Investigating Unnatural Deaths Linked to Sexual Assault; A Forensic Analysis

ABSTRACT

Background: *Exploration of fatalities associated with sexual activity, encompassing both natural and unnatural occurrences, delving into elements such as physical strain and peculiar circumstances. Terminology like "dying in the saddle" is utilized to describe incidents during sexual intercourse. Although human sexuality is generally regarded as positive, it can, in some cases, result in fatal incidents. Natural deaths, often impacting males, are correlated with pre-existing medical conditions, including fatal cardiovascular events triggered by sexual exertion. Sexual violence, spanning from harassment to coerced penetration, remains a pervasive global issue. In Bangladesh, there are notable instances of sexual intimate partner violence against women.*

Aim of the study:*The study aimed to represent the clinical characteristics and causesof unnatural death related to sexual assault.*

Methods:*This retrospective study, conducted at the Department of Forensic Medicine & Toxicology, Dhaka Medical College, Bangladesh, analyzed 15 autopsies over two years, from July 2021 to June 2023, focusing on suicides by hanging and poisoning. The research adhered to legal and ethical guidelines, obtaining informed consent from legal guardians. Inclusion criteria covered all ages and genders, with unnatural deaths related to sexual activities. Exclusion criteria included natural deaths. Cases were identified through autopsy records, additional examinations, police files, court proceedings, and input from witnesses. A team of five experienced forensic pathologists ensured an unbiased evaluation. Results were organized into tables and graphs, with statistical analysis using SPSS.*

Result:*This study analyzed 15 unnatural deaths, focusing on age distribution, gender, sexual assault patterns, locations, sexual activities, and causes of death. Victims aged 0-10 years constituted 46.67%, 11-20 years were 33.33%, and 21-30 years were 20.00%. Females comprised 93.33%. Sexual assaults occurred mainly by neighbors (40.00%), involved gang rape (20.00%), and stepfather rape (13.33%). Public places (33.33%) and other locations (40.00%) were common sites. The most prevalent type of injury was head trauma, accounting for 26.67%. Fatal injuries, burns, choking, and poisoning were equally significant, each contributing to 33.33% of cases. Falls from heights were identified as a major cause of death, comprising 20.00% of the reported incidents.*

Conclusion:*This study explores the complexities of unnatural deaths during sexual activities, focusing on suicides involving hanging and poisoning. It emphasizes the need for a nuanced understanding of such incidents, highlighting potential misclassifications and advocating for accurate forensic assessments. The research suggests heightened awareness, education, and preventive measures to address social and cultural factors contributing to sexual violence. It emphasizes the importance of accurate forensic examinations in differentiating consensual and non-consensual acts.*

Keywords:*Non-Accidental Deaths, Sexual Assault and Forensic Analysis.*

INTRODUCTION

Deaths related to sexual activity, whether natural or unnatural, can occur with or without the involvement of others [1]. The occurrence of death during sexual intercourse can be attributed to factors such as the physical strain of the activity or unusual extenuating circumstances. Euphemisms like "dying in the saddle" describe such incidents [2]. While human sexuality is generally associated with positive connotations, fostering relationships based on partnership, pleasurable satisfaction, relaxation, and reproduction, it is important to recognize that sexual activity can be linked to fatal incidents, whether natural or unnatural. Natural deaths, defined as those caused by pre-existing diseases, are discussed in medical and forensic literature concerning sexual activity. These cases form a relatively homogeneous group, predominantly affecting males. Fatal cardiovascular events triggered by sexual exertion, as well as instances of sexual activity with extramarital/non-related partners or masturbation, are reported in connection with these incidents [3-13]. Sexual violence encompasses a range of acts, from verbal harassment to forced penetration [1]. According to the World Health Organization (WHO), sexual violence is broadly defined as any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts directed against a person's sexuality through coercion, regardless of the relationship to the victim, and occurring in any setting [14]. WHO estimates that around 35% of women globally have experienced sexual and physical violations by an intimate or non-intimate partner during their lifetime [15]. In Bangladesh, specific statistics on sexual violence are limited, but it

Comment [Ma1]: Good title. Interesting. Anticipating impacts.

Comment [Ma2]: Title focused on Sexual assault and unnatural deaths; thus the introductory paragraphs should emphasize on Sexual assault as heinous crime and its consequences in the survivors, so much so as the aggressive decision to end up life.

Emphasize onhow forensic analysis can scientifically relate to sexual assault and unnatural death….

Comment [Ma3]: Also add up how forensic examination help to find out the cause in the scientific manner, and possibly punish the perpetrator and content such crime in the society.

