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Cut Throat Injury An Iceberg Of Deteriorating Mental Health Among Rural Young Population –A Retrospective Study

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Abstract

Background: *Cut throat injuries represent a severe manifestation of psychosocial distress and are often associated with poverty, illiteracy, unemployment, interpersonal conflicts, and substance abuse, particularly in rural youth. Limited awareness and access to mental health services in these populations exacerbate vulnerability, making such injuries an iceberg of underlying deteriorating mental health.*

Objectives: *To assess the demographic and socioeconomic profile of patients with cut throat injuries, evaluate precipitating psychosocial factors and underlying psychiatric conditions, and analyse the severity, anatomical distribution, and outcomes of such injuries.*

Materials and Methods: *A retrospective record-based study was conducted at a tertiary care centre from January 2019 to December 2024, including 39 patients aged 15–80 years who presented with cut throat injuries and underwent emergency neck exploration. Data regarding demographic details, socioeconomic status (Kuppuswamy scale), precipitating factors, psychiatric assessment, site and depth of injury, structures involved, and management outcomes were collected and analysed using descriptive statistics.*

Results: *Of 39 patients, 92.3% were below 45 years and the male-to-female ratio was 11.7:1. A majority (79.5%) belonged to rural background and 69.2% to middle socioeconomic class. Suicidal intent accounted for 74.3% of cases, with family conflicts (28.2%) and financial crisis (25.6%) being major precipitating factors. Substance abuse was documented in 82%, while anxiety and depression were noted in 23.1% and 28.2%, respectively. Zone II of the neck was most commonly involved (64.1%), with deep vascular injuries in 71.8%. ICU admission was required in 23% of cases, with an average hospital stay of 14±10 days.*

Conclusion: *Cut throat injuries among rural youth are a critical indicator of hidden mental health deterioration, predominantly linked to psychosocial distress and substance abuse. The predominance of suicidal attempts, Zone II involvement, and psychiatric comorbidities highlight the urgent need for early identification of at-risk individuals, routine psychiatric evaluation, and community-based preventive strategies. Strengthening rural mental health services and reducing stigma are essential to lower the burden of such self-harm.*

Keywords: *suicide, homicide, cut throat, alcohol dependence, neck injury, rural, mental health*

INTRODUCTION:

Individuals from rural background face unique psychosocial challenges among which young individuals are more vulnerable. In these individuals, the contributory factors affecting mental health are poverty, illiteracy, unemployment and substance abuse. But awareness and access to mental health services in rural areas is limited. Therefore, social stigma, social isolation, interpersonal rivalry, economic hardships, and limited access to psychological support contribute to violent behavior either for self or for others. Adolescence is a critical transition phase with liability for mental health disorders and 90% of the World's adolescents live in low and middle income countries. Whereas on the other hand, midlife crisis is a common cause for emotional upheaval impacting mental health during adulthood (19-65years).[1]

Globally majority of the deaths by suicide occurred in these low and middle income countries (77%). India reported 170,924 suicides in 2022 (12.4 per 100,000), with young adults forming a major share, while surveys show ~10.6% of the population suffers from mental morbidity amid large treatment gaps.[2,3] Karnataka reflects this burden, recording 13,056 suicides in 2021 (8% of India's total), many among students. Such trends underscore the vulnerability of rural youth, where psychosocial distress often culminates in severe self-harm like cut-throat injuries, serving as markers of hidden mental health deterioration.[4-7]

Among the various methods of self -harm, suicidal cut throat injuries represent a severe alarming indicator of distress. Understanding the factors leading to such extreme actions is crucial to develop effective prevention strategies and planning mental health interventions. This study aims to assess cut throat injuries as an indicator of mental health status among the rural youth. It focuses on identifying the most at risk age groups, evaluating the severity of the injuries and the mental status of the individuals. These insights will be help promote mental wellbeing in rural population and reduce suicide rates.

This study aims to highlight the psycho-social factors and early warning signs for violent behavior. It also helps to develop intervention strategies to increase accessibility, create awareness and screening for mental health for at risk individuals.

Objectives:

1. To assess the age group, socioeconomic status and risk factors for attempting suicide by cut throat injury.
2. To assess the mental state of the individual , potential triggers and underlying psychiatric conditions.
3. To assess the extent and severity of the injury.

