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## Editorial

### **Integrated Teaching in Medical Education**

Ravindra B Deokar<sup>a\*</sup>, Sachin S Patil<sup>b</sup>

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Integration is a key importance for medical education, as the basic science learning is placed in the context of clinical and professional practice and makes students understanding more meaningful and relevant. Now, the interest in integrated studies or the integrated curriculum is increased at all levels of educational school. But, there are wide differences in interpretation of what integration actually means and how it can be accomplished within the educational institutional setting<sup>1</sup>. Generally integrated teaching is education which structured and cuts across subject matter lines to bring together various aspects of the curriculum into meaningful overall association to focus upon broad areas of educational study.<sup>1</sup>

The medical education curricula generally have been integrated horizontally with subjects of same phase and vertically with basic and clinical sciences subjects. Since Flexner's days, the curricula mandate students to learn first basic and biomedical sciences and then shift to clinical sciences. But, in this model, students may not see the relevance of basic and biomedical sciences applications to clinical practice, and it is most appropriate to encourage students to think as clinician from the first day of professional studies in medical institutions.<sup>2</sup>

Over a period of time, the meaning of the health-illnesses was changed from a biological to an anthropological approach defining it as a biological, psychological, socio-cultural process embedded and determined socio-culturally by groups of the human beings.<sup>3</sup> Medical education needs to encompass various teaching/ learning strategies to foster the development, understanding and integration of knowledge, skills and wisdom. Newer strategies such as student-centric learning, a systemic approach, problem-based learning, community-based education, elective programs, and integrated teaching.<sup>4</sup>

In vast medical curriculum, students are expected to learn many subjects in short period. The teachers are allotted many other administrative responsibilities besides teaching and also involved in other research related activities and continued education updating their knowledge.

With traditional teaching learning methods, didactic lectures and small group demonstrations are the most widely used teaching-learning methods. Furthermore, the classroom is getting larger due to increased number of students in a batch more than 200 at many reputed teaching institutions and the

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students' participation remains a great challenge to the faculty. With implementations of the new competency based curriculum, the primary mode of delivery has become more student-centric in approach delivering the core knowledge with better understanding of the subject.<sup>5</sup>

Self-directed learning may be student friendly, effective and useful process. Integration in education ensures the harmonious functioning of the educational processes with better coordination amongst all faculty of various speciality/ disciplines.<sup>6</sup> Teaching the students by correlating the various subjects with its practical relevance helps for better understanding and creates positive interest and facilitates active learning. It can be achieved by teaching the same topic in sequential manner from different faculty members of different departments at one time to avoid repetition of the same subject by different departments. Medical education all over the world recognizes that the integration in medical education is one of the major education reforms required.

The Medical Council of India also strongly recommended integration in undergraduate medical education with the new competency based medical education curriculum. It helps to increase the effectiveness of teaching-learning process and need of society. The integrated teaching is an organization of teaching matter to unify and inter-relate topic in subjects, frequently taught in separate academic courses or departments."<sup>7</sup> Various advantages of integrated teaching<sup>8</sup> over traditional lectures are good perception of the learning environment, reducing fragmentation of medical courses, preventing repetition and waste of time, facilitating application of the knowledge to clinical practice, promoting interdepartmental collaboration, a low attrition rate involves a substantial reduction in financial and emotional costs for our students, faculty, and society.

### Conclusion:

Curriculum reform implementation & integrated teaching in medical education is difficult and challenging. Considering and

understanding the need and advantages of the reform may help the academic community to succeed in the new curriculum implementation. The definition of health and illness is changed with changing medical curriculum.

The eighteenth century, definition of disease as an anatomical alteration of the organs with understanding of its multicausality with influences due lifestyles factors, social, political, and economical determinants. Now, in defining health disease biological, social, and cultural (historic) factors are given due consideration. Author recommends that there should be horizontal & vertical integration of basic and clinical sciences with socio-humanistic and population health sciences, making to a broader concept of ways to teach, learn and understand medicine.

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## *Original Research Article*

### **Hanging in custodial setup: A 10 year analytical study**

Rajesh Vaijnathrao Bardale<sup>a\*</sup>, Nitin Subhash Ninal<sup>b</sup>

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#### Article Info

#### **Key words**

Death

Suicide

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Custody

Prison

#### Abstract

Suicide in custody is a well-established problem. Earlier studies have found that suicides in custody set-up are excess than the general population. Hanging is the most common method of custodial suicide. This is a postmortem examination based retrospective study conducted at Department of Forensic Medicine, Government Medical College and Hospital, Miraj. We examined all available files of inquest papers, autopsy reports, toxicological analysis reports, histopathology reports and case papers into the death of people in custody through 2007 to 2016. A standard proforma was designed to collect the information to ensure consistency for the whole sample. A total 135 autopsies in custodial setup were performed during the 10 year period from January 2007 to December 2016. The mean age was 40.4 years. About 46.66 %deaths were noted in police lockups while 53.33 % deaths were recorded in prison. Suicide in a custodial set up is a tragic event. It creates apprehension and distress, particularly in the family and by and large has repercussions in the society. Identifying the risk prone individual is one of the important steps.

#### **1. Introduction**

Suicide in custody is a well-established problem.<sup>1-4</sup> Suicide behind bar is a preventable but neglected problem in India. Suicide represents a significant correctional health problem and need specific interventions. Earlier studies have found that suicides in custody set-up are excess than the general population.<sup>3</sup> Hanging is the most common method of custodial suicide.<sup>1-5</sup> Though each and every death in custodial set up cannot be avoided; but a significant number of such premature deaths can be prevented with use of preventive measures and interventions.

The aim of present study is to analyse the death due to hanging in custodial setup and to provide data so as to enable to formulate corrective reforms to prevent such untimely death.

#### **2. Material and methods**

This is a postmortem examination based retrospective study conducted at Department of Forensic Medicine, Government Medical College and Hospital, Miraj. All available files of inquest

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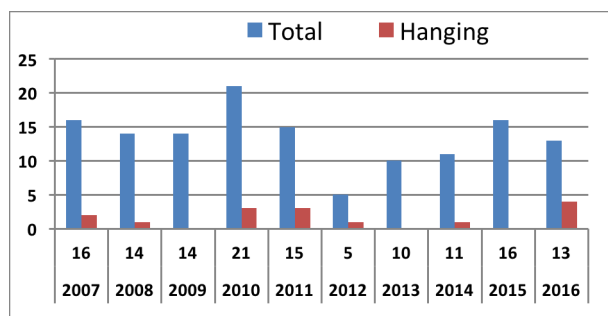
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papers, autopsy reports, toxicological analysis reports, histopathology analysis reports, histopathology reports and case papers into the death of people in custody through 2007 to 2016 were examined. A standard proforma was designed to collect the information to ensure consistency for the whole sample. Only deaths due to suicidal hanging, confirmed after investigation and evaluation of circumstances, were included in the study. Information collected included age, sex, type of custody (prison or police cell), place of death/incident, medical attention received, presence of any associated disease, history of any psychiatric illness, substance abuse and cause of death.

### 3. Results

A total 135 autopsies in custodial setup were performed during the 10 year period from January 2007 to December 2016 out of which 15 (11.11%) cases were of suicidal hanging. The year-wise distribution of the custodial death and suicide is presented in Fig 1.

**Fig 1: Distribution of total number of cases and cases due to suicidal hanging**



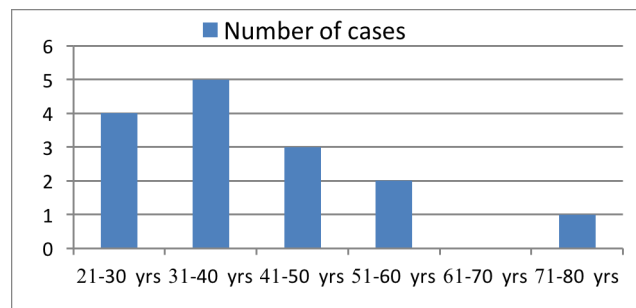
#### Age and sex

The study consists of 15 incarcerated people consisting of 13 men and 2 women. The mean age was 40.4 years. About 60 % (n = 9) deaths were recorded in the age group of 21 to 40 years (fig 2) while one death was noted at the age of 78 years.

#### Type of custody

07 deaths (46.66 %) were noted in police lockups while 8 deaths (53.33 %) were recorded in prison (Table 1). Mean age of individuals who died

**Fig 2: Distribution of cases according to age groups**



in police custody was 36.14 years while mean age of person died in prison was 44.12 years. Among the people who were in police custody, 6 (85.71 %) had committed suicide within 24 hours of the arrest or inquiry. Amongst jail inmates, one person (12.5%) was convicted and 7 (87.5%) were temporary prisoners (under trial/ Magisterial remand). The convicted prison inmate who had committed suicide was suffering from chronic obstructive pulmonary disorder (COPD).

