

**“ANALYSIS OF PSYCHIATRIC
PROBLEMS IN BURNS”**

Dissertation submitted to
THE TAMIL NADU DR.M.G.R.MEDICAL UNIVERSITY

*In partial fulfillment of the regulations
for the award of degree of*
**M.Ch. DEGREE EXAMINATION
BRANCH – PLASTIC SURGERY (BRANCH – III)**

AUGUST 2011



GOVT. KILPAUK MEDICAL COLLEGE

**THE TAMIL NADU DR.M.G.R.MEDICAL UNIVERSITY
CHENNAI, INDIA**

CERTIFICATE

This is to certify that the dissertation titled “**ANALYSIS OF PSYCHIATRIC PROBLEMS IN BURNS**” in Kilpauk Medical College Hospital is a genuine work done by **Dr. R. Manimaran** under my guidance during the period of 2008 – 2011. This has been submitted in partial fulfillment of the requirements for the M.Ch. Degree Plastic Surgery (Branch - III) by the TAMILNADU DR M.G.R.MEDICAL UNIVERSITY to be held in August 2011.

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ACKNOWLEDGEMENTS

I express my sincere thanks and gratitude to **Dr.S.Geethalakshmi., M.D., Ph.D.,** Dean, Kilpauk Medical College for permitting me to utilize the clinical materials of this hospital.

I have great pleasure in thanking my teacher **Prof. Dr. V. Jayaraman, M.S., M.Ch., MNAMS., Dip. N.B., Ph.d, FICS.,** Professor and Head of the Department, Department of Burns, Plastic and Reconstructive Surgery, Kilpauk Medical College and Hospital, Chennai – 10, for his valuable support in the conduct of the study and for his valuable guidance, suggestions and supervision throughout my career and my period of study. I thank my professor for being helpful in successfully completing this dissertation.

My sincere thanks to **Prof. Dr. N. Ramesh Kumar, M.S. M.Ch.,** Prof. and Head, Department of Plastic Surgery, G.R.H. Chennai for his suggestions throughout my study.

My sincere thanks to **Prof. R. Gopinath, M.S. M.Ch.,** Department of Plastic Surgery, K.M.C.H. Chennai for his suggestions throughout my study.

My sincere thanks to **Prof. Dr. R. Rajarathinam, M.D., D.P.M.,** Head of the Department of Psychiatry K.M.C.H. Chennai for his suggestions throughout my study.

My sincere thanks to our Assistant Professors who have given full support by guiding me throughout the period of this study with their valuable advice.

I owe my sincere thanks to my Colleagues for their kind support throughout the study.

Finally, I would like to place on record my sincere thanks to all my patients for their immense cooperation without which this study would not have been possible.

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INTRODUCTION

A burn injury implies damage to or destruction of living tissue, in the overwhelming majority of cases the skin, by thermal, chemical, electrical radiation energy or combination thereof. When the skin is seriously damaged, the properties of that tissue are lost, the barrier functions destroyed and the internal milieu is exposed to and affected by threatening surroundings. A severe burn injury, where larger areas of the skin are destroyed, is a life threatening state, and the consequences include fluid and electrolyte imbalance, metabolic disturbances, bacterial contamination of tissues, and complications in all major organ systems. The severity of a burn injury is a function of both the characteristics of the burn injury itself and of factors related to the individual. Such factors include the proportion of the body surface that is damaged, location of injury, depth of the injury, age at injury, presence of associated injuries, and coexisting illness, and associated psychosocial problems like poverty, low socioeconomic status, marital problems, psychiatric problems and substance abuse (alcoholism) which is more prevalent in our country.

The treatment of burns is a long procedure that begins on the day of injury and can continue for many years or even decades. Initially, the focus is on the wounds, and surgery in its real meaning is one of the main

components of treatment. But even at this early stage other elements affect recovery; on daily ward rounds many patients describe problems with nightmares and itching of the newly healed skin and scars. They feel tired and frustrated because itching or nightmares have interrupted their sleep, resulting in a lack of tolerance and motivation to comply with the strenuous and often painful rehabilitation.

The general impression from daily work on the burns unit is also that burns seldom "just happen"; predisposing factors for injury can often be found in the patient's history, including social problems, substance abuse, or mental illness. Furthermore, these factors appear to affect recovery.

The treatment of burns injuries commences with a period of specialized intensive care during wound care and surgical treatment are carried out when necessary. Management of pain and anxiety related to the accident, and to burn care procedures such as surgery, are main challenges during this phase of care. For the severely injured, this first period is just the beginning of a long journey involving adaptation to post burn life.

Rehabilitation of the patients starts on the day of injury and comprises measures that are also undertaken during the phase of very

specialized and technologically focused intensive care. Active surgical treatment of wounds and scars, as well as physiotherapy and occupational therapy continue long after the patient has left the intensive care unit and are part of the process of regaining functional capacity.

Psychological and psychosocial issues are actively addressed in order to identify and treat severe co morbid psychiatric conditions such as mood disorders and depression, posttraumatic stress disorder (PTSD), and substance use disorders, and less pronounced psychological problems that may interfere with compliance to various treatment and rehabilitation measures.

Potential late problems include complications such as restriction in range of motion and in muscle strength, changes in appearance, psychological disturbances, and, occasionally, widespread social and environmental dislocation.

This study is to see the prevalence rates and clinical diagnosis of psychiatric disorders and psychosocial problems as a predisposing factor to burns and sequelae to burns in our population, hence necessitate the consultation liaison with the psychiatric team management to improve the outcome from the time of critical phase recovery to the rehabilitation phase.

AIM OF THE STUDY

- To analyse the incidence of psychiatric problems in suicidal burns patients
- To study the survival rate of psychiatric burn patients
- To study the psychiatric problems in suicidal burn survivors.
- To study the functional outcome of the psychiatric burn survivors

REVIEW OF LITERATURE

1. Epidemiology

The incidence of burn injury varies greatly in different regions and countries throughout the world as a result of both economic and social factors. Burn related problems in third world countries are thus both greater and different from problems encountered in the western world.

Mechanisms of injury also vary widely among different countries and communities depending on such factors as the ways in which food is prepared, heating system, industrial environments and general living conditions. The use of specific products or the existence of specific habits may explain why some types of burns prevail in certain cultures and religions.

Males are strongly over-represented in burn statistics all over the world with India as the only exception; children are also at high risk, both in developed and in less developed countries.

2. Psychosocial risk factors for burn injury

Psychosocial factors are clear risk factors for burns. Numerous psychosocial factors form relative risk and absolute risk pushing

individuals to undertake drastic measures leading to burns. The risk factors leading to individuals to burns are as follows.