MATERIALS AND METHODS:

This retrospective record based study was started after obtaining Institutional Ethics Committee clearance to conduct the research. (Vide No: SDUAHER/R&D/CEC/SDUMC-PG/99/NF/2025-26) . After seeking permission from Hospital head & Medical Records Department, access to medical records was obtained.

This study is done on patients who presented with cut throat injuries at our institute from January 2019 to December 2024 .A total of 39 patients aged 15-80 years with cut throat injuries who underwent emergency neck exploration were included in the study.

Patients who were found to be unconscious, those with head injuries were all excluded from the study.

Demographic details like, age, sex, residence, mechanism of injury, cause of injury, site of injury, extent of injury, sociodemographic pattern, hospital arrival delay, duration of hospital stay, ICU admission, treatment given and the final outcome of patients were collected retrospectively from the medical case records.

Socio-economic status stratification was done as per Modified Kuppuswamy scale (Upper/ Upper middle/ Lower middle/Lower).

A comprehensive evaluation of severity of neck injury such as depth and anatomical zone (I/II/III) of location of cut-throat wounds and structures injured (vessels/ nerves/ cartilage/ trachea/ larynx/ thyroid) were assessed based on intra-operative findings documented in medical case records.

Psychiatric assessment details were obtained from the inpatient reference's obtained during the admission which included details like prior history of psychiatric illness if any, usage of alcohol or any other substance during the act, precipitating stressful event (family conflicts/ job loss/ academic failure/ relationship issues/ financial crisis/ death of loved ones/ other event), intent of the act (serious/ non serious attempt) and psychiatric evaluation post injury.

Statistical Analysis:

The data tabulated on Microsoft Excel sheet and was analyzed using SPSS software version 23. Statistical analysis was done and the results presented as frequency, percentages and proportions.

RESULTS:

Out of the total n=39 patients, 36(92.3%) were below 45 years of age .The male to female ratio was 35:3 (11.69: 1) and one transgender indicating higher prevalence in male population. Majority (79.48%) of the study population hailed from rural back ground and 35(89.7%) were married and 2 (5.12%) were unmarried and 2(5.12%) were divorced.

The results of socio-economic status indicated that 27(69.23%) belonged to middle class, 9 (23.07) lower class and only 3 (0.84%) belonged to higher socioeconomic status. The Precipitating factors we found included family conflicts in 11 (28.2%) followed by marital disharmony in 5 (12.8%), financial crisis like job loss in 1and unpaid debt and loans in 10(25.64%).The other additional factors like death of loved ones was found in 7 (17.94%), relationship issues in 4 (10.25%) and academic failure in 2 (5.12%)patients. None of our patients had previous history of underlying psychiatric conditions. **(Table 1)**

Table 1: Distribution of demographic data

Variables	Frequency(n=39)	percentage
Age		
<25	2	5.2%
25 to 45	34	87.1%
>45	3	7.7
Sex		
Male	35	89.7%
Female	3	7.7%
Transgender	1	2.6%
Residence		
Urban	8	20.5%
Rural	31	79.5%
Marital status		
Married	35	89.7%
Unmarried	2	5.1%
Divorced	2	5.1%
Socioeconomic status		
Low	9	23.0%
Upper middle	0	0
Lower middle	27	69.2%
upper	3	7.7%
Addictions:		
Substance abuse/ Alcohol/smoking/others	32	82.0%
Precipitating factors		
Family conflict	11	28.2%
Marital disharmony	5	12.8%
Financial crisis	10	2.7%
Job loss/unemployment/loans		
Death of loved ones	7	17.9%
Relationship issues	4	10.2%
Academic failure	2	5.1%
Mode of injury		
Suicidal	29	74.3%
Homicidal	8	20.5%
Accidental	2	5.1%

The Majority (25) of the patients had involvement of Zone II of neck followed by zone III (8) and zone I (6).The depth of injury was Superficial in 11 patients and deep in 28 patients. The patient had different types

of hesitation marks patterns in 11 patients. Of the superficial cuts in 11 patients with additional strap muscles violation was seen in 9 patients. The delay in hospital Presentation has lead to massive blood loss and hypoxic brain damage was noted in 2 patients. The mean duration of duration of hospital stay was 14±10 days and 9 (23.0%) patient's required ICU admission.

