene. Among the poisons organophosphorous group of poison (60%) are the most commonly used poison followed by native plant poisons (25%). In contrast to this the commonest method used by males are poisoning (33.3%) followed by hanging (32%) and railway run over (26.7%). The commonest method used by females for committing suicide is by hanging has also been observed in Southern Part of India [3] and in countries like Pakistan [4], Japan [13], Austria [14] and England [15]. In contrast to our findings, females of Brazil [16], Geneva [11] and Israel [17] adopted common methods like poisoning and fall from height for committing suicide.

WHO suicide statistics suggest that mental disorders (depression and substance abuse) are associated with more than 90% of all cases of suicide. A study undertaken in Singapore [5] ascertained that illness (51%) both physical and mental are the predominant associated factors of suicide. So also a study in Wolverhampton [18] ascertained a positive psychiatric history in 64.5% cases of suicide. Our findings are in contrast to the findings observed by the above-mentioned workers wherein only 6% were found to be mentally ill. Among all the cases of mental illness about 87% of females were suffering from clinical depression, which suggest depression is a risk factor for suicide to certain extent. The reason may be reluctance by the women of this locality to attend a clinic for simple psychiatric complaints.

Our study predicts marriage is one of the very important risk factors for suicide. 110 cases out of 144 cases (76%) were married which slightly more than the findings are observed in southern India [3]. The reason of more suicides in married ones may be linked to marital disharmony, being the most common causes of suicides among the females of this locality, which is detailed later. In Thailand [7] observed equal incidences of suicides among the married and unmarried ones. Among the entire victims 51% belonged to rural areas, whereas rest 49% were almost equally divided between Semi-urban and Urban areas. This finding was

also observed in England and Wales [19]. Illiterate females of low socio-economic status were mostly the sufferers (65%). This has also been observed in India [3] and countries like Thailand [7] and in UK [20]. A peculiar finding observed in the ongoing study is that none of the victims left a suicidal note which is contrary to the finding observed in south Carolina USA by [6] 22% and [21] 19%. The reason may be directly linked to the higher percentage of illiteracy among the women of this locality. A positive history of suicidal tendency could be ascertained in 13.2% of the cases. This finding is much less in comparison to the findings observed in Thailand [7] and in Singapore [5].

In the present study only 6% of females were found to be habituated to alcohol, which is much less to the findings observed in England [15] and in South Carolina, USA [6]. The reason could be attributed to the fact that intake of alcohol by the women of this locality is very less than that of men. Six out of seven females prefer to commit suicide inside the four walls of the house (84.7%). This higher percentage of indoor occurrence is directly linked to the self-restriction of the females inside their houses, which was also observed in Southern India [3]. Although seasonal variation is not much however present study reveals highest number of cases in rainy season (44.4%), which is in contrast to the finding observed in Faisalabad [4], where a seasonal surge in spring was observed. The ongoing study reveals a higher day light occurrence (62.5%). The reason of higher day light occurrence is due to the advantage of loneliness inside the house, taken by the victims. Marital disharmony (55.5%) is the chief cause of suicide by the females and among the risk factors of marital disharmony, large family and drug addictions commonly alcohol were specially identified as the serious risk factors. Quite contrast to our findings, studies in Japan [13] and in South Carolina, USA [6] suggest dreadful disease followed by problems of economic distress to be the two most common causes of suicide. Dreadful diseases could contribute less towards the causes of suicide in our study. As regard the occupation of the females, housewives (78%) are the major sufferers, rest 22% are employed so suicide is less common in employed than the housewives?

## Conclusion

The incidence of suicide is increasing day by day. WHO [1] estimates by the year 2020 one death on average every 20 seconds and one attempt every 1-2 seconds of suicide. Worldwide scenario suggests second highest number of suicidal cases in India following China, which is quite alarming and needs to be dealt seriously.

Although there are a number of risk factors involved or associated with suicide the present study depicts a few. Around 49% of the total suicides were females. Younger age females (16-25 years) were mostly prone to commit suicide. Hanging and burns are commonly used methods for committing suicide. Mental and physical illnesses are not big hazards for committing suicide. Females of rural background married and illiterate were the usual sufferers. The risk factors like suicidal tendency and intake of alcohol were encountered in very few cases. Employment in general protects against suicide, so unemployed (housewives) and low-socio economic are at increased risk of self harm. The females mostly committed suicide inside the four

walls of the house, during the rainy season and in the daylight. Marital disharmony constituted the chief cause of suicide among women of this locality.

Diverse strategies are required to prevent suicide, nevertheless it is hoped that the information provided here can raise awareness and evoke interest with regards to the serious public health and community burden represented by suicide.

Thus to mitigate female suicide the following preventive measures are recommended.

1. There is a need to educate females particularly from poor families and they should be made self-dependent.
2. Females should be encouraged to marry at an appropriate age.
3. Care should be taken not to leave females, alone in the house specially those who are depressed.
4. Acknowledgement

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