- Lower socioeconomic groups
- Financial loss
- Unemployment
- Illiterates
- Marital disputes
- Extremes of age groups (geriatric)
- Sexual abuse, Rape
- Substance use disorders and Alcoholism
- Illness like diabetes, epilepsy, chronic disability, chronic pain, cancer and other chronic illness.
- Pre existing psychiatric illness (Depression, PTSD etc)

3. Premorbid psychopathology

Psychiatric disorders have been reported to be 28% to 75% of all burn patients. In a study from 2003, **Patterson et al** observed that Burn

patients had higher psychological distress than a non burned normative sample, even after excluding those with a formal pre injury psychiatric diagnosis. In two studies by **Fauerbach** and colleagues the lifetime prevalence for any DSMIII-R axis I diagnosis was 64 %, for affective disorder it was 31 %, and for alcohol abuse or dependence it was 41%,this can be compared to population based figures obtained from two epidemiological studies, an American study by **Kessler et al**, and a Norwegian study by **kringlen et al**, where the lifetime prevalence's for any psychiatric disorder were 48% and 52 %, and for depression they were 17% and 18%, respectively, and for alcohol abuse or dependence they were 24% and 23%, respectively in western literature.

In many patients with pre-injury psychiatric disorders, it seems that the disorder in question has contributed significantly to the aetiology of the injury itself. Furthermore, patients with a pre-injury psychiatric history are more likely to have preventable injuries, require longer hospitalisation and have problems with adjustment early in their recovery.

Self-inflicted burns account for about 4% of burn injuries worldwide (**Horner BM et al**), incidence is 25% according to a study done in south India by **Dr. R. Raja shanmugakrishnan et al** (2008) with

wide variations from 0.4 to - 25 % and there are indications that the numbers are increasing.

4. Rehabilitation and adaptation

The goal of rehabilitation efforts after a major burn is to support the natural adaptation process in order to obtain as good an end result as possible in the widest sense. WHO has chosen to include the concept of rehabilitation in its International Classification of Impairments, Disease and Handicaps. A strict Definition was produced by a WHO expert Committee in 1981, and is as follows: Rehabilitation includes all measures, aimed at conditions, and at enabling the disabled and handicapped [person] to achieve social integration.

Rehabilitation aims not only at training disabled and handicapped persons to adapt to their environment, but also at intervening in their immediate environment and society as a whole in order to facilitate their social integration. The disabled and handicapped persons themselves, their families, and the community they live in, should be involved in the planning and implementation of services related to rehabilitation.

A burn trauma exposes the individual to significant physical, psychological and social demands. In follow-ups 14 to 24 months after

injury, about 90% of patients report physical complaints, with reactions from scars, pain, pruritus, heat sensitivity and loss of strength being the most common. In studies of perceived health, psychological health is often rated as inferior to physical health. However, in a recent Swedish study it was found that nine years on average after injury, heat sensitivity and work related problems were most pronounced. In addition, women reported a worse outcome in general than men.

While it is reasonable to expect patients with major burns to be at risk, even minor burns can result in significant psychological distress. Adaptation after burn injury is thus a complex process, and the burned area and its localisation predict perceived outcome to only a small extent. Other factors such as personality traits, coping strategies, and body image dissatisfaction have been found to be associated with an increased risk for psychological distress following burn injury.

Psychiatric morbidity during the adaptation phase during the immediate post-burn phase, cognitive changes such as delirium and transient psychotic reactions may occur, usually as a result of infections, alcohol withdrawal, metabolic complications, or high doses of drugs. Bearing in mind that individuals who sustain a burn injury are often affected by pre-morbid psychiatric disorders, which makes them more

vulnerable to post-burn psychiatric problems, a number of other potential triggers for post-burn psychiatric illness must be considered.

First, psychological responses to the burn trauma may not only be a result of the devastating impact of the burn injury itself, but may also be caused by what the patient has witnessed or experienced during the accident. Such experiences may elicit psychological responses that become enduring and pathological

Secondly, a burn injury is extremely painful, and furthermore, treatment of a burn injury involves a number of iterating, painful procedures, a feature which has been related to depression and anxiety.

Third, burn patients are often physically isolated in order to prevent infections, something that contributes to a sense of social deprivation.

Fourth, alteration in body appearance and limitations in physical functioning may add to the risk of impairment in psychic well-being. It was found that symptoms of depression and anxiety generally occurred together, with prevalence rates between 25 % and 65 % one year post burn, and that most symptoms subsided after that period.

5. Return to work

A central measure of adaptation and reintegration into the community is return to work. Return to work is therefore a goal of its own in different adaptation programs following various diseases and injuries. Return to work is a definite turning point for an afflicted individual and requires certain physical and emotional strengths, but it is also a measure of basic health that can be compared between different groups.

The measure is, however, not uncomplicated, since it is not solely affected by the impact on physical and emotional health of the injury or disease that is the focus of the assessment. Other factors like socioeconomic background, general education, the individual's occupational training, and the current business cycle in society are also of importance.

With the relevance of return to work as a measure of successful adaptation after injury. On average 58 % of the men and 35 % of the women were working, and also that those who were working had significantly better perceived health. The strongest predictor of returning to work was being employed prior to the injury.

The probability of returning to work was reduced by the presence of a psychiatric history and by extremity burns and that it was inversely related to the extent of the burn. A recent review concluded that the proportion of patients returning to their preburn employment varied between 52% and 90 % in different studies. Preburn psychiatric history was related to employment at the time of injury, and injury severity, and that preburn work status and preburn psychiatric history alone, or in combination, could predict post burn work status.

Hence there is interplay between injury severity and psychosocial factors regarding return to work, which is also reported that there is evidence that the severity of the burn injury and psychological problems predict return to work, and that employment status at the time of the injury and co morbid conditions limit the success of a vocational rehabilitation program.

6.Pruritus

Most burn patients develop pruritus, or itch, during the rehabilitation phase, with a reported incidence as high as 87 % after discharge from hospital according to **Vitale M et al** . For some individuals, pruritus is the dominating health complaint after severe burn injury. Pruritus seems to be most severe in partial thickness burns; it

peaks at one to two weeks, i.e. during the time period when most wounds are healing, and diminishes gradually thereafter. Rebuilding of the skin continues for an extended time period, and pruritus has previously been said to persist up to 18 months after the burn. However, the clinical impression is that some patients continue to have severe pruritus even after several years, although there is limited information about its presence long after injury.

Pruritus after burn injury has been associated with some injury-related factors such as the extent of injury, time until wound closure, and burn localisation, but the underlying mechanism of pruritus is not well known. Psychological factors have been suggested to contribute to the complaint, particularly in chronic pruritus. In patients with atopic dermatitis, chronic idiopathic urticaria and hand dermatoses, stressful life events, emotional stress, symptoms of anxiety and depression, as well as personality factors, have thus been associated with increased pruritus.