**Table 1: Custody-wise distribution of cases**

Type of custody	Male	Female	No. of cases (%)
Police	06	01	07 (46.66 %)
Prison	07	01	08 (53.33%)

#### 4. Circumstances

Amongst all custodial deaths, 9 (60 %) deaths were noted in early morning hours, 4 (26.66 %) in afternoon hours and 02 (13.33 %) in night hours. 07(46.66 %) deaths occurred in prison cell/ lockup, 6 (40%) deaths occurred in latrine and 02 (13.33%) death occurred at side room in Police Station. The point of suspension in these cases was the grill of cell or window grill of latrine or window grill of side room. Various types of available ligature material like cloth piece, scarf, handkerchief, strip prepared from blanket or chaddar (bed sheet), nada (*waist strip or lace use to fasten underwear*), underwear elastic strip, pant, bandage cloth and sari were used by these people to hang themselves. Amongst these material clad clothes (*nada, underwear strip, and sari*) were used by 8 (53.33%) inmates (fig 1).

#### 5. Discussion

Suicide in a custodial set up is a tragic event. It creates apprehension and distress; particularly in

the family and by and large has repercussions in the society. Sometimes such death tarnishes the image of law enforcement agencies. Nowadays an enquiry is conducted by the National Human Right Commission in custodial death. Similarly such deaths are investigated by different agencies like Sub-Divisional Magistrate, Judicial Magistrate of First Class, Police or State Crime Investigation Department etc. After completion of such inquiry the said documents remain with the investigating agencies or findings are submitted to the Government. Such inquiry findings should be utilized for the purpose of reformation or for initiation of preventive measures to prevent such unfortunate death.

Studies conducted in several countries have found an increase in suicide rates in custody over the last five decades.<sup>3</sup> These inmates utilize available means to commit suicide. Hanging is the major cause of committing suicide in custodial set-up. These inmates use available means like satranji (dari), chadar, underwear, lungi, hospital bandage or belt as a ligature material to hang themselves.<sup>1,2</sup> Apart from this, in the present study we had noted use of clad clothes (n = 8 [53.33 %]) as a ligature material to hang themselves. The clad clothes were sari (n = 2), nada (*waist band of under wear*) (n = 3), strip of underwear (n = 2) and pant (n = 1). Use of such clad cloth is a new threat and means to hang oneself. The Police or Prison authorities should be aware about use of such unusual ligature material.

While analysing the time of committing suicide, it was observed that most of the suicides (n = 9 [60 %]) occurred in early morning hours. A feeling of isolation, despair and helplessness might be experienced by the inmate.<sup>5</sup> This may be a reason to take such an extreme step by inmates. Identifying such inmates and recognizing the psychological aspect of a person, especially if arrested for first time is crucial step in preventing such death. Moreover, close monitoring at least for initial 24 hour period may be useful step. As observed in previous studies,

suicidal hanging is facilitated by the bar construction of cells and windows. These bars are utilized by the inmates as a suspension point. In the present study, bar of window or cell were utilized by the inmates to hang them. Therefore, elimination of bar type of construction and redesigning of cell would reduce the available means for committing suicide.<sup>5</sup>

Preventing suicide in setup needs cooperation and coordination amongst the Police force or Prison authorities. Identifying the risk prone individual is one of the important steps. Improvements in the reception and first night policy should be clearly identified and followed carefully. Monitoring and assessment of the prone individual and use of close circuit surveillance system should be considered as a priority and should be made available. Similarly improvements in cell design, removal of ligature points and avoidance of single cell accommodation should be considered. As identified in present study use of self-apparel as a ligature material to commit suicide cannot be ruled out so caution should be exercised while putting the individual in cell.

## 5. Conclusion

The present study had identified some traits or risk factors for suicidal hanging in custodial setup. However, the list is not exhaustive but with ongoing research and availability of new knowledge, another set of risk factors can be identified. It is true that each and every death in custody cannot be prevented but by and large such untimely death can be reduced with considerable numbers if appropriate preventive steps are implemented.

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## Original Research Article

### Trends of suicidal hanging in western Mumbai region

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#### Article Info

#### Key words

Hanging  
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Typical hanging  
Atypical hanging

#### Abstract

**Background:** the present study was conducted with aims to determine i) various epidemiological factors of death due to hanging in the western Mumbai region, ii) variation in types of hanging deaths.

**Methods:** It is two-year study conducted at mortuary of H. B. T. Medical College & Cooper Hospital, Mumbai for period of January 2015 to December 2016. During study period total 3114 of medico-legal autopsies were conducted, of which 114 (3.6%) autopsies were of death due to hanging. These cases were included in this study.

**Result:** 114 out of 3114 medicolegal autopsies were of death due to hanging making incidence rate 3.6% of hanging. Age group most commonly involved in hanging was 21-30 years constitutes 41.22% cases of hanging deaths. Male victims constitute of 59.64% cases and female victims were 40.36% cases. In 96.5% cases place of hanging was closed place inside room 3.5% cases hangings takes place in open place. Most common ligature material used for hanging was dupatta/odani constitute 46.5% cases followed by rope in 20.17% cases.

**Conclusion:** Young age group population between 21-40 years are more susceptible victims of suicides by hanging constitute 65.78% cases. Proper parental and social guidance and support could prevent suicides in this age group. Timely counselling of such vulnerable group victims could be preventable. Effective prevention strategies are needed to promote awareness of prevention of suicides in young age group.

#### 1. Introduction

Hanging is the form of asphyxial death which is caused by suspension of the body by a ligature material compressing the neck externally and the constricting force being the weight of the body itself. Hanging is always considered suicidal except accidental hanging in sexual pervers, homicidal hanging

in lynching and justifiable judicial hanging.<sup>1</sup>

The most common method of self-suspension involves attaching the suspending material (rope, string, sari, *chunni*, wearing apparel, etc.) to a high point such as fan or ceiling beam, etc., and the

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lower end may be formed into a 'fixed loop or running noose' and is placed around the neck. The victim stands on the chair/stool/table or some other support and either jumps or kicks away the support and gets suspended. The hanging is most common type of asphyxia death and it is one of the leading methods of committing suicide.<sup>2</sup>

The present study was conducted with aims to study the variation in epidemiological factors in hanging deaths and types of hangings

## 2. Material and methods

The present prospective study of violent asphyxia deaths were conducted at mortuary of the department of forensic medicine and toxicology at H.B.T. medical college & Cooper Hospital for the period of two years i. e. 1<sup>st</sup> January 2015 to 31<sup>st</sup> December 2016. Total 3114 autopsies were conducted in this two year period of which 114(3.66%) deaths were due to hanging.

The data includes cases of hanging referred for post mortem by police station from western Mumbai (western suburbs) region which comes under the jurisdiction of H. B. T. medical college.

### Inclusion criteria

1. The study includes the deaths due to suicidal hanging.
2. Victims of the age more than one year.

### Exclusion criteria:

1. Accidental and homicidal hanging case.
2. Infant deaths.

The preformed proforma was used to record the various parameter of study like age, sex and type of hanging. The information of cases was obtained from police inquest, ADR forms, crime scene photos, statement of relatives of victims, hospital papers, and history obtained from relative, friends accompanying with deceased person.

## 3. Observations and result

**Table 1: Total number of autopsies and its relation to deaths due to hanging**

Period	Total autopsies	Hanging autopsies
Jan 2105-Dec 2015	1524	53(3.47%)
Jan 2105-Dec 2015	1590	61(3.83%)
Total	3114	114(3.66%)

Total 3114 autopsies were conducted in period of two year i.e. Jan 2015- Dec. 2016 out of which total 114 (3.66%) cases were of suicidal hanging.

**Table 2: Age and sex wise distribution of hanging cases**

Age group	Male	Female	Total (%)
1-10 years	-	-	-
11-20 years	11	8	19 (16.66%)
21-30 years	29	18	47(41.22%)
31-40 years	16	12	28(24.56%)
41-50 years	11	7	18(15.78%)
51- and above	1	1	2(1.75%)
Total	68(59.64%)	46(40.36%)	114(100%)

The study reveals no single case of suicidal hanging in age group of 1-10 years. Predominance of male victims 68 (59.64%) observed over female victims account for 46 cases (40.36%). Maximum number of victims 47 (41.22%) were found in the age group of 21-30 years, followed by age group of 31-40 years which accounts for 28 (24.56%) of cases. Together age group of 21-40 years accounts for more than half of cases 75 (65.78%). Age group 41-50 years accounts for 15.78% (18) cases of suicidal hangings.

**Table 3: Distribution of cases based on marital status**

Marital status	No. of cases	Percentage
Married	53	46.49%
Unmarried	61	53.51%
Total	114	100%

The study found that suicidal hanging was common in unmarried person and accounts for 61 (53.51%) case compared to married person which accounts 53(46.49%) cases.