Table 2: Distribution of Severity and management of Cut throat injury

Variables	frequency	percentage
Site/Zone of neck		
I	6	15.4%
II	25	64.1%
III	8	20.5%
Depth of injury		
Superficial	11	28.2%
Deep	28	71.8%
Structures damaged:		
Strap muscles	9	23.1%
Laryngeal cartilages	19	48.7%
Vessels	31	79.5%
Nerves	3	7.7%
Trachea	4	10.3%
Pharynx/esophagus	3	7.7%
Pleura	1	2.6%
Neck exploration	30	76.9%
Tracheostomy	28	71.8%
Outcome		
Decannulated		
Not done	4	10.3%
Done	24	61.5%

The structures damaged included strap muscles in 9 (23.1%), laryngeal cartilages in 19 (48.7%) vessels in 31 (79.5%), nerves in 3 (7.7%) trachea in 4 (10.3%) and pharynx/esophagus in 3 (7.7%). The most common vessels injured were anterior jugular vein in 8, external jugular vein in 7 both 12 in followed by internal jugular vein (IJV) in 4 cases. 4 patients had facial artery and patients had superior thyroid artery injury. However major arteries like external, internal and common carotid arteries were spared in all cases. Nerve injuries were seen only in 3 patients, with I patient each with spinal accessory, branchial plexus and recurrent laryngeal nerve injury.**(Table 2)**

Involvement of laryngeal skeleton was seen commonly in zone II injuries with laceration of thyroid cartilages in 20, thyroid and cricoid cartilages in 9 and thyrohyoid membrane in 7 patients. Hyoid bone partial fracture along with damage to other laryngeal cartilages was observed in 3 patients.

1 patient with zone I involvement presented with surgical emphysema suggesting pneumothorax was treated accordingly. Another patient with zone I involvement who presented with surgical emphysema and pneumo-mediastinum was found to have esophageal injury and breach in tracheal rings which was primarily repaired at the time of neck exploration. Patient also had an expanding hematoma due to injury to internal jugular vein.

In one patient where the laceration was extending across the neck from zone I to zone II, complained of limb weakness and numbness had damage to cervical plexus although the laryngeal frame work was intact.

In 1 female patient with zone III involvement with deep wound extending to vertebral bodies had laceration of trapezius and prevertebral muscles, and an expansile hematoma IJV injury and massive blood loss required blood transfusion. Altered sensorium due to Alcohol withdrawal psychosis was observed in 8 patients. Previous history of admission to rehabilitation center for Alcohol dependence syndrome was noted 6 patients. Anxiety was seen in 9 (23.1%) of patients and depression was seen in 11(28.2%) of patients.

DISCUSSION:

A grievous injury involving vital structures of the neck either accidentally or by suicidal or homicidal intent represents cut throat injury.[8]

In our study about 94.8% of the individuals were below 45 years of age .The global surveys reported death by suicide in 56% of individuals under 50 years of age. Worldwide, suicide by self- inflicted cut throat injury is the third leading cause of death among the young population aged between 15–29 years. Similar study conducted by Rajendiran et al in Tamil Nadu found 50% of cases were between 30-40 years of age which corresponds to our results. Substance abuse, underlying psychiatric illnesses like depression and anxiety, interpersonal conflicts over land disputes are the main reasons in the rural region. [15]

In a study done by Chappidi A.K et al homicidal cut throat injuries were observed in 56.6% followed by suicidal in 30% and accidental 13.3%. In contrast a study done by Anas et al reported higher number of suicidal cases (72%) compared to homicidal cases(24%) with accidental cases, least (4%.) This is similar to our study where the suicidal cases were 74.3%, homicidal cases were 20.5% and accidental were 5.1%.[9]

In our study we found incidence of cut throat injuries among males were higher compare to female with ratio 11.7 male :1 female. The global age-standardized suicide rate is 2.2 times higher in males than in females.[1] whereas the study Chappidi A.K et al was 9:1and study done by Anas et al it was 11.5: 1. [8,9] Men tend to choose violent and high fatality mode of suicide like sharp force injuries , firearms, hanging while women use poisoning and overdose.