It has also been shown that experimentally induced pruritus increases in healthy controls after experiencing a mental stress. Recent research reveals an increasingly complex picture where pruritus is subserved promoted by specific neural elements both peripherally and centrally and where there are many more mediators involved in addition

to histamine. The currently accepted view is that central mechanisms, direct effects of stress hormones, activation of pain-inhibitory systems and conditioning of behaviour are all involved and should be considered in the treatment of prolonged problems with pruritus.

7. Depression after burn injury

In more recent studies published after 1990 and using self-report instruments, depression prevalence rates vary between 2 % and 53 % the first month after the burn, and between 13 % and 34 % at 12 months post burn. Only a limited number of studies have used clinically administered semi-structured interviews. In a study from the US by **Fauerbach et al**, at the time of discharge from hospital four out of 95 patients (4%) were diagnosed with an ongoing major depression. A number of possible risk factors for post-burn depression have been examined with conflicting results, probably as a result of poor statistical power.

Pre-morbid psychopathology was not related to symptoms of depression in the studies by **Tedstone et al** and **Williams and Griffiths**, whereas **Fauerbach et al** reported that pre-burn affective disorder was significantly related to post-burn affective disorder. The latter is in agreement with general trauma literature. Inconsistencies have also been reported with respect to the role of burn severity and locus of burn.

The extent of physical injury seems to be of minor importance. However, when patients with premorbid psychopathology were excluded, one study reported that the presence of physical injury was the single best predictor for development of depression in a mixed sample of burn- and motor vehicle accident patients. In a study by **Madianos et al**, face disfigurement was significantly associated with the presence of psychiatric morbidity, at least during acute hospitalisation.

In a study of psychosocial adjustment five years after burn injury, significantly more patients with disfigurement on the hands or face reported symptoms of depression as compared to those with no visible burns.

8. acute stress disorder

The DSM-IV includes the diagnosis of ASD, which may be found as early as 3rd day following injury. Composed of dissociative, intrusive, avoidant, and arousal symptoms, the formulation of ASD emphasises dissociative symptoms. To be diagnosed with ASD, one must experience at least three of five possible dissociative symptoms but only one intrusive, avoidant and arousal symptoms. ASD was added to DSM-IV, at least on the basis of retrospective studies that documented the presence of dissociative symptoms including derealisation, depersonalisation, and

emotional numbing, and a reduction of awareness in one's surroundings following various types of accidents. **Speigel** and colleagues, have argued that a dissociative syndrome characterised by depersonalisation, derealisation, and psychic numbing is prominent immediately following a traumatic stressor.

8. Posttraumatic stress disorder

PTSD is classified together with the anxiety disorders in the DSM (Diagnostic and Statistical Manual of Mental Disorders) nosologic system, but differs from other anxiety disorders in that it has to be preceded by a traumatic event and that exposure to the traumatic event has to involve a threat to life or physical integrity. It also has to include a moment of intense fear or helplessness. Subsequently, the affected individual must suffer symptoms of intrusion and display avoidant behaviour and hyperarousal.

These symptoms must cause substantial subjective distress or functional impairment for at least four weeks. Lately, the term sub-threshold or partial PTSD has been used in order to fully cover those individuals who suffer from posttraumatic symptomatology, but without fulfilling all necessary criteria for full PTSD. The reason for this is based on criticism that the PTSD concept is too restrictive, since a number of

individuals who do not fulfil diagnostic criteria for full PTSD will exhibit clinically significant levels of impairment.

It has also been suggested that individuals who at one point exhibit some but not all criteria for PTSD are at risk for later development of a complete PTSD. Acute stress disorder (ASD) was introduced into the DSM-IV in 1994. The current diagnostic criteria for ASD are similar to the criteria for PTSD, although the criteria for ASD contain a greater emphasis on dissociative symptoms, and the diagnosis can only be given within the first month after a traumatic event.

The prevalence rates of PTSD in adult burn populations varied between 31 % and 45 %. In more recent studies using self-report instruments, frequencies vary between 2 % and 26% within the first month post burn and between 13 % and 33 % at the 12-month follow-up. Using the SCID-I methodology, **Fauerbach et al** reported a prevalence of 8 % at discharge from hospital and 20 % at the 12-month follow-up. Not unexpectedly, the figures for sub-threshold PTSD after burn injury are higher than those reported for full PTSD. A high co morbidity between PTSD and depression has been described both in burn patients and other trauma populations and questions have been raised regarding whether

PTSD and depression are separate disorders in the aftermath of trauma or part of a single general traumatic stress construct.

The risk factors for developing PTSD after a burn injury have been addressed by several studies. **Fauerbach et al** found that pre-burn affective disorder, but not anxiety disorders, increased the risk of post-burn PTSD, whereas **Perry et al** reported that subjective emotional distress and perceived social support after injury were related to the development of PTSD. In a study by **van Loey et al**, PTSD symptoms were predicted by anxiety measures and objective factors such as female gender, locus, and severity of injury.

In another study, cosmetic disfigurement was related to the manifestation of PTSD symptoms of avoidance and emotional numbing in females injured by burn. Furthermore, personality traits have been related to PTSD after burn.

A study by **Fauerbach et al** indicated that neuroticism was higher and extraversion was lower in patients who developed PTSD compared with those who did not develop PTSD. In addition, a study from our group revealed that coping style, life threat during the accident, and early symptoms appeared to be strong predictors of PTSD symptoms at three months after burn injury. Finally, screening for nightmares seems to be a

simple tool to identify individuals at high risk of having PTSD symptomatology.

9. Personality

A major function of personality is to solve major life tasks – the problems that confront individuals in everyday life – such as developing the capacity for satisfying relationships and establishing meaningful goals.

Assessment of various aspects of personality has become increasingly meaningful, since recent research has shown that personality traits are important predictors of health and treatment outcome. According to WHO, personality is defined as “the ingrained pattern of thought, feeling, and behaviour characterising an individual’s unique lifestyle and mode of adaptation, and resulting from constitutional factors, development, and social experience”. Biologically oriented personality theories tend to use a dimensional approach to classify and explain human behaviour.

The three-factor model, proposed by **Eysenck**, suggests that personality is a hierarchical structure in which a large number of specific

traits are organised into three higher-order factors, Extraversion, Neuroticism and Psychoticism.

The five-factor approach has arisen from two different traditions, a lexical analysis of the natural language and psychometrics of personality measures. The currently most studied product of this approach is **Costa and McCrae's** five factor model of Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness. According to the major Scandinavian personality theorist, **Henrik Sjöbring**, personality is conceived in terms of independent constitutional factors which are normally distributed. He postulated three such personality variants which he labelled Validity, Stability and Solidity. Partly based on the theories of **Sjöbring**, as well as on other theories on biologically based dimensions of personality, Daisy Schalling developed the Karolinska Scales of Personality (KSP). The KSP were primarily designed for the purpose of operationalising and measuring constructs defining vulnerability for different forms of psychopathology.