**Table 4: Distribution of cases based on place of hanging**

Place	No. of cases	percentage
closed place	110	96.5%
Open space	4	3.50%
Total	114	100%

The study shows that the preferred place for committing suicidal hanging was closed place seen in 110 (96.5%) case. Suicidal hanging was committed in open place seen in 4(3.5%) cases.

**Table 5: Type of hanging based on position of knot**

Type of hanging	no. of cases	percentage
Typical	11	9.65%
Atypical	103	90.35%
Total	114	100

Typical hanging was observed in 9.65% where the knot was present on occiput. About 90.35% cases were of atypical hanging.

**Table 6: Type of hanging based on the suspension of body**

Type of hanging	No. of cases	percentage
Complete	75	65.78%
Partial	39	34.22%
Total	114	100%

There were 65.78% cases were of complete hanging and remaining 34.22% cases were of partial hanging.

**Table 7: Type of ligature material used**

Ligature material	No. of cases	Percentages
<i>Dupatta/ Odhani</i>	53	46.5%
<i>Sari</i>	18	15.78%
Bed sheet	11	9.64%
Rope	23	20.17%
Cable wire	5	4.38%
<i>Lungi</i>	4	3.5%
Total	114	100%

Present study reveals the commonest ligature material used for suspension of body in hanging was *Dupatta/ Odhani*(46.5%). The rope was the second common ligature material (20.17%). Ligature material sari accounts for 15.78%cases, bed sheet for 9.64% cases, cable wire for 4.38% cases and lungi for 3.5% cases of hanging.

#### 4. Discussion

This prospective study is conducted over a two-year period from January 2015 to December 2016. During this period, a total of 3114 autopsies were conducted of which 114 deaths were of hanging constituting 3.66% cases of all autopsies. A similar study conducted by Dinesh Rao over years 2010 to 2013 at Bangalore showed an incidence rate of 3.31% cases of total autopsies conducted<sup>3</sup> which were consistent with the present study. Two-year study by Dekal V, Shruthi P shows the incidence rate of hanging rate 27.9% of total autopsies.<sup>4</sup>

Dr. Amit Yadav, Dr.DivyeshSaxena et.al. Study in Indore for a period of 2012-2013 shows the incidence rate of hanging deaths 30.28% of total autopsies.<sup>5</sup> Mohit Shrivastava1, P.S. Thakur et.al study, conducted between 2017-2018 reported the incidence of hanging death 9.2%.<sup>6</sup> A 10-year study between the period in 2003-2013 by Der EM, Dakwah IA, Derkyi-Kwarteng L et.al reveals the incidence of hanging death 0.34% in Ghana.<sup>7</sup>

The present study reported the typical hanging in 9.65% and atypical hanging in 90.35% of total cases, complete hanging found in 65.78% cases and partial hanging in 34.22%. Other studies like Dinesh Rao<sup>3</sup> found the complete hanging in 88% of cases and partial hanging in 12% cases. Dekal V, Shruthi P study<sup>4</sup> reported the typical hanging in 4.4% cases and atypical hanging in 95.6% cases, complete hanging in 90.3% cases and partial hanging cases 9.7% cases. Dr. Amit Yadav, Dr.DivyeshSaxena et.al<sup>5</sup> study shows typical hanging in 4.7% cases and atypical hanging in 95.3% cases, complete hanging in 92% cases and partial hanging in 8% cases.

In Mohit Shrivastava1, P.S. Thakur et.al<sup>6</sup> study, the typical hanging was detected in 12.3 % cases and atypical hanging in 87.7% cases. Ambade VN, Tumram N et.al study<sup>8</sup> study in Nagpur reveals the typical hanging in 10.2% cases and atypical hanging in 89.8% cases, complete hanging in 67.7 % cases and partial hanging cases 32.3% cases. Dr. S. RanjanBajpai<sup>9</sup> study in Nashik region shows 21 cases of complete and 41 cases of partial hanging however in 134 cases type of

hanging not known. Chand S, Solanki R et.al.<sup>10</sup> Study result shows the typical hanging in 11.53% cases and atypical hanging in 88.46% cases, complete hanging in 98.07 % cases and partial hanging in 1.92% cases. Patel-Ankur P, Bhoot-Rajesh et al.<sup>11</sup> study in Ahmadabad found the typical hanging in 2.5% cases and atypical hanging in 97.5% cases, complete hanging in 98.75 % cases and partial hanging in 1.25% cases.

The present study found a predominance of male victims (59.64%) over female victims (40.36%) and the most common age group affected was 21-30 years (41.22%) followed by 31-40 years (24.56%). Findings in the present study are consistent with Mohit Shrivastava1, P.S. Thakur et. al.<sup>6</sup> study and which also found the predominance of male victims (67.5%) over female victims (32.5%) and the most common age group affected was 21-30 years (35.9%) followed by 31-40 years (25.1%). Additionally, findings of Der EM, Dakwah IA et. al.<sup>7</sup> study shows the predominance of male victims over female victims and the most common age group affected was 20-29 years (28.7%) followed by 30-39 years (25.1%).

Dr. S. RanjanBajpai<sup>9</sup> study reveals the similar findings and shows the predominance of male victims and the most common age group affected was 21-30 years followed by 31-40. Another study by Patel-Ankur P, Bhoot-Rajesh et al.<sup>11</sup> shows the similar findings to the present study showing the predominance of male victims (64%) and the most common age group affected was 21-30 years (42.66%). Similar findings was observed in Ravdeep Singh, Anupinder Thind et al.<sup>12</sup> study is consistent with the present study showing the predominance of male victims and the most common age group affected was 21-30 years (35.42%) followed by age group 31-40 years (33.33%). However, findings of the present study are not consistent with Dinesh rao<sup>3</sup> study which shows the predominance of female victims and most common age group affected was 31-40 years followed by 21-30 years.

The unmarried victims constitute 53.51% cases and married victims constitute 46.49% cases of hanging in the present study. Findings of this study were not consistent with Dinesh Rao<sup>3</sup> study

shows 70.45% of victims were married and 29.55% victims were unmarried.

In 96.5% cases, the location of hanging was a closed place while in 3.5% cases the place of hanging was in open space.

Findings of this study are consistent with Dinesh Rao<sup>3</sup> study which suggests the most commonplace of hanging was the closed place (91.85) compared to open space (8.15%). Mohit Shrivastava1, P.S. Thakur et. al.<sup>6</sup> study revealed the most commonplace of hanging was the closed place (95.6%) compared to open space (4.4%). Ravdeep Singh, AnupinderThind et al.<sup>12</sup> study found 95.83% cases hanging occurred in closed place 4.17% case occurred at an open place. Findings of this study are varying from Ambade VN, Tumram N et.al study<sup>8</sup> which shows that 68.7% hanging cases occurred at a closed place and in 31.35% cases hanging takes place at the open place.

The most common ligature material used for the hanging was a dupatta (46.5%) followed by a rope (20.17%). These findings are consistent with Dinesh Rao<sup>3</sup> study which mentioned the most common ligature material was the dupatta followed by the sari. Patel-Ankur P, Bhoot-Rajesh R<sup>11</sup> study found that the most common ligature material used was dupatta followed by the bedsheet. Findings in the present study are not similar to MohitShrivastava, Thakur et.al<sup>6</sup> study which described the most common ligature material used was the rope followed by sari. Der EM, Dakwah IA, Derkyi Kwarteng L et. al.<sup>7</sup> study found that the most common ligature material was the rope followed by an electric cable wire. Ambade VN, Tumram N<sup>8</sup> et.al. study reveals the most common material was nylon rope followed by a dupatta.

## 5. Conclusion

Young age group population between 21–40 years are more susceptible victims of suicides by hanging which constitutes about 65.78% of total cases. Proper parental and social guidance and support could prevent suicides in this age group.

Timely counselling of such vulnerable group of victims could prevent suicide. Effective prevention strategies are needed to promote awareness of the prevention of suicides in the young age group.

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## *Review Article*

### **Academic leadership in Health Sciences Education in India**

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#### Article Info

#### Abstract

#### **Key words**

Leadership

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Research on Leadership and educational is essential & it emphasizes on the importance of having institutional leaders in medical field as many organisations are heavily involved with advanced instructional programmes. Best practices for developing educational leadership in higher education, health care and medical faculties have to be better understood. Many findings show that educational leadership involves processes on the levels of students, residents, teachers as community at the organizational level. The individuals created a place for backstage conversations, where they got opportunity to develop their own thinking and inspiration to break new ideas into their educational communities. In addition, a systemic approach is essential for the effective implementation of educational leadership to reach all levels via interaction and communication across an organization. Current issue deals with analysis of possible ways to develop leadership in medical students, residents and teachers. Taking into consideration the reforming educative system and contemporary tendencies of world integration, the development of skilful personality is the prioritize task. The aim of study is to emphasize on the important ways for a development of leader's creative thinking in medical education.