Comment [Ma4]: General aim: Social hx, Witness hx, Police notes, Court Proceedings.

Specific aim: Forensic findings in SOCO, Body, Chemical/ histological test reports

Comment [Ma5]: Why was it decided to take only hanging and poison?

Comment [Ma6]: The deceased person's psychological, physical, emotional , and relationship history taken?

Comment [Ma7]: Also mentioned accidental death…

Comment [Ma8]: Any guidelines or protocol used? If so, mention

Comment [Ma9]: Where is the other 30%(30+40)?

Comment [Ma10]: These appears to be murder than suicide!!!
Do you mean to say that there are significant discrepancy in witness, police suspicion on suicide to forensic finding?

Comment [Ma11]: How many really have physical and chemical evidence of hanging before death and poisoning leading to death? Did your study attracts any such evidence?

Where are the forensic pathological reports? Histological? Chemical? Molecular?

Comment [Ma12]: Unnecessary in view of the title of the article.

Comment [Ma13]: Focus on SEXUAL ASSULT rather than the broad definition of Sexual Violence.

Comment [Ma14]: The scope of this investigation encompasses all instances of unnatural deaths related to sexual activities

is reported that nearly 60% of Bangladeshi men engage in violent behaviors towards their intimate partners [16]. Bangladesh has the second-highest prevalence of sexual intimate partner violence against women globally, following Ethiopia (58.6% vs. 49.7%) [14]. Data from Odhikar, a Bangladeshi human rights organization, reveals that between 2001 and 2019, at least 14,718 individuals (including 6,900 women and 7,664 children) were raped in Bangladesh, with 2,823 cases involving gang rape [17]. The highest reported trend in rape incidence occurred between 2002 and 2003, with a gradual decline in 2008. However, a surge in sexual violence, including rape, was observed in Bangladesh in 2020, with 13 reported rape incidents daily in the first four months of the year [18]. By the end of 2020, there were at least 1,627 reported rape victims and 317 gang rape incidents, compared to 1,080 and 294, respectively, in 2019 [18]. This study aims to provide an overview of the various situations in which unnatural fatal events may occur in a sexual context. The study aimed to represent the clinical characteristics and causes of unnatural death related to sexual assault.

METHODOLOGY & MATERIALS

This prospective investigation involved the examination of 15 autopsies to analyze fatalities attributed to suicide, specifically by hanging and poisoning. The research was carried out at the Department of Forensic Medicine & Toxicology, Dhaka Medical College, Dhaka, Bangladesh, spanning two years from July 2021 to June 2023. It adhered strictly to legal and ethical guidelines. The investigative team retrieved historical data from the hospital's chronological register and treatment records stored in the record room. Opinions were formulated based on autopsy findings, supplemented by additional investigations as needed. Before data collection, a comprehensive overview of the study was presented, and informed consent was obtained from the legal guardians of the study participants. Guardians were also informed of their right to withdraw from the study at any point in time.

Inclusion criteria:

- All age.
- Both male and female.
- Unnatural death related with sexual activites.

Exclusion criteria:

- Natural death cases.
- Accidental death cases.

Unnatural deaths linked to sexual activities were identified through a comprehensive analysis of autopsy records, additional examinations (such as histological and toxicological assessments), information from death scenes detailed in police files, court proceedings, and, when available, input from sexual partners or witnesses present during the sexual incidents. The scope of this investigation encompasses all instances of unnatural deaths related to sexual activities occurring shortly before, during, or after death, as well as cases where injuries resulting from sexual practices led to delayed deaths occurring days later. To ensure a thorough and unbiased evaluation and selection process, a maximum of five experienced forensic pathologists conducted the study. The collected information was systematically organized and presented in tables or graphs based on its relevance, with each visual aid accompanied by detailed explanations to facilitate a comprehensive understanding. Statistical analysis was done using the Statistical Package for the Social Sciences (SPSS) program on the Windows platform. Mean values with standard deviations represented continuous parameters, while categorical parameters were expressed in frequency and percentage.