Recently, the KSP was subjected to further revision and development, thereby reducing the number of items and improving psychometric properties. Since the revisions were extensive, the new instrument was renamed the Swedish universities Scales of Personality

(SSP). A vital assumption in personality research is that basic personality traits are stable over time in adulthood. Empirical evidence supports this assumption with findings of substantial rank-order stability and small changes in mean levels over time as evaluated by different personality inventories in diverse cohorts. Personality traits have also been shown to be of importance in relation to burn trauma.

Persons with high neuroticism and extroversion scores are more likely than others to be exposed to traumatic events, and individuals afflicted by burn injury exhibit such personality traits to a greater extent than a normative sample. Furthermore, personality traits have been suggested to have an important impact on long-term physical and psychological outcome as well as on the use of healthcare after burn injury.

10.Coping

Coping is a complex process that is not so easily defined. It can, however, be understood from a predominant conceptual theory, the transactional view of coping. This theory by **Lazarus** describes coping as a psychological process that is an “ongoing cognitive and behavioural effort to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person”. Coping is

looked upon as neither positive nor negative in itself. The health consequences are dependent upon both the specific situation and the person who uses the coping strategy. In general, “problem focused coping” has been positively associated with health, whereas “avoidant”, “self controlling” and “support seeking” strategies have been negatively associated with health. The findings in the burn literature are somewhat contradictory with regard to problem focused coping and support seeking while avoidant coping is more consistently associated with poorer health.

11.Fear-avoidance

This concept originally evolved from pain research and represents fear of experiencing pain and avoiding situations that are associated with possible painful experiences. It has been shown to be related to poorer physical performance and self-reported disability. In a sample of burn patients, **Willebrand et al** found that fear-avoidance was related to poorer self rated health and longer sick leave. In this context fear-avoidance was adapted to the burn situation and referred to fear of re-injury or harm instead of pain.

ANATOMY

Skin anatomy and the burned skin

The skin is divided into three layers, of which the epidermis is the outermost.

The epidermis consists of a stratified squamous epithelium, which is anchored upon a basement membrane, and of which the superficial layers are sequentially sloughed off and replaced.

The epithelial cells, keratinocytes, produce keratin which forms the outer skin barrier that makes the skin waterproof and protects the deeper layers of the skin. Other cells in the epidermis are the melanocytes, which produce the skin's pigment melanin, Merkel cells, which are thought to be pressure receptors, and Langerhans' Cells, which are antigen presenting dendritic cells in the first line of the Body's immune defence. The so-called adnexa of the skin, i.e. hair follicles, Sweat and sebaceous glands, are of epidermal origin, although anatomically they are projections of the epidermis into the dermis. They are of considerable Importance in the treatment of burns, as the stem cell population from which skin regeneration occurs is predominantly located in the bulge region of the hair follicles. The epidermis is firmly attached to the next layer, the dermis, by a basal membrane.

The dermis mainly consists of connective tissue and its predominant components are collagen and elastic fibres, produced by connective tissue fibroblasts. The function of the dermis is above all mechanical; it gives the skin its strength, durability and elasticity. A number of different cell types are embedded in the dermis, or pass through the dermis.

The superficial part of the dermis has a relatively dense capillary bed, which has a key function in temperature regulation. A multitude of immune cells are mainly located around these superficial vessels. Afferent as well as efferent nerves transverse the dermis. Pain and itch are transmitted by free nerve endings of unmyelinated nerves in the superficial dermis, and special sensory bodies in the superficial dermis also transmit the sensation of pressure.

The third skin layer is the subcutaneous tissue, which connects the skin to the underlying structures and has a role in giving the skin its flexibility and elasticity as well as in defining the body's contours. The subcutaneous tissue does not have any cutaneous regenerative ability. The depth of a burn is described in relation to the anatomical layer that is irreversibly damaged.

1st degree burns:

Epidermal burns are limited to the epidermis. The skin may “peel” after about a week, which represents the sloughing of the damaged epidermal cells.

2nd degree superficial burns:

Superficial partial thickness burns are limited to the upper layers of the dermis. The circulation and the sensory nerves of the skin are intact, making these injuries extremely painful. As the stem cell pool of the deeper parts of dermis also is intact, these burns heal within about two weeks and usually no scarring occurs, but the healed skin can itch for some time after injury.

2nd degree deep burns:

Deep partial thickness burns involve most of the dermis. As these injuries can affect almost the entire dermis, the sensory nerve endings in this layer of the skin are damaged and these burns are therefore characterised by a loss of sensation in the burned area. The hair follicle stem cell pool is also affected, so that repopulation of the damaged area by keratinocytes either does not occur, or it occurs at a very slow rate and is then accompanied by scarring and wound contracture.

To decrease healing time and the risk of severe wound contractures, skin is grafted to the wound bed and the healed skin will therefore have fewer or no skin appendages and fewer nerve endings, depending on the depth of the burn and the thickness of the skin grafts. Nerve regeneration after deep dermal burns has been discussed as a factor in the development of itching during healing of the skin, as well as during development of hypertrophic scars.

3rd degree burns:

Full thickness burns destroy the entire dermis and the underlying subcutaneous tissue, and these injuries therefore require grafting. The extent of damage to the subcutaneous tissue has a considerable impact on the final appearance. If all subcutaneous tissue is lost, the skin grafts are placed directly onto the underlying muscle fascia. This causes an altered body contour and a loss of skin flexibility, as the healed skin will adhere directly to the muscle and follow its movements. Furthermore, as in deep dermal burns, the grafted, healed skin will have fewer or no skin appendages and sensory nerve endings.

In both deep dermal and full-thickness burns, wound healing will always be accompanied by scarring and a tendency to contract. The scars are usually red and raised for at least six months, until the scar matures. The redness disappears and the scar becomes softer and flatter.

MATERIALS AND METHODS

Materials

Patients admitted in kilpauk medical collage burns department during the period of December 2009 to February 2010 were taken for the study.

Inclusion criteria

- All patient 15years and above were included
- All patients with suicide history were included

Exclusion criteria

- All patients below the age of 15 were excluded as major and common psychiatric problems rarely occur in this group
- Patients who were not willing for participation were excluded

Methods

Patients were assessed with a fixed set of questioner to diagnose pre burn psychosocial and undiagnosed psychiatric illness.

At the 5th, 30th, 90th post burn day they were assessed by psychiatrist for any mental illness and managed accordingly.

Burn survivor were asked to review after one year and assessed by the psychiatrist.

OBSERVATION

Total number of patients admitted during the period of December 2009 and February 2010 were 114 and male were 34 patients and females were 80 patients, only 20 patients survived among them 9 were males and 11 were females.