#### **1. Introduction**

A great leader has certain attributes and

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behaviours, however, when it comes to characteristics of all leaders, there are only a few key points, to identify an appropriate and effective approach that suits the needs of your team and organisation the rest is situational and it is up to you as a leader.<sup>1-2</sup>

## 2. LEADERSHIP AND EDUCATION

Characteristics of successful leaders and the traits will differ enormously, it is important for one to realise that there is no universal archetype of a leader. Also, they have been given the opportunity to become leader in their organisation because of their specific personality and capabilities which one needs to recognise. What makes someone a great leader; if one can identify an important trait in any organisation and develop it which will allow them to become a bigger and better version among others with a stronger personality and a strong sense of authenticity will encourage not only highlighting these skills but also the leadership.<sup>3-5</sup> Medical students should be introduced to leadership and its relevance to medical education on their first day of medical school. Leadership is defined as influence on individuals and groups by enhancing behaviours (actions), cognitions (perceptions, thoughts, and beliefs), and motivations (why people act and think as they do) to achieve the goals that benefits the individuals and groups.<sup>4-6</sup> Leader sets the vision and inspire followers. The medical University should use these definitions and delivers a four-year, comprehensive program as a part of the undergraduate medical education of all medical students.

A leader's characteristic should dependent on the leader's vision, situation, team and organisation. The following are characteristics that have been successful traditionally, but all may not be necessarily appropriate for you to adopt. As leader, it is up to you to identify what qualities will help your team to prosper. Good leadership needs emotional strengths and great behavioural characteristics which can draw deeply on a leader's mental and spiritual reserves. Qualities

needed for prosperous relationships between leaders and staff members include integrity, honesty, confidence and compassion. Important Qualities for a good leadership are Adaptability, Delegation, communication, Confidence, Determination, and Intuition.<sup>7-12</sup>

Developing educational leadership in higher education medical faculties and health care is the best practices for better understanding.<sup>13</sup> The framework of practitioner's, a research, and seminar series, had to be involved in a dialogical process of inquiry, and coupled with an oriented approach, explicit activity-emphasizing empowerment among educational leaders<sup>8</sup>. This leadership program uses a variety of pedagogical techniques with emphasis on experiential learning. The program strives to develop adaptive leaders who are prepared to perform in volatile, uncertain, complex, and ambiguous environments.<sup>14-18</sup> The importance of having institutional leaders heavily involved with advanced instructional programming have been emphasized on research on educational leadership.<sup>16</sup> It is essential for leader and leadership education programs to define leadership; identify the students, which may become leaders. He should base the program on a conceptual framework. He should develop a curriculum consistent with the goals and conceptual framework and ensure that the program has a sound scholarly basis and include appropriate assessments.<sup>19-20</sup>

All concepts of leadership, management, and followership taught to the students are based on principles, theories, approaches, and techniques that have been developed by scholars and practitioners of leadership.<sup>6,21,22</sup> The faculty may conduct research and scholarship including evaluation of program effectiveness. Medical and graduate students have the option to participate in Leadership programme. Current projects should include gender and leadership; intergenerational leadership; development of leadership

assessment tools in innovative teaching strategies.<sup>23-26</sup>

The program includes assessment of student's knowledge and performance, faculty knowledge and performance, and program effectiveness. Assessments of leadership are based on quizzes; self-reflection; formative and summative feedback in applied settings; and faculty, peer, self-assessments. Quizzes and self-reflection questions are given after each session, and students provide programmatic feedback. Results from the quizzes, self-reflection responses and feedback are used to improve sessions.<sup>25</sup> The program has developed a self-assessment and peer support tool that is available as a smart phone app to help teach and promote self-awareness. Students were provided their own formative ratings in each of the leadership elements. Also, the ratings based on input from several peers were provided. This information helps students to compare the different ratings. Additionally, all students participate in several medical field exercises over the four years where faculty evaluates them in applied settings.<sup>27-31</sup>

All medical students in the medical program become physicians in health Service after at least five years after graduation. Therefore, the program may assess performance as medical health care leaders for many years after completion of the medical institution's leadership program. This information is gathered and evaluated as part of the university's Long-Term Career Study.<sup>32,33-38</sup> Leadership elements in the database should include student demo-graphic information as well as performance during internship, phases of education, and beyond. The merging of these data sets allows for evaluation of leadership performance in relationship to individual differences and medical professional performance.<sup>37</sup>

The increasing complexity of medical practices & education, the preparation of healthcare professionals for responsibilities & leadership roles has become increasingly important in today's

world.<sup>38</sup> Indian Medical Education System is not yet reviewed in a systematic fashion for the literature on faculty development designed to promote leadership in medical education. In the western system the leadership in Medical Education is a growing interest topic in medical school education & medicine.<sup>21</sup> The Association of American Medical Colleges now identifies leadership as "the most critical component for success."<sup>22</sup> Some medical schools in the United States are introducing curricula on leadership, but there is a large gap that still needs to be filled.<sup>23</sup> The University of the Health Sciences educates and trains health professional leaders for the United States, and Public Health Service. Leadership education has long been a part of university's mission. Recently, the university has expanded its Leader and Leadership Education and Development program that is provided to all University medical students at the F. Edward Hébert School of Medicine.<sup>24-26</sup>

Physicians in their communities are often perceived in becoming effective community leaders and are expected to participate in volunteer activities, business, and politics on other hand medical students receive very little guidance.<sup>27,31</sup> Current issue in today's world is about how to deal with analysis of possible ways to develop leadership in medical students.<sup>28,32</sup> Taking into consideration the reforming in National Medical Commission (NMC) system and contemporary tendencies of world integration, the development of skillful personality is the prioritize task.<sup>30,33</sup> Therefore all Universities and Medical colleges should include this in their Curriculum aspects either as a workshop, CMS, Conference or at least as a Certificate Course. Leaders in medicine had addressed the systems that challenges and improve the healthy life of the public and had called for transformative changes in healthcare.<sup>29,34</sup>

In order to achieve some high Leadership qualities, one has to have High satisfaction with faculty development programs, A change in attitudes toward organizational contexts and

leadership roles, Gains in knowledge and skills, Changes in leadership behaviour. Limited changes in organizational practice, Key features of faculty development, Avenues for future development.<sup>35</sup>

The aim of this review is to emphasize on the best ways for a development of leader creative thinking at the first basic level of medical education. Therefore, the main objective purpose of this study was to elicit to describe the comprehensive program and its conceptual framework that may be useful for other academic medical leader and leadership education and development programs around the globe & the perspectives of students, faculty physicians and administrators regarding the knowledge and competencies necessary in an undergraduate leadership curriculum. & the objective of this review is to synthesize the existing evidence.<sup>34-37</sup>

Participants like students, residents, teachers from medical college consistently valued the practical relevance and applicability of the instructional methods used and found such leadership programs to be useful and of both personal and professional benefit. They also reported some positive changes in their leadership capabilities and in their attitudes toward their own organizations as well. Some authors reported an increased awareness to their institution's vision, challenges and commitment, whereas others reported greater increased motivation, self-awareness of personal limitations & strengths and confidence in their leadership roles. A greater sense of appreciation of the benefits & community of networking were also identified. Some authors also reported increased knowledge of leadership concepts, principles, and strategies e.g., strategic planning, leadership skills, effectiveness and resolution, and increased awareness of leadership roles in academic settings.<sup>36</sup> The application of new skills at the workplace e.g., departmental reorganization and team building, should be adopted for new leadership roles and responsibilities, and the creation of new collaborations and networks.<sup>37</sup> Self-perceived changes in leadership behavior should be

consistently reported and included in a change in leadership styles, observed changes primarily suggested new leadership positions.<sup>38</sup> Although not frequently examined, changes in organizational practice included the implementation of specific educational innovations, an increased emphasis on educational scholarship, and the establishment of collegial networks.<sup>39</sup> Moving forward, faculty development programs should do a ground work in a theoretical framework. There is need to articulate definition of leadership considering the role of context. The extended programmes and follow-up sessions should be explored for its value to promote the use of alternative practices such as narrative approaches, peer coaching, and team development. Various features contributing to positive outcomes are the use of multiple instructional methods within single interventions, individual and group projects, reflective practice, experiential learning, support of peers and the development of communities of practice; mentorship; and institutional support.<sup>40-42</sup>

Improving leadership qualities in targeting basic science (Pre, Para) and clinical faculty members in relation to medical sciences is at most necessary, Articles with a focus on faculty development should also be reviewed. All study designs that included outcome data beyond participant satisfaction should be examined in terms of (1) Leadership as the primary focus of the intervention; (2) Leadership as a component of a broader focus on educational development; and (3) Leadership as a component of a broader focus on academic career development.<sup>35-42</sup>

The importance of having institutional leaders on educational leadership emphasizes heavily research involved with advanced instructional programming. We have to understand the importance of best practices for developing educational leadership in higher education health care and medical faculties. The researchers and practitioners should be involved in a dialogical process of inquiry, coupled with an explicit

practice-oriented approaches emphasizing empowerment among educational leaders.