RESULT

This study examined 15 cases of unnatural deaths, providing insights into various factors such as age distribution, gender composition, patterns of sexual assault, locations of the incidents, types of sexual activities, and causes of death. The age distribution of the study population, as depicted in Table 1, reveals that a significant portion (46.67%) of the cases involved individuals aged 0-10 years. Additionally, 33.33% of cases were in the 11-20 years age group, and 20.00% were aged >20 years. The study predominantly included females, constituting 93.33% of the total population, as illustrated in Figure 1. Regarding the nature of sexual assaults, Table 2 outlines that neighbors raped 40.00% of victims, 20.00% experienced gang rape, 13.33% were subjected to rape by stepfathers and only one was raped by stranger. The distribution of rape locations is presented in Table 3, indicating that public places and other locations accounted for the highest frequencies at 33.33% and 40.00%, respectively. Own houses and schools

Comment [Ma15]: Add on unbiased scientific investigations. Interpersonal and intrapersonal variability in reporting….(as you have 5 Forensic Patholgy experts involved in the reporting). This will be interesting as well in gesturing transparency and possible challenges faced?

Comment [Ma16]: Will be interesting

Comment [Ma17]: Why is this limitation?

Comment [Ma18]: Not mention in the abstract.

Comment [Ma19]: You mentioned "Potential misclassification of deaths and the importance of accurate forensic assessments" in concluding remark….
So what CLASSIFICATION and FORENSIC ASSESSMENT GUIDELINES are used during the study period? This way you can justify your claim….if indicated in the study.

Comment [Ma20]: What do you mean by pattern? Specify

Comment [Ma21]: Result missing?

Comment [Ma22]: Is it possible to include the time lapse from the sexual assault to the reporting/ investigation/ incidental finding?

had relatively lower frequencies, with 20.00% and 6.67%, respectively. The results in Table 4 present a comprehensive overview of the causes of non-accidental deaths linked to sexual assault, involving a total of 15 cases. Notably, head injuries emerge as the predominant cause, accounting for 26.67% of fatalities whereas falls from height contribute significantly at 20.00%. The diverse range of causes includes fatal injuries, burns, choking and poisoning each representing 13.33% of the cases however, a unique case of death by biting was found 6.67%.

Comment [Ma23]: Where are the forensic reports on Sexual Assualt?
1.Anogenital injuries
2.Injuries to other parts of body in relation to the sexual activities/ assault.
3.Accused person's body fluid findings including spermatozoa.
4. Poison: what are the findings in 2 cases? When was the poison taken after sexual assault? What was the forensic reports….will be interesting to know the detail.
5.15 cases of Sexual assault and death in your study. So, what is the duration/ time lapse from the last assault? In your study, are there any way that these questions have some answers? This is very important.
6.The report does not have a single case of hanging, but strangulation; which gesture more towards murder rather than suicide. What were the forensic report? Hang after death?
7.There were several other cases which appeared as accident, but quite possibly be murder….how did the forensic investigation in SEXUAL ASSUALT cases came in relating Sexual activities and the cause of death? Were they related or not?
8. Almost half are less than 10 years of age…these children less than 10 years of age cannot possibly plan suicide unless coerced/ taught/ stimulated by adult/s? Will the article be able to highlight by the Forensic investigation?

9.Biting to death!!! It will be Very interesting to throw light on this.
10. Were there any discrepancy on the forensic report with the case/ Police record/ Witness input/ partner input?
11.Highlight on "Chem Sex" findings all male and one female death in your study.(mention on discussion part….? Homosexuality?

Table 1: Age distribution of the study population (N=15).

Age range (in years)	Frequency (n)	Percentage (%)
0-10	7	46.67
11-20	5	33.33
>20	3	20.00
Total	15	100.00

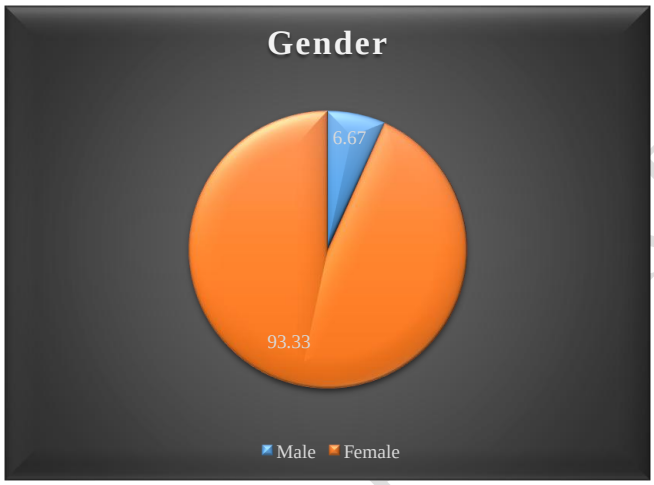

Figure 1: Sex distribution of the study population (N=15).

Table 2: Distribution of the study population based on raped by (N=15).