TABLE -I

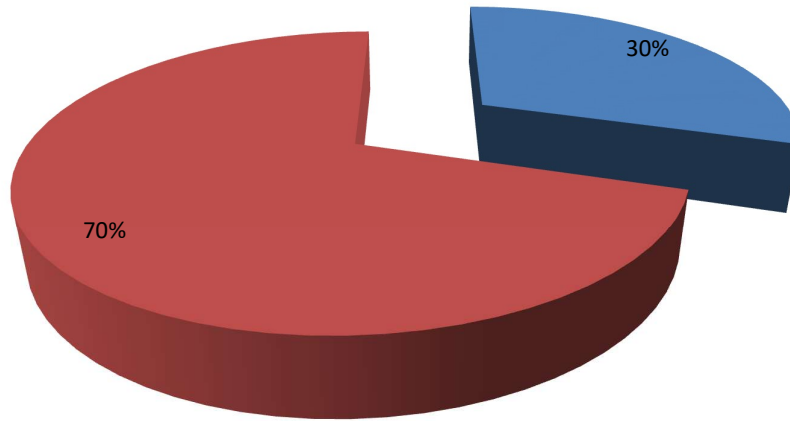
Sex distribution

Sex	No of cases
Male	34
Female	80

Among 114 cases of suicidal burns in this study 34(30%) were male and 80 (70%) were female patients. Female patients were considerably more in suicidal burns

SEX DISTRIBUTION

■ MALE ■ FEMALE



AGE DISTRIBUTION

■ 15-20 ■ 21-30 ■ 31-40 ■ >40

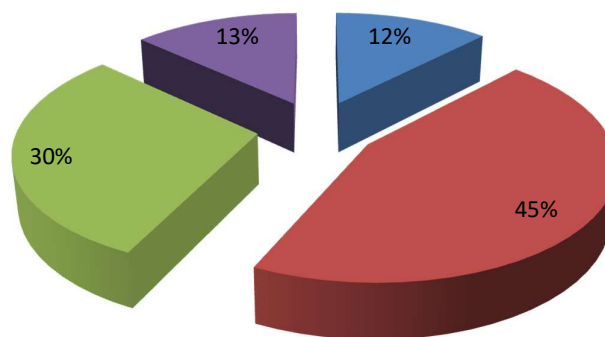


TABLE-II

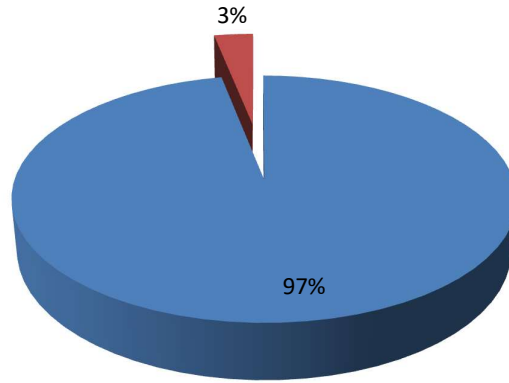
Age distribution

Age	Total	Male	Female
15-20	14(12%)	3	11
21-30	51(45%)	13	38
31-40	34(30%)	14	20
>40	15(13%)	5	10

Among the cases 12% of the patients were in the age group of 15-20 years,45% of the patients were in the age group of 21-30 years,30% of patients were in the age group of 30-40 years and 15% of patients above 40 years. The incidence of suicidal burns is high in the age group of 21 to 30 years and declining thereafter.

MARRITAL STATUS

■ MARRIED ■ UNMARRIED



EDUCATION

■ PRIMARY ■ SECONDARY ■ COLLEGE ■ UNEDUCATED

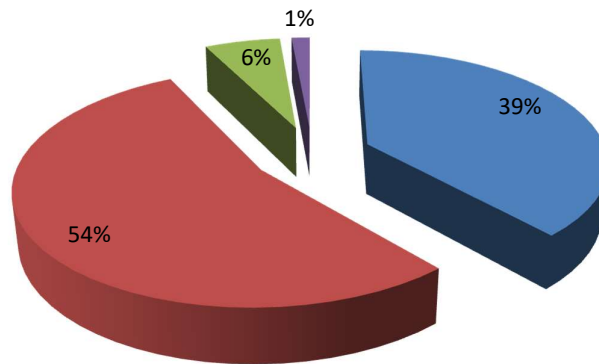


TABLE-III

Marital status

Sex	Total	Males	Females
Married	100(88%)	29	71
Unmarried	14(12%)	5	9

Among cases 88% of the suicidal burns victims were married and only 14% were unmarried. There were a significantly high percentage of suicidal burns in married individual. But among the individual sex group there were no significant difference.

TABLE-IV

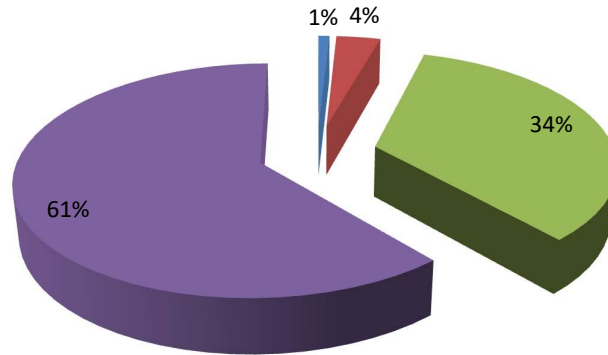
Education status

Education	total	Male	Female
Primary	32(28%)	12	20
Secondary	45(40%)	10	35
Collage	5(4%)	0	5
Uneducated	32(28%)	12	20

Among the cases 40% of the patients had secondary education, 28% for both primary and uneducated patients and 4% only had college education. There is a significant difference in higher education and lower education and uneducated group. Putting together primary and uneducated and comparing with secondary education there was no significant difference. In college group there were no male patients.

EMPLOYMENT

■ SKILLED ■ SEMI SKILLED ■ UN SKILLED ■ DEPENDENT



PERMORBID PSYCHOPATHOLOGY

■ NO PSYCHIATRIC DIAGNOSIS ■ MAJOR DEPRESSION
■ GENDER IDENTITY DISORDER ■ POST TRAUMATIC DISORDER
■ PERSONALITY DISORDER ■ SUBSTANCE ABUSE

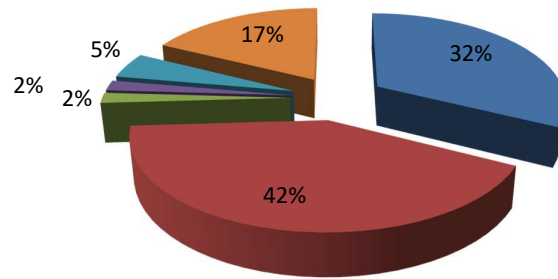


TABLE-V

Employment status

Employment	Total	Male	Female
Skilled	1(<1%)	0	1
Semi skilled	4(4%)	2	2
Un skilled	39(34%)	27	12
dependent	70(61%)	5	65

Among the cases 70% of them were dependents and 39% were un skilled labourers 4% were semi skilled and <1% skilled ie 1 patient. Of this majority of male patients were employed prior to burn injury and majority of female patients were dependents.