World wide surveys shows 84% of suicidal deaths among adolescents in the age group pf 10-19 years were from economically low- and middle-income countries.[1]

We have found that 87.1% participants opted for suicide were of middle age ranging between 25-45 years of age. Young adults were more at risk for suicidal tendencies, as 92.3% in our study were below 45 years of age. Other studies also showed similar results varying between 61.19% to 70%.[8,9]

A majority of our participants (69.23%) belonged to middle socio economic class. Our Results are in contrast to study done by Chappidi A.K et al where majority belonged to low socioeconomic class (79.10%) and about 79.5% were from rural background compared to 77.61%.[9] Middle age comes with life transitions and stressful events like career plateau, health decline, peak financial responsibilities, unstable employment and debts might be the underlying cause

Majority of participants in our study had injuries involving Zone II of neck (64.1%) and deep cuts (71.8) indicates manual dexterity and firm determination for ending self. On the other hand hesitation marks a hall mark of suicide was seen in 11 patients with suicidal cut throat injuries. Only 5 patients were found to have fresh hesitation cuts on the neck, and in 6 patients an additional multiple healed cut marks on forearm were presenting previous attempts of self-harm. These findings are in contrast with study done by Cirielli V et al.[13]

Anatomical Zone II injuries was observed in 64.1% of our patients which is similar to study by Simpson et al, (64%) whereas studies by Chappidi A.K et al and Peralta et al, had comparatively higher values of 86.6.and 81% respectively. [9] Zone 2 cut injuries are common since it is most exposed and accessible part of neck with lack of bony protection

Although vascular injuries were common (79.5%), major vessels in the neck were spared except in 4 cases where Internal jugular vein (IJV) was damaged. As per the study done by Mahmoodie M et al vascular injuries were noted in 40% of cases of penetrating neck injuries, with carotid artery injury in 10% of patients. In 1 patient with zone I involvement with deep wound extending to vertebral bodies had laceration of trapezius and prevertebral muscles, and an expansile hematoma, IJV injury and massive blood loss required blood transfusion.[10]

Of the 3 patients who had neural injuries, the patient with branchial plexus injury had limb weakness and numbness, spinal accessory injury had restricted shoulder movements and the one with recurrent laryngeal nerve injury had transient hoarseness of voice which improved at 3 months follow-up due to compensation from contralateral vocal cord.

Around 82% of our participants had co morbid substance use of alcohol which is Similar to a study conducted by Anas e al where they found 86.11% patients with cut throat injuries had co-morbid alcohol use disorder. [8] Alcohol intoxication leads to impaired judgement, reduced impulse control and increased

emotional instability leading to violent self harm behavior.[11] The pain blunting effect of alcohol makes the individuals more likely to inflict injuries without hesitation.

The common precipitating factors in our study were family conflicts (28.2%) and financial crisis (25.64%). Mood disturbances like anxiety and depression were vulnerable factors for self-harm. 23.1% of our patients with financial crisis suffered from anxiety. 28.2% of our patients who suffered from depression following death of loved ones attempted suicide during bereavement period.[12] The potential triggering factor was heartbreak in one transgender and in another two educated patients, detection of HIV (Human immunodeficiency virus) positive status . Family feuds and property disputes were triggering factors predisposing for homicidal cut throat injuries in our study. These findings are similar to study conducted by Cirielli V et al. [13]

Midlife crisis with shifting family roles led to feeling of worthlessness and was a major factor which for depression. Departure of children typical of empty nest syndrome also deranged coping mechanism.[14] Individuals with agricultural background with un cleared debts and increased financial responsibilities expressed feeling of shame, resentment, hopelessness and confusion preceding the decision for termination of life. [15] Psychosocial stressors like family conflicts, financial difficulties, relationship issues, stigma associated mental health issues along with alcohol use disorder are the identified factors for inflicting cut throat injuries as found by previous studies.[16,17]

Limitations:

This study is limited by its retrospective, record-based design and relatively small sample size from a single center, which may restrict generalizability. Additionally, absence of a comparison group limits causal inferences.

CONCLUSION:

Cut throat injuries are a grave manifestation of psychosocial distress, particularly among young and middle-aged rural populations. This study highlights that family conflicts, financial crisis, and substance abuse were the predominant precipitating factors, with suicidal cases far outweighing homicidal or accidental ones, thereby underscoring the hidden burden of untreated mental health issues. The predominance of Zone II injuries and deep cuts with vascular involvement reflects both the determination and lethality of such attempts. Co-existing psychiatric morbidities such as anxiety, depression, and alcohol dependence further amplify vulnerability, emphasizing the need for routine psychiatric evaluation in all affected individuals. Early identification of psychosocial triggers, timely psychiatric referral, and community-based awareness programs are essential preventive measures. Strengthening mental health services, improving accessibility, and reducing stigma in rural areas can play a crucial role in mitigating recurrence. Therefore, preventive strategies focusing on mental health promotion and accessible interventions are vital to lowering the burden of suicidal cut throat injuries in vulnerable populations.

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