The seminar series should be elaborated on the basics of development process and the factors which have added value to the development of professional leadership expertise. Wenger's theory of communities of practice tell about the qualitative content analysis and was conducted resulting in thirteen categories. The findings show that teachers as community and at the organizational level and educational leadership involved processes on the levels of students. To break new ideas into their own educational communities individuals created a place for backstage conversations at which they got opportunity to develop their thinking and inspiration. In addition, there is need of a systemic approach for the effective implementation of educational leadership. It facilitates the interaction and communication across an organization.

The curriculum should be focussed on the formation of professional identity, learning through experience with acquisition of relevant knowledge and skills throughout all four years of undergraduate teaching. Various topics of study pertaining to leadership are effective communication, crisis management, emotional intelligence, team performance under stress, self-assessment, personality, peer support and team building. Various modalities of teaching-learning methods such as small group discussions, interactive plenary sessions, group discussions, flipped classrooms, applied clinical and field settings may used to impart the curriculum. Small group learning about recent updates on leadership in healthcare settings may conducted by the "Near Peers" (more senior medical students) and core faculty.

### 3. Conclusion

Leader and leadership education and development are essential aspects of medical

education and are gaining attention in all over the world. Medical schools need to determine whether, when, what, who, and how the leadership can be taught. The Medical Universities around the globe should provides a comprehensive, four-year leader and leadership education and development program along with medical curriculum for a medical student that may be valuable for their life time. To meet the new leadership requirements in health sciences & higher education. "HEALTH SCIENCES EDUCATION LEADERSHIP PROGRAMME SHOULD BE ORGANISED in every Medical College's curriculum.

**Conflict of Interest:** None.

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## Review Article

### Overview of rape related laws in India and necessary recommendations

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#### Article Info

**Key words**  
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#### Abstract

Rape is one of the universal and below reported crimes against women in India. The term 'rape' was first time coined in our lawful constitution was when the IPC was prepared in 1860. Numerous incidents of rape that triggered protest by general public and activists against rape. **Rameeza Bee rape case** of 1978 was one such case. But [Mathura Rape Case](#) in the state of Maharashtra was one that shaped hue and cry on a countrywide extent for the first time. Statistics indicated that India saw a 336% increase in child rape cases from 2001 to 2011. This alarming trend led to the need for a 'special legal procedure' for child victims of sexual offences resulting in POCSO act. Anti rape laws in India had most of the times seen the face of modification only when heinous incidence of sexual assault occurred followed by uproar of public. This ultimately forced the government and administration to amend the laws to fill the existing loopholes and to make more stringent laws.

#### 1. Background

Rape is one of the universal and below reported crimes against women in India.<sup>1</sup> The term 'rape' was first time coined in our lawful constitution was when the IPC was prepared in 1860.<sup>2</sup>

During British era, rape was used as one of the weapon of oppression by British as a foreigner-coloniser. After independence, in 1970s, the rape by police, army, security forces, and '*landlord rape*' became major issues.<sup>1</sup>

#### 1860: Indian Penal Code

In Section 375 IPC, only the person committing rape would be liable for punishment and not the victim, however Section 377 IPC makes punishment liable for both partners. This excuse prevents male rape victims from complaining against their accused as it will also open them up to prosecution.

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There was no clause for sexual intercourse without consent among husband and wife. To summarize, the least penalty for rape was as relaxed as two years in prison (the same as perjury) and maximum punishment was imprisonment for life.

### 1983: The Criminal Law

Numerous incidents of rape that triggered protest by general public and activists against rape. **Rameeza Bee rape case** of 1978 was one such case. It took place in Hyderabad where a Rameeza Bee was sexually assaulted by numerous policemen.<sup>1</sup>

But [Mathura Rape Case](#) in the state of Maharashtra was one that shaped hue and cry on a countrywide extent for the first time.<sup>1</sup> A young tribal girl named Mathura was sexually assaulted by two policemen while in custody on 26<sup>th</sup> March, 1972. Court set free the accused policemen considering the fact that Mathura was actually 'accustomed to sexual intercourse', The Supreme Court Judges justified that Mathura had not raised any alarm and there were no noticeable injuries or struggle marks on her body. Presuming her active sexual life, it was thought by the court that she might have provoked the cops to perform sexual intercourse with her. This judgment caused mass out roar throughout the country and demanded amendments in the law. This resulted in amendment in anti rape laws in 1983.

Our legal system entirely ignored the rapes by public servants till then. But it was this case that a new kind of rape was introduced called 'Custodial Rape' which comprises of rapes of females while in custody of public servants. Till this point, it was the survivor female's responsibility to prove that the sexual intercourse was not consensual but with this amendment, court will presume that female is telling the truth about consent of sexual intercourse. Since then the concept of 'consent' became fundamental part of rape. This amendment also prohibited the revealing of victims' identity and barred the 'character assassination' of rape victims in court. It's thanks to this amendment that rape victims now have pseudonyms like 'Nirbhaya'.

It also added the categories 'mass' and 'gang'rape to the already existing individual rape as well as 'in camera' trial and the onus of proof about consent for sexual intercourse to be shifted onto the accused instead of the victim.<sup>1</sup>

### 2002: Amendment to Indian Evidence Act

Inspite of prohibition of the 'character assassination' in 1983 Criminal Amendment act, there was no clear cut definition to embrace cross-examination of a rape victim. PIL filed by an NGO named Sakshi in which they pointed out that women didn't feel comfortable about reporting rape for the reason that "the objective of the defence in rape trials was to disgrace and demean the sexual integrity of the victim" rather than to treat them as someone who had experienced mental and physical trauma and someone who needed to be sheltered.

In Section 155 (4) of the Indian Evidence Act 2002, the defence lawyer could discredit a rape victim's testimony by proving that she was of 'immoral character' which consist of inquiring the her of precedent sexual acts. This specific clause was deterrent for rape victims to file a case. Hence amendment of this clause was done in 2002. Subsequent to this amendment, the cross-examination of a rape victim was banned.

### 2012: Protection of Children from Sexual Offences (POSCO) Act

Statistics indicated that India saw a 336% increase in child rape cases from 2001 to 2011. The According to National Crime Record Bureau, 48,338 child rape cases were recorded for this period. This alarming trend led to the need for a 'special legal procedure' for child victims of sexual offences resulting in POCSO act. Till then, only clause of statutory rape mentioned in the IPC which penalises sexual intercourse with a girl under 16 years of age despite of consent.

However, there was no difference in trial procedure for children involving age below 16 years. The resultant POSCO Act takes into account the special conditions in which a child could be sexually abused. For example, accused might be



child's relative or guardian. The Act made provision for the police in charge to defend the victim child during the investigative process.

Now the police had to confirm that child has got shelter and protection as well as providing emergency medical treatment. It also gives direction to special courts for conducting the trial in-camera and not disclosing the identity of the child, as well as keeping it as child-friendly as possible. The Act also makes provision for fast tracking the cases of child sexual abuse within a year and making the reporting mandatory. Another big lacunae was that it does not take into account crimes against male-children. This loophole was rectified in 2012 with POSCO or the Protection of Children from Sexual Offences Act. The new Act was made gender-neutral and also included other forms of penetration in addition to peno-vaginal penetration. The Act also included the abetment of child sexual abuse as an offence and included non-penetrative assault, sexual harassment and child pornography.

### **2013: Criminal Law (Amendment) Act**

On December 16, 2012, a 23-year-old physiotherapy intern, Nirbhaya was brutally gang-raped in a moving bus. After struggling to survive in the hospital, she succumbed to her injuries on December 28. The brutality and violence of the case led to widespread protests around the country.

There was demand of not only for change in the law but also for how the crime of rape was looked at. This proved to be the biggest turning point for anti-rape laws in India. This pressurized the legal system of India to reassess the existing laws and also realized that numerous other crimes that were particularly against women like stalking, acid attacks, and voyeurism was missing from our legal framework.

This led to the 2013 Criminal Law Amendment. New offences like stalking, acid attacks, and voyeurism were inculcated into the definition of rape. Even the threat of rape is now considered as a crime. The minimum punishment was raised from seven years to 10 years

imprisonment. In cases where victim died after rape or was in a vegetative state, the minimum punishment was increased to 20 years. This was the first time that the vegetative state was also incorporated ever since the landmark Aruna Shanbaug case.

When Nirbhaya case was in trial, the character of the victim was debated inspite of the 1983 and 2002 amendments in force. As the victim was a young professional, her freedom and 'western' lifestyle were considered as 'invitations' for rape. To circumvent this in the future, this amendment reiterated that the 'character of the victim' was absolutely immaterial to rape cases.