TABLE-VI

Pre existing psychiatric illness

Diagnosis	Total
No psychiatric diagnosis	35
Major depression	45
GID	2
PTSD	2
Personality disorder	5
Substance abuse	19
Schizophrenia	6
Others	nil

Among the cases 45% of the patients were diagnosed with major depression and 19% had substance abuse problems and 26% had pre diagnosed psychiatric illness and were on treatment at the time of admission.

TABLE-VII

Percentage of burns distribution in victims

percentage	Total	male	Female
<25%	9(8%)	5	4
25-50%	27(24%)	7	20
>50%	78(68%)	22	56

Among the suicidal burns patients in our study 68% were above 50% burns,24% were 25-50% burns and only 8% were less than 25%.

PERCENTAGE OF BURNS

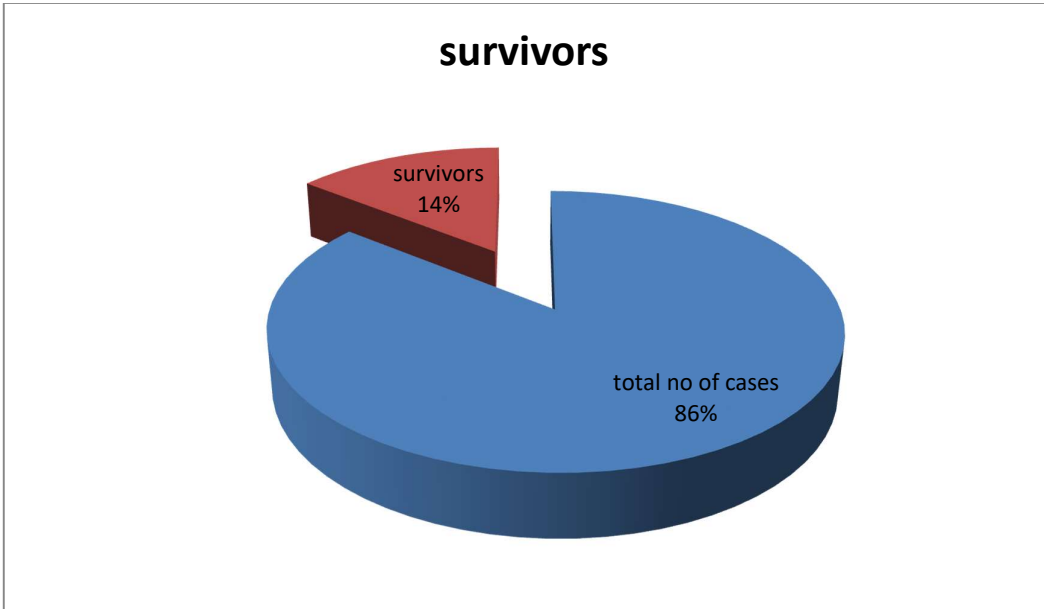
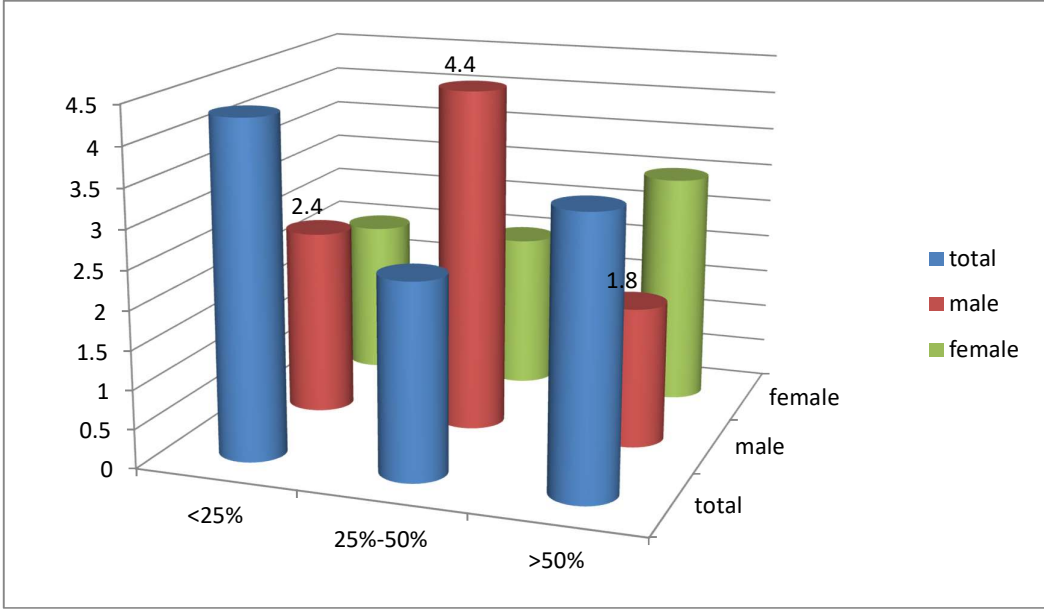


TABLE-VIII

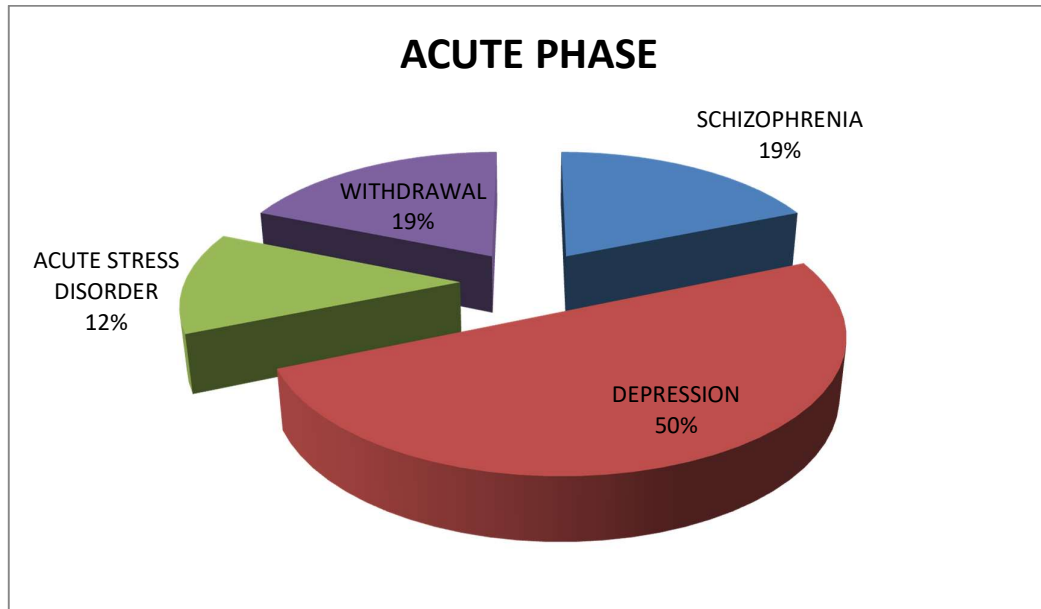
Survivors

cases	total	Males	Females
Total cases	114	34	80
survivors	19	8	11

Among the cases total no of survivor were 19 patients among which 8 were male patients and 11 were female patients