Raped by	Frequency (n)	Percentage (%)
Known Person		
Neighbor	6	40.00
Stepfather	2	13.33
Father	1	6.67
Teacher	1	6.67
Partner	1	6.67
Unknown Person		
Gang rape	3	20.00
Stranger	1	6.67

Table 3: Rape location of the study (N=15).

Location	Frequency (n)	Percentage (%)
Own house	3	20
Public place	5	33.33
Hostel	1	6.67
Other	6	40.00
Total	15	100

Table 4: Cause of death (N=15).

Cause of death	Frequency (n)	Percentage (%)
Fell from height	3	20.00
Head injury	4	26.67
Other Fatal injuries	2	13.33
Burn	2	13.33
Choking	2	13.33
Poisoning	2	13.33
Bite to death	1	6.67
Total	16	106.67

DISCUSSION

The current study aims to offer an overview of the diverse circumstances surrounding death related to sexual activities, seeking a better understanding of the phenomenon of unnatural death within this context. In addition to specific findings at the death location or statements provided by the sexual partner or offender, autopsies may reveal anogenital injuries or histological evidence of sperm in body cavities, which can be interpreted as indicators of sexual activity. The obtained results suggest that instances of unnatural death in this context can manifest under various circumstances. Therefore, these cases extend beyond autoerotic fatalities or sexual homicides and appear to be more intricate than natural deaths linked to sexual activity [19]. Incorrect conclusions about the classification of death, such as suspicions of suicide or sexual homicide leading to homicide investigations, could arise. Attempts to avoid such investigations and the shame linked to the true circumstances of death might prompt family members, particularly male ones, to modify the death scene before medical professionals or authorities arrive. In terms of sexual activities, whether consensual or not, the findings show a higher number of females. The gender distribution in our study aligns with the outcomes of previous research, possibly indicating the relative physical vulnerability of female victims compared to male offenders [20,21]. While inadvertent intoxications may have taken place, there is also the possibility that the instances of fatalities could be linked to a phenomenon known in literature as "Chem Sex." This term refers to the deliberate use of narcotics or drugs, particularly stimulants, before or during sexual activities to enhance and prolong sensations of desire [22-24]. This pattern of behavior is primarily observed within the demographic of male homosexuals. However, it is important to note that the studies investigating this phenomenon specifically focused on pre-selected and interviewed individuals within the male homosexual population [23,24]. The findings of the current investigation indicate that females engage in heterosexual activities involving the use of drugs. This observation aligns with recent research by Lawn et al., reinforcing the notion that drug use is not exclusive to males in such contexts [25]. Moreover, engaging in physical activity during sexual encounters may decrease tolerance thresholds for any substances consumed, potentially resulting in a life-threatening situation. Healthcare professionals, including general practitioners and emergency medicine providers, should educate potential users about these potential dangers. In instances of fatalities linked to non-consensual sexual activities, all individuals involved or implicated as potential offenders were male, except one female. These findings align with observations made by Chan et al. in both 2009 and 2016 [20,21]. Consistent with the findings reported by Chan and Heide, as well as Beauregard and Radojevic et al., the primary factors leading to mortality were instances of bleeding resulting from sharp force and incidents of strangulation [20,21,26]. Radojevic et al. posit the presence of a sexual component in cases involving multiple stab wounds [26]. Consistent with the findings of Beauregard et al. and Schmidt and Madea, our study reveals that fatal strangulation predominantly occurs in cases involving minors[27,28]. In this current research, instances where individuals assert self-defense after causing the death of a man who made sexual advances are not explicitly categorized as sex-related homicides. Instead, they are perceived as more likely to stem from interpersonal conflicts. We posit that these cases should not be overlooked when examining the diverse circumstances surrounding unnatural deaths linked to sexual activities. In alignment with Geberth's findings, these scenarios predominantly manifest in the context of homosexual homicides [25]. The findings of the current research reveal that strangulation stands out as the leading cause of death in incidents of autoerotic accidental deaths. It is imperative to recognize the inherent peril associated with utilizing strangulation as a technique for pleasure enhancement, rendering it devoid of any possibility of "safe play." Given the frequent depiction of neck compression on readily accessible adult content websites, medical professionals should be alert to the potentially life-threatening nature of such activities. It is crucial to acknowledge that the influence of imitation may extend beyond adults to include inexperienced teenagers and young adults in search of sexual exploration. From our perspective, addressing this issue in the sexual education of young individuals, alongside subjects like sexually transmitted diseases and pregnancies, could contribute significantly to the prevention of such tragic deaths.