As one of the accused in this case was a juvenile and was also tried as such, another blemish in the system was recognized. Therefore age for being tried in court as an adult for violent crimes like rape and murder was decreased from 18 years to 16 years, that to the Juvenile Justice Act.<sup>2</sup>

### **April 09 2013: Supreme Court judgement in case of Lillu @ Rajesh Vs State of Haryana.**

An additional obstacle due to which women avoided from reporting rape was the dreaded 2-finger test, in which a doctor inserts '2 fingers' into the vagina to verify its laxity. This test made women feel like objects in evidence, violating her privacy and integrity, instead of treating her like a trauma victim. The Supreme court concluded saying "The two finger test and its interpretation violates the right of rape survivors to privacy, physical and mental integrity and dignity. Hence this test, inspite of being positive, cannot validate the presumption of consent".<sup>3</sup>

### **2018: Criminal Law (Amendment) Act**

An 8-year-old girl named Asifa Bano was raped and killed in the district of Kathua in Jammu and Kashmir in January 2018. Seven people were named in the case charge sheet, four of whom were police officers charged for attempting to cover up the case. This case led to national outrage, especially because it was against a child, but also because it took place in a temple and was

perpetrated by a priest. It quickly became politicised along the Hindu-Muslim lines. Thus the change was mainly made to POSCO as victim was against a child and punishment for rape of a child below age 16 years a minimum of 20 years imprisonment but also made provision for the death penalty for the rape of anyone under age 12 years.

Thus, for the first time, death penalty has been introduced for the offence of rape considering the gravity of the offence. It also changed the fast-track clause from a one year to 6 months, so that justice could be delivered in such cases without being tinted by politics.

- Under Section 376(1), the quantum of punishment has increased from a minimum of seven years to a minimum of ten years.
- Punishment for rape on a woman less than sixteen years of age has been added by the amendment. Punishment in such cases was increased to rigorous imprisonment of a minimum twenty years which may extend to life imprisonment. [Section 376 (3)]
- Punishment for rape on a woman less than twelve years of age has also been added by the amendment. The punishment in such cases is defined as a minimum twenty years rigorous imprisonment which may extend to imprisonment for life. The offender in such cases can also be punished with death penalty. {Section 376AB}<sup>3</sup>
- Moreover, Section 376DA and 376DB have been added by the amendment which deals with punishment for gang rape on a woman less than sixteen years and twelve years respectively. Imprisonment of life is awarded as the punishment in such cases. However, for gang rape on a woman less than twelve years of age death penalty can also be awarded.
- Clause (i) of Section 376(2) has been omitted.<sup>4</sup>

The Code of Criminal Procedure, 1973

- If a person is accused of rape on a woman of less than sixteen years of age, he shall not be granted anticipatory bail under Section 438 by a High Court or a Court of Session.
- The amendment has lead provision for speedy trial and investigation.
  - The investigation has to be mandatorily completed within two months.
  - The appeal in rape cases has to be disposed within six months.
- Moreover, the amendment has also made two changes in Section 439 of the Code.
  - A provision has been inserted which states that the High Court or the Session Court has to give notice to the public prosecutor within 15 days of which it receives the bail application of an accused of raping a girl under 16 years of age.
  - A sub-section has been inserted which makes the presence of informant or a person authorized by him mandatory during the hearing of bail application of the accused in such cases.<sup>4</sup>

## 2. Critical Analysis

**The death penalty for rape of girl below 12 years will lead to under-reporting of cases, especially in cases of perpetrator being the family member.**

- Effectively the punishment for committing rape on a minor girl and committing murder has become same. That can increase the chances of the offender killing the victim.
- Now the accused has no provision to get an anticipatory bail even if there are chances of being booked under a false case.

## 3. Necessary recommendations

- 1) More emphasis should be given on increasing the conviction rate.
  - 2) Greater attention to be given for providing protection to the victim as well as the witness.
  - 3) Registration of convicted accused as sex offenders for rest of the lifetime and maintaining national registry of Sexual offenders.
  - 4) Sex offenders must wear GPS device, so that their daily movements can be monitored.
  - 5) Romeo Juliet law to be implemented as majority of POCSO cases constitutes consensual sex among teenagers of almost same age<sup>5</sup>. In developed countries like USA, UK etc due to presence of this law, incidence of rape cases appears to be less. In developing country like India where investigating persons and resources are limited, valuable time and resources of investigating authorities and doctors as well as FSL personnel is wasted in dealing with these cases, which could have been utilised in cases where it is absolutely essential.
  - 6) Providing sex education in schools and teaching children about raising alarm in initial stages to prevent big mishaps. It also includes inculcating good moral values and attitude among male children towards females since childhood.
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#### 4. CONCLUSION

Anti rape laws in India had most of the times seen the face of modification only when heinous incidence of sexual assault occurred followed by uproar of public. This ultimately forced the government and administration to amend the laws to fill the existing loopholes and to make more stringent laws.

**CONFLICT OF INTEREST:** None.

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## Case Report

### Suicide by multiple methods- a case report of complex suicide

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#### Article Info

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Complex suicide  
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Poisoning

#### Abstract

The phenomenon of complex suicide as the use of more than one method to induce self-destruction has been widely noticed in the forensic literature. In complex suicide, the victim intentionally uses backup methods to ensure successful suicide. Depending upon simultaneous or chronological implementation of backup method/s, complex suicides are categorized as Primary or planned complex suicide and secondary or unplanned complex suicide.

The Complex suicides poses challenge for autopsy surgeon and the investigating agencies because of the plurality of methods applied for self-destruction. Determining the cause of death amongst the multiple methods used in complex suicide is a crucial task. Also, easily available and accessible methods used in complex suicide poses more difficulty to categorize the case as planned or unplanned one. We presented here forensic aspects of a case of complex suicide by triple methods i. e. wrist-cutting, ingestion of household insecticide and hanging.

#### 1. Introduction

Complex suicide is defined as the use of more than one method to induce death, either simultaneously or chronologically. In 1974, Marcinkowski et al. had considered a general division of methods of suicide. In this classification, suicides are divided into simple versus complex, the complex one refers to committing suicide by a combination of more than one method.<sup>1-5</sup> Planned or primary complex suicide is the complex action mechanism formerly planned, to protect the victim from failure.<sup>6</sup> This manner of suicide is used by the victim so as to prevent failure of

one of the mechanisms. On the contrary, the characteristics of unplanned or secondary complex suicide is that the victim, after the failure of an attempt, continues to try by using one or more Self-destruction modalities to achieve death. Using more than two methods to complete suicide is a very rare occurrence.

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**Case report:**

A 53-year-old man had been found by his younger brother to be dead in his home, hanging by his neck to the ceiling support. He immediately rushed to the nearest Police station and informed about the incident. Investigating officer at the crime scene observed that the room was locked inside. Upon opening door the deceased found in state of complete hanging using a nylon rope with a fixed knot over back of neck on left side.

On detailed crime scene investigation the investigating officer found a knife on the floor near the wash basin in the room with stains of blood over wash basin; also, noticed an empty bottle of household insecticide in the vicinity of the room. According to the close relatives and friends, the deceased had financial crisis because of his fraudulent business partner. As a result of which he was going through depression and also had alcohol addiction. On completion of inquest the Investigating officer forwarded the dead body to for medico-legal autopsy.

Examination of clothes revealed brownish stains having abnormal smell on anterior part of shirt.



**Fig. 1:** Deceased in hanging position.

On examination of the body of deceased, brownish colored sero-sanguineous fluid was oozing out at right angle of mouth [Fig. 1].

He was an averagely built and nourished male. Rigor mortis was present all over the body but not well developed. Glove and stockings type distribution of post-mortem lividity was observed and which was fixed.

At his external examination, the neck showed a single ligature mark with maximum 1 cm width, directed obliquely upward towards the suspension point at left side of occipital region. It was brown and dried with a parchment-like appearance with narrow band of hyperemia at margins. Additionally, multiple wrist-cuts of approximately 5 cm in length were noticed on anterior aspect of left wrist (Fig.2).



**Fig. 2:** Multiple wrist cuts.

The wrist cuts were starting from lateral side and ending on the medial side of wrists with superficial incisions. There was injury to radial vessels and complete and/or partial transactions of underlying flexor muscles were noticed.

There were neither facial congestion nor petechiae in skin and eyes. The cervical spine, hyoid bone and laryngeal cartilages were intact. There was no hemorrhage in strap muscles, thyroid gland or other neck tissue on internal examination. Petechial hemorrhages were revealed in visceral pleurae, pericardium and under the scalp. On internal examination of gastro-intestinal tract, stomach showed 150 cc brownish fluid having abnormal smell with mucosa of the stomach inflamed and hemorrhagic [Fig.3].



**Fig.3:** Stomach mucosa with hemorrhages.



**Fig.4:** Container of alleged poison found at crime scene.

On comparing it with empty bottle of household insecticide at crime scene, it was found to be the same odor. [Fig.4].

A complete forensic investigation revealed that the case was an unusual complex suicide using triple methods by wrist-cutting, ingestion of household insecticide and hanging.