TABLE-IX

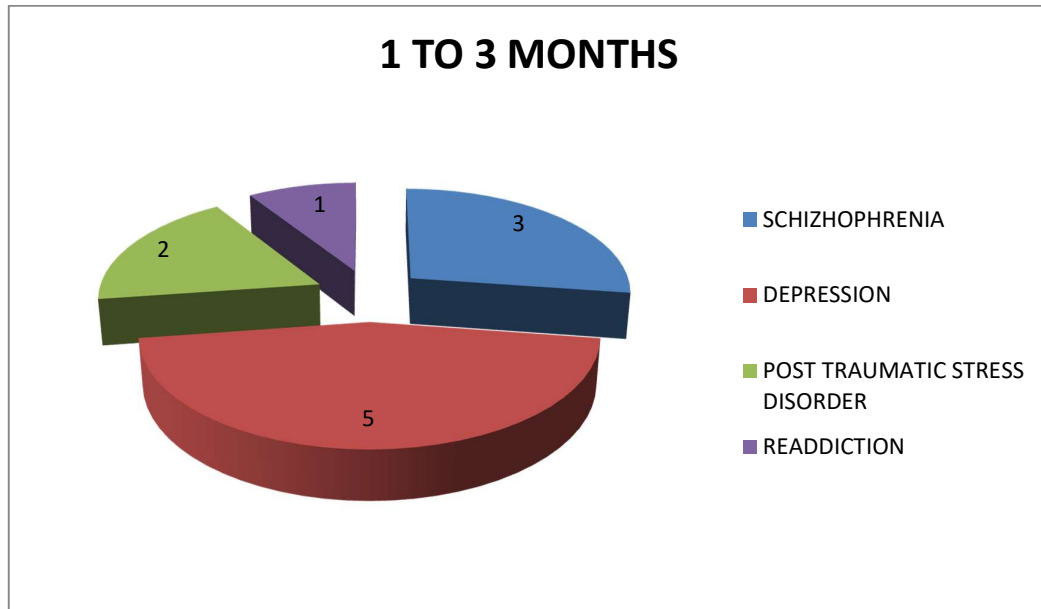
Acute phase psychiatric illness in survivors within one month



Among the 19 survivors 50% of them developed depression(8 cases),19% had pre existing schizophrenia and continued no new case was reported, 19% had withdrawal particularly male patients and 12% developed acute stress disorder (2 cases).

TABLE-X

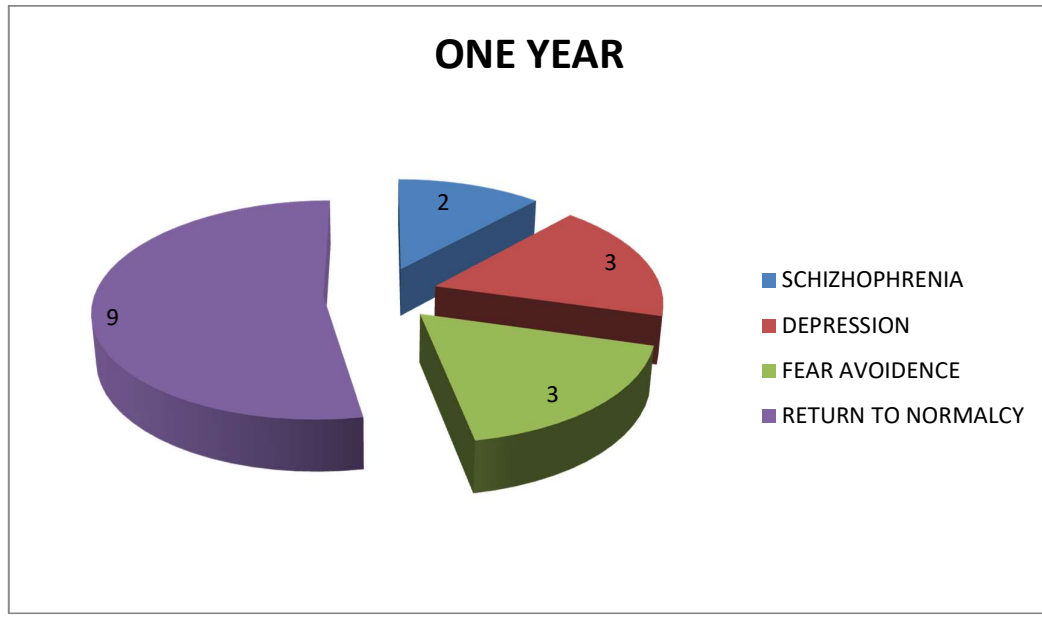
Psychiatric illness after 1 to 3 months of survival



Among the 19 survivors 3 continued to have schizophrenia and were on medication, 5 patients had depression(26%), 2 patients had post traumatic stress disorder (11%) and 1 patient went in for readdiction.

TABLE-XI

At one year follow up



Among the cases 5 cases were lost for follow up and in the remaining patients 2 were on treatment for schizophrenia, 3 patients had depression, 3 patients had fear avoidance they never went back near any fire and 9 patients returned to their normalcy.

DISCUSSION

As the English say goes as” *normal people seldom get burned*” the psychopathological aspects of suicidal burn victims were analysed from the period of December 2009 to February 2010 in government kilpauk medical college hospital department of burns and reconstructive surgery. This study is necessitated due to large number of suicidal burns admitted in the second largest burns department in India and for understanding the association of various psychosocial factors in suicidal burns and analyse their outcomes.

Incidence

The incidence of suicidal burns all over the world is about 4% in our part of the country it is 25% according to a study done in south India by **Dr. R. Raja shanmugakrishnan et al** (2008). In our study the total incidence of suicidal burns accounted for (114 patients) 30% with overall 386 admissions which is more compared to the international statistics and to domestic statistics.

Age

On analysing age distribution suicidal burns were more common in the 20 to 40 years of life accounting to 75 % of the total burn victims. Reason being marital and social problems is more in this age group.

Sex

On analysing the incidence in gender female population were more than male accounting to 70% females and 30% males. As females are more exposed to social problems in our conservative society.