Comment [Ma24]: Chem sex: 7% male death after sexual activities are related to drug toxicity/ overdose, or rather consequences? Good to know the age group, and other social biometrics will be helpful for policy makers/ focused activities in conducting preventive measures…..

Comment [Ma25]: Did these cases brought as SUICIDAL HANGING rather than Death by strangulation (murder)?

Strangulation after sexual assault causing death is LOUD AND CLEAR in your finding which need to be emphasized.

Comment [Ma26]: This went out of track from the title/ objectives/ methodology of the study?

Comment [Ma27]: The defending remark on the sexual pleasure by neck compression during sexual activities is dangerously diverting in the wrong context especially when it involves DEATHand SEXUAL ASSAULT…..(Psychopath, Sadist: need psychological counseling and behavioral management by expert)

Open and frank discussions about this topic should be encouraged among medical professionals, encompassing general practitioners, pediatricians, and emergency care providers. This is especially important when addressing sexual health matters or handling cases involving potential survivors of such practices. A 2016 American study involving interviews with 2,021 individuals reported that approximately 20% had experiences with enthrallment, 30% with striking buttocks, and 13% with playful flogging [29]. In Australia, a survey of 19,307 individuals revealed that around 1.8% of participants had encountered BDSM [30]. This current investigation found comparable percentages of injuries, showing no significant distinctions in the nature or severity of the injuries. Consequently, these results are not deemed helpful in differentiating between autoerotic and consensual sexual acts. Our study aligns with clinical research indicating that anogenital injuries may be present or absent in both consensual and non-consensual acts [31-37]. Forensic and clinical professionals should take note of these findings when interpreting anogenital injuries. In cases of suspected death preceding sexual activity, it is crucial to conduct histological examinations on sperm. Moreover, these samples can facilitate molecular analyses to identify individuals involved in sexual activities if they are already in a database. However, it is essential to consider that the absence of sperm does not rule out penile penetration and could be attributed to factors like lack of ejaculation or sterilization. Additionally, the presence of sperm in a body cavity might result from transfer from another body region, such as via a hand or an object. From a medical standpoint, neither the presence of sperm, anogenital injuries nor intentionally inflicted fatal injuries can serve as conclusive evidence to distinguish between consensual and non-consensual sexual activities. This determination should be within the purview of police investigations and judicial judgments. In instances of death following sexual activities, as well as cases involving unconscious, injured survivors, forensic and clinical physicians should conduct an impartial assessment through thorough examinations and documentation.

Limitations of the study:Every hospital-based study has some limitations and the present study undertaken is no exception to this fact. The limitations of the present study are mentioned. Therefore, the results of the present study may not be representative of the whole of the country or the world at large. The number of patients included in the present study was less in comparison to other studies. Because the trial was short, it was difficult to remark on complications and mortality.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this study sheds light on the complex and multifaceted nature of unnatural deaths related to sexual activities, particularly in the context of suicides by hanging and poisoning. The study underscores the need for a nuanced understanding of the circumstances surrounding unnatural deaths, emphasizing the potential misclassification of deaths and the importance of accurate forensic assessments. Recommendations stemming from this research include heightened awareness among healthcare professionals, law enforcement, and the general public regarding the diverse situations in which unnatural fatal events may occur during or after sexual activities. It is crucial to address the social and cultural factors contributing to sexual violence, as evident in the study's findings related to rape cases. Furthermore, education and preventive measures should be implemented to reduce the risks associated with certain sexual practices, such as the deliberate use of substances to enhance sensations. Additionally, the study emphasizes the importance of accurate forensic examinations in cases of suspected unnatural deaths related to sexual activities, highlighting the limitations of medical evidence in distinguishing between consensual and non-consensual acts.

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Comment [Ma28]: As well as accused.

Comment [Ma29]: Abbreviation need to be clarified for the first time.

Comment [Ma30]: Is this a protocol to be suggested?

OCMC (One Stop Crisis Management Centre) be one such thing?

Comment [Ma31]: What are they? Never mentioned anywhere

Comment [Ma32]: Where?

Comment [Ma33]: The study was done on dead bodies on unnatural death with autopsy reports in hand. Isn't it?

Comment [Ma34]: No case of hanging by death.
Only 2 case out of 15 cases death due to poison…

Comment [Ma35]: Following SEXUAL ASSAULT Fall from height, burn, head trauma, fatal injuries causing death should NOT be gesture lightly as just an unnatural fatal events, but intentionalmurderous act. Do you agree?

Doctors opinion are crucial, which helps in tailoring the society.

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