## Discussion

In the forensic literature, complex suicides have been accounted for about 1.5–5.0% of all suicides.<sup>2,7</sup> The methods used vary from country to country due to the variations in cultural, religious and social background. In India, insecticide ingestion, hanging, self immolation, drowning, falling from height and self-inflicted injury by sharp force are frequently encountered methods for suicide. The methods most frequently used in complex suicides are those which are prevalent in that region. In our case, three methods used for self-destruction were wrist-cutting by knife, consumption of household insecticide and hanging. Vidhate et al. have reported a complex suicide by wrist-cutting associated with corrosive acid poisoning.<sup>8</sup> Palmiere et al. have reported a complex suicide by self-strangulation associated with multiple sharp force injuries.<sup>9</sup> Altun G described a complex suicide by wrist-cutting and ingesting a large amount of concentrated hydrochloric acid and another case of hanging after taking rodenticide poison.<sup>10</sup> In the literature, the use of maximum up to five suicidal methods have been illustrated.<sup>2,8</sup>

In complex suicides, victims prefer to use methods of lesser lethality before choosing to use more lethal techniques. The adaptation from lesser to greater methods of lethality is most likely concerned with pain, anguish, and frustration experienced by the person.<sup>3</sup> Although, we can definitely say that, last method used for suicide in this case should be hanging; it's difficult to determine sequence between wrist-cutting and ingestion of insecticide. Bohnert and Pollak have accounted that self-inflicted injuries by sharp force, especially cuts of the wrists, are often

preferred as the primary act of suicide in complex suicides.<sup>6,7</sup> On the basis of previous studies, we can guess that wrist-cutting might have taken place earlier than ingestion of insecticide. The second method was applied by victim after using self-inflicted injuries by sharp force because first method takes much longer time as well as gives too much pain and acute ache.<sup>2</sup> The second method also might have taken much time and produced uneasiness and pain. On having knowledge that, these methods are slower and comparatively ineffective, the victim might have selected hanging as third method of suicide. Hanging is one of the hard method of committing suicide which is certain and quick in terms of result.

Investigation of scene of crime may play crucial role among complex suicide lie in present case. The scene discloses important features about suicide, like material used as means of suicide, blood loss from sharp weapon injury, absence of struggle. Relatives or friends of the decedent also may reveal background information such as history of depression, previous suicide attempts, social, marital or economic problems.<sup>2,8</sup> In present case scenario, all the three events i. e. cut wrist, poison ingestion and hanging might have taken place very close to each other in terms of time. The sequence of events in this case was now very obvious. However, categorization of this case among planned and unplanned complex suicide faces difficulty. The different methods used for committing suicide by victim were straightforward in terms of access to materials and ease of implementation. So, we could not comment whether previous planning to make available these means was carried out or not.

## Conclusion

Planned complex suicides represent complex medico-legal cases. The combination of mechanisms concerned in such cases may be complex to determine cause of death. Homicide should be carefully ruled out in every case of sharp weapon injury. The careful assessment of all

elements, including crime scene investigation and postmortem findings will help reconstruct chain of events and elucidate the time, manner, cause and mechanism of death.

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Case Report

**Survival after accidental strangulation (Isadora Duncan Syndrome): A case report**

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Article Info

Abstract

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Survival  
Asphyxia

Strangulation is a form of asphyxia caused by constriction of the neck without suspending the body. Homicidal strangulation is commonest whereas suicidal is not so common and accidental being the rarest. The first reported case of accidental strangulation was that of world famous dancer Isadora in 1929. After that many cases of similar incidences were reported in different literature. Until 2001, there was no reported case of survival after accidental strangulation. Few cases of survival have been reported thereafter with spinal injury and injury to the deep structures of neck. However, cases of such accidental strangulation without any injury to the neck structures and spines are extremely rare. This paper intends to report such a rare case which was admitted to the tertiary care centre of Dibrugarh, Assam in 2013 with respect to its medico-legal examination of wounds and its interpretation.

**1. Introduction**

Strangulation is a form of asphyxia caused by constriction of the neck without suspending the body. They are usually homicidal in manner, suicidal is not so common and accidental being the rarest.<sup>1,2</sup> Accidental strangulation if at all occurs, it is mostly seen at the extremes of life or individual under the influence of alcohol or any other drugs.<sup>3,4,5</sup> Such accidental strangulation that has been reported so far

are mostly amongst female population resulting from entrapment of clothing, wearing specially around neck (chunni, dupatta etc.) in moving machinery. First reported case in the literature was that of the world famous dancer Isadora Duncan who died on 14 September 1929

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following her long scarf accidentally caught in the wire wheels of her bugatti car causing constriction around the neck.<sup>6</sup> Following this incident, all deaths resulting from accidental entrapment was known as "Isadora Duncan Syndrome" or the "Long Scarf Syndrome". Even though many cases of accidental strangulation were reported survival was no recorded until 2001, when Gowens et al. illustrated a similar case where the victim survived in spite of neck injury.<sup>6</sup> here we present a case of injuries on neck with an unusual type of causation brought to the otorhinolaryngology department of tertiary care centre, Dibrugarh, Assam. In this paper, the case along with her injury has been described and nature was confirmed from history, clinical findings and circumstantial evidence.

### 1. Case history

A 32 years old lady, a staff nurse by profession was brought to the hospital at 3 pm on 12/11/13; after she was coming home from her duty shift in an auto rickshaw. She took the front seat on the left side of the driver. She was wearing salwar-kameez and a dupatta loosely encircling the neck, one of the two free ends lying over chest and the other end over the back. Road was a narrow concrete one with dilapidated condition. The auto rickshaw was moving in a speed more than its average limit for the road. While the vehicle took a sharp turn towards right side to cross a railway crossing, the lady lost control over herself due to her loose grip and was about to fall towards the left side through the unguarded open door. The driver suddenly caught the free end of the dupatta lying over chest to prevent her falling but could not prevent her falling; rather it caused tightening of the dupatta around the neck. She felt down on the road with the constricting dupatta in situ and there was transient loss of consciousness for few seconds. Although the driver managed to stop the vehicle, she was dragged for a distance of 2-3 feet causing injury to the legs. Dupatta was unfolded immediately and she was brought to the casualty of our tertiary centre. She had injury over neck, face and legs with mild dyspnoea and dysarthria while attended. The patient was admitted under the department of Oto-rhino-laryngology and

Head & Neck Surgery. All the necessary investigations were done to rule out any bony injury. Wounds were managed conservatively with oral corticosteroids, antibiotics and pain killers. The patient recovered completely after few days and was discharged.

### 3. Findings on examination

#### General examination:

Consent of the victim was taken before starting examination. The patient was confused and apprehensive on arrival. All her vitals were stable with a Glasgow Coma Scale score of 15/15. She complained of difficulty in swallowing and articulation in a low pitched voice.

#### Injuries:

Following injuries were seen while examining the patient bedside (all photographs shown are taken on her 3<sup>rd</sup> day of hospitalization):

1. An abrasion of size 26 cm x 2.5 cm present over neck just below the level of thyroid cartilage, starting from the midpoint of front of neck; going towards left side, encircles the neck and ends over right lateral aspect of neck. It was transverse in position and grooved; 8 cm below the centre of the chin, 6 cm below the left angle of jaw and 6.5 cm below the right angle of jaw. Although, there was non-continuity between the two ends involving an area of 9 cm; they were connected by two superficial abrasions, one (injury number "1a") above and the other (injury number "1b") below the level of the primary injury (injury number 1). Injury number "1a" was an inverted "V" shaped, measuring 12.5 cm x 2.5 cm (including both limbs of V) and injury number "1b" was forming a curve like impression with the convexity upwards (dimension 10.5 cm x 3 cm). All three injuries showed signs of healing (fig. 1,2,3,4).
2. A sutured wound of length 5 cm with four stitches seen over the left side of face, 7 cm

from midline and 3.5 cm below the later canthus of the left eye.

3. Graze abrasion of size 7 cm x 6 cm with reddish brown scab seen over lateral aspect of left leg involving lateral malleolus. Similar type of injury also noted on the opposite leg in its inner aspect.
4. Graze abrasion of size 9 cm x 5.5 cm with reddish brown scab also noted over lateral aspect of left forearm, 7 cm below the elbow joint.

### Photographs

**Photograph 1: Photograph showing right lateral aspect of neck with injury**



**Photograph 2: Photograph showing left lateral aspect of neck with injury**



**Photograph 3: Photograph showing anterior aspect of neck with injury**



**Photograph 4: Photograph showing back of neck with injury:**



### **Investigations**

X-ray of the cervical neck region revealed no bony injury or increase in pre-vertebral soft tissue shadow. The CT scan findings of the head and neck also revealed no abnormality.

### **4. Discussion**

In day to day forensic practice, most of the ligature strangulations are homicidal, some are suicidal and a few accidental, usually in children.<sup>7</sup> Death due to accidental strangulation has been reported very often, mostly amongst Indian women due to

their traditional dresses like saree, chunni, scarf etc. Accident occurs when free floating ends of such dresses entangle in moving wheel of vehicles or other machinery, there is sudden pull causing constriction around the neck leading to unconscious and if the pull is sustained it causes death by asphyxiation.<sup>8,9,10</sup> Due to its sudden pull and sustained pressure, mortality rate is very high in such incidences.

In our case, the victim; wearing a silk dupatta around the neck was about to fall while the driver took a sharp right turn in a reckless way. To prevent her falling, the driver suddenly pulled one floating end of the dupatta. However, she fell down on the road through the unguarded open door and due to pulling action of one end, there was rotational constricting movement of the dupatta around the neck. This frictional force resulted in abrasion around the neck. The force of constriction and rotational movement affected more over anterior, left lateral and posterior aspect of the neck; sparing a part over right lateral aspect due to slight lifting at the cross over point of the dupatta by sustained pulling. This produced a non continuous, oblique ligature mark over neck at the level of thyroid cartilage.

Usually, in such instances there is sudden loss of consciousness; most of the victims die because of sustained pressure and constriction by high speed rotatory wheels of vehicles or machinery. Loss of consciousness can be described by pressure over baro-receptors in carotid body resulting in inability of the victims to rescue them from sustained pressure.<sup>11</sup> But, in this case, the constricting force was transient. While falling down on the ground, the pulling force from the driver as well as counter force due to body weight of the victim was relieved immediately causing sudden release of pressure. Moreover, one of the co passengers suddenly removed the dupatta from her neck. Since the victim fell down freely, there was no jerky movement of the neck, although there was drag for 2-3 feet just before stoppage of the auto rickshaw. This explains absence of any cervical bony injury. The laceration seen over face was due to its first impact over the concrete road.

As the first impact was over face, absence of any head injury is self explanatory. Clinical features of dysphagia, hoarseness, and dyspnoea can be explained by gross oedema of internal neck structures.<sup>12</sup>

Here, ligature mark was alike of hanging i.e. non continuous, oblique. This point usually favors attempted hanging rather than strangulation. But when the whole scene was reconstructed, it was formulated that although the vehicle stopped immediately the lady was dragged for a distance of 2-3 feet due to skidding of tyres. Torn clothing and graze abrasion around both lower limbs can be correlated with this drag. These findings are consistent with the statement given by the victim and the driver. On the basis of this, attempted hanging and any other foul play were ruled out and nature was given as accidental strangulation.

Such type of accidental strangulation cases is reported very often, but victims who survive are very few. Another rarity in this case is absence of any cervical bony injury. In such scenario, the trickiest task is cracking the manner of injury. When the victim dies, autopsy along with circumstantial evidence can sufficiently indicate the manner of the occurrence.<sup>13</sup>

## 5. Conclusions

In our country, auto rickshaw is a common mode of transport especially in periphery. The design of such vehicles look like lack of safety measures especially over doors which are mostly unguarded and open. The front seat which is made only for the driver is modified to accommodate passengers on both sides in a confined space. This causes slippage of passengers and falling down on road through unguarded doors causing serious injury. Moreover, speed limits and safety guidelines are not followed by those vehicles very often.

Although, this kind of accidents cannot be prevented; strict regulations regarding safety measures of small vehicles along with strict traffic guidelines must be implemented. Working women should take care of their clothing while travelling

in such vehicles. Long hanging scarf must better be avoided or used very cautiously to prevent such fatal outcomes.

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## Letter to Editor

### **Application of Forensic Odontology in Forensic Investigations**

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To,

The Editor in Chief, JFMSL.

If it comes into picture that a fragment of mandible or just a single tooth, which is of few millimetres in size is found at the crime scene or at the site of a major mass disaster, how can we know to whom those remains belong??

It is in such cases that dental methods of identification play a valuable role. In fact, as dental methods are easy, reliable and cost effective; they can routinely be used in identification process. The theory of forensic odontology is based on the concept that “no two mouths are alike” same as the theory behind fingerprints. Every individual has a unique set of teeth which helps to determine a separate identity of that individual. Use of dental methods have proven significant in assisting Forensic Medicine. Dental identification plays significant role when identification of remains of deceased person is skeletonized, decomposed, burned or dismembered and is invalid by visual or fingerprint methods. Identification by dental evidence is possible because, the hard tissues are preserved after death and can even withstand a temperature as high as 1600 degree C when heated, without appreciable loss of its structure (1).

As police are the first ones to take custody of crime scenes, information regarding individual's age, gender, and race could be determined by validating the dental sample as substantial evidence by police personnel.

Increase in number of sexual assault, child abuse and homicide cases has led to bite-mark analysis as significant responsibility of the forensic dentist. The major areas of interest for a forensic odontologist are;

- Identify human remains that cannot be identified using facial recognition, fingerprints or other means.
- Identify remains in mass fatalities, such as plane crashes and natural disasters.
- Determine and analyze bite marks in cases of assault or suspected abuse.
- Estimate the age of skeletal remains as well as living individuals.
- To testify in dental malpractice cases.

Let's have a look at few of the famous cases solved in the past with the help of dental evidence. After the end of World War II, rumors were flourishing that Adolf Hitler and his wife Eva

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had both died together in 1945 after they went missing. It was thus a challenge to confirm such rumors. Few pieces of Hitler's jaw were found later that showed remnants of a dental bridge, as well as particular forms of reconstruction, and evidence of periodontal disease. Hitler's identity was then confirmed when the dental records kept by Hitler's dentist were matched with the remains. However, the first example of dental identification from India was reported back in 1193, when Raja Jai Chand, a great Indian monarch was defeated by Muhammad's army and was murdered. His identity was thus established by his false teeth (2).

We all remember the deadly terror attack of 9/11 in U.S.A. Many victims were identified in the first using their dental records. Also, in the Indian Ocean tsunami of 26th December 2004 dental data was among the primary identifiers in identification.

Our teeth can reveal much information about our age, sex, habits, occupation, and area of origin as well as the socioeconomic status. Example; brown or black stains present on teeth may indicate that the person must have habit of drinking tea and coffee frequently. More commonly seen in Indians are red or brown stains on teeth caused by chewing tobacco. Poor oral hygiene as well as poor quality of dental treatment may indicate a lower socioeconomic status. Certain occupations such as metal workers may have green, yellow or black stains on their teeth due to the exposure to metal fumes. Certain areas in our country have excess amount of fluoride in water which can lead to a condition called dental fluorosis in which yellowish or brownish discoloration of teeth can be seen.

Dental age estimation plays a significant role for determining the age of a person; living or dead. Age estimation in children and infants is based on the different stages of tooth development and eruption in oral cavity.<sup>1</sup> In adults, age can be estimated based on the different structural and biochemical changes that our teeth undergo during lifetime. Whereas, presence of neonatal

line is used to determine live birth in infanticide cases.

Dental radiographs prove to be significant in age and sex determination. Determining age and sex is one of the primary criteria for personal identification. Sex can be determined by certain distinguishing characteristics of male and female teeth.

Palatal rugae patterns remain stable during life and can be considered for comparison in forensic investigations. Our lips has a unique pattern of prints which like fingerprints can be used to identify a person positively and can be used to verify the presence or absence of a person at the crime scene.<sup>3</sup>

Teeth prove to be a reliable source of DNA. Hence, teeth and saliva are used commonly for determining the identity and profile of a person.<sup>2</sup> Bite marks are the result of the tooth impression on different materials. Bite marks can be found on flesh, foodstuffs and less frequently on a variety of other materials.<sup>3</sup> The procedure for comparison of bite marks on the skin of victim to the dentition of possible assailants is well established and has been reported in historical cases, as well as in many cases to the present day. Also they can be found in child and elderly abuse cases.

Facial reconstruction comes to the rescue, when conventional identification methods are not helpful and the face of the deceased is severely disfigured. In such cases an approximate face of that person can be created. The methods may involve photographic superimposition or modeling a face on the skull replica with clay or plasticine, along with computer graphic simulations [two dimensional (2D) and three dimensional (3D) reconstruction.

### **The Indian scenario**

In our country, this subject is still in its emerging state. It is necessary to create awareness and educate the crime investigating officers and law agencies with the correct protocols and tools of forensic dentistry.<sup>4</sup> Correct knowledge about recognizing a dental sample as substantial

evidence by police personnel is certainly important to prevent the loss and tampering of evidence. Also dental records prove to be the best defense for the dentist in case of a malpractice suit.

Recent tragedies, past and present situations have increased awareness concerning the importance of forensic dentistry in identification of victims.<sup>5</sup> To maximize dental application in forensic cases, it is necessary to train dentists in the practical aspects of this subject. Also there is a necessity in exposing dentists to the basic principles and techniques of the subject. The availability and accuracy of dental records determine the success of identification. All such measures would help to identify, recover, and interpret the dental evidence correctly, thus providing timely justice to all.

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