Marital status education

Marital status has a big influence in suicidal burns, 88% of them were married at the time of injury. And most of them were uneducated or had only primary education accounting to 56% of burn victim and higher education seems to have a low prevalence of suicidal burns (4%).these two factors contribute to psychosocial stress in lack of education may not provide good employment and marital commitments may increased need to provide for the family thus increasing stress.

Socioeconomic status and employment

All of these patients were low socioeconomic group and considering the employment 61% were dependent and most of them were females. 34% were unskilled labourers, in this majority were males, this indicates that women are in more social and financial stress than men as they are dependent on their spouse for their livelihood. In this group most of husbands of the victims were alcoholic thus increase the financial burden on the women.

All above said problems are interrelated to each other contributing to one another e.g., poor education – poor work - poor income – poor family status leading to stress and inability to provide – unable to support children education and so on thus leading to psychosocial problems.

Per morbid psychiatric problems

Feuerbach et al reported 64% psychiatric disorders, 31% alcohol abuse and 41% for dependence in other studies by **Kessler et al** and **Kriglen et al** were 48% and 52% for psychiatric disorder, 17% and 18% for depression and 24% and 23% for alcohol abuse and dependence. In our study the incidence of psychiatric disorders were 15%, for depression 39% and for alcohol abuse and dependence 17% of which alcohol was the

major problem in male and depression being common in marital dispute and low socioeconomic group. Even though the incidence of alcohol related suicides are low compared to other study it still contribute indirectly to the psychosocial problems to the spouse and increasing the risk of suicidal burns. In males alcohol related problems were more than other disorders.

Mortality

On analysing mortality rate in suicidal burns victims it was found to be 68% very high compared other studies by **Subramanian et al** (56.5%) in Solpur, **Bilwani et al** (58.26) in Ahmadabad and **Jayaraman et al** (52.33%) in Chennai but less than the mortality reported by **puri et al** (90.5%) in Pune. The high mortality rate was found to be related to the high percentage(68% sustained >50% TBSA) of burns the suicidal burns victims sustain the reason being intention to die in some instance they sustain less percentage for instance in an attempt to threaten their spouse they impulsively burn them self to gain their attention.

Acute phase

On analysing the incidence of acute psychiatric problems in hospitalised suicidal burn victims depression was a major problem with

50% within a month and 26% in three months when compared to **Faurebach et al** it varies from 2% to 53%. This was more common in female patients. Withdrawal accounted to 19% and all of them were male survivors with less than 25% TBSA. Acute stress disorder accounted for 12% in this study it was less compared to 18% to 26% in Greek, US and Dutch samples. Post traumatic stress disorder(PTSD) in our study was 11% it was less when compared to 15% to 20% Dutch and Greek samples PTSD was seen in patients who survived >40%TBSA in our study.

Recovery phase

On analysing these patients 5 patients were lost for follow up in the remaining 14 patients 48% of them returned to their normal life style and 16% of the patient had fear avoidance they never went back to cook or even lit sacred fire in temple. 16% had residual depression reason being all 3 patients under went repeated surgery for contractures etc, and 2 patients were continuing treatment for schizophrenia.

CONCLUSION

Premorbid psychopathology

Compared with the general population, burn patients have a high rate of premorbid psychopathology. Patients with pre-existing psychopathology typically cope with hospitalization through previously established dysfunctional and disruptive strategies. The most common premorbid psychiatric diagnoses are depression, personality disorders, and substance misuse. Prior psychopathology can have an adverse impact on outcomes, including longer hospitalizations and the development of more serious psychopathologies after injury. In our study alcohol abuse and marital disputes were the main contributors for the pre existing psychopathology of our patients. Analyzing the precipitating events that led to suicide in depth may help to diagnose unrevealed pre morbid psychopathology in the burns patients and help in management.

Resuscitative or critical stage

The psychological characteristics of this stage include stressors of the intensive care environment, uncertainty about outcome, and a struggle for survival. The intensive care environment can be both overstimulating and understimulating with the monotony of lying in a hospital bed for weeks. Cognitive changes such as extreme drowsiness, confusion, and disorientation are common during this phase. More severe cognitive changes such as delirium and brief psychotic reactions also occur, usually as a result of infections, alcohol withdrawal, metabolic complications, or high doses of drugs.

In depth psychological intervention is of minimal value at this phase, since physical survival is the primary goal. Patients should be encouraged to cope with the frighteningly unusual circumstances of the intensive care unit through whatever defenses are available to them, even primitive strategies such as denial and repression. Supportive psychological interventions should focus on immediate concerns, such as sleep, pain control, and protecting patients' coping strategies.

Acute stage

The acute phase of recovery focuses on restorative care, but patients continue to undergo painful treatments. As patients become more alert during this phase, they face these procedures with less sedation. Also, patients are more aware of the physical and psychological impact of their injuries.

Depression and anxiety—Symptoms of depression and anxiety are common and start to appear in the acute phase of recovery. Acute stress disorder (occurs in the first month) and post-traumatic stress disorder (occurs after one month) are more common after burns than other forms of injury. Patients with these disorders typically have larger burns and more severe pain and express more guilt about the precipitating event. The severity of depression is correlated with a patient's level of resting pain and level of social support.

Sleep disturbance—Central to both anxiety and depression is sleep disturbance. The hospital environment can be loud, and patients are awakened periodically during the night for analgesia or for checking vital signs. Patients' mood, agitation, and nightmares can all affect sleep.

In our study the acute phase depression, withdrawal, acute stress reaction and post traumatic stress disorder were more common in the early phase of recovery and hence early intervention by providing psychosocial support and medical management help in the cooperation of these patients, Additional measures of giving proper counseling to the nearest family members of the patient may improve cooperation of the patient and hence help in faster recovery.

Long term rehabilitation

The long term stage of recovery typically begins after discharge from hospital, when patients begin to reintegrate into society. For patients with severe burns, this stage may involve continued outpatient physical rehabilitation, possibly with continuation of procedures such as dressing changes and surgery. This is a period when patients slowly regain a sense of competence while simultaneously adjusting to the practical limitations of their injury. The first year after hospitalisation is a psychologically unique period of high distress. Physical problems—Patients face a variety of daily hassles during this phase, such as compensating for an inability to use hands, limited endurance, and severe itching. Severe burn injuries that result in amputations, neuropathies, heterotopic ossification, and scarring can have an emotional and physical effect on patients.

Psychosocial problems—In addition to the high demands of rehabilitation, patients must deal with social stressors including family strains, return to work, sexual dysfunction, change in body image, and disruption in daily life. Many people continue to have vivid memories of the incident, causing distress. Patients may also develop symptoms of depression. There is evidence that adjustment to burn injuries improves over time independent of the injury size. Social support is an important buffer against the development of psychological difficulty.

Adjustment difficulties that persist more than a year after discharge usually involve perceptions of a diminished quality of life and lowered self esteem. Some studies suggest that burn disfigurement in general leads to decreased self esteem in women and social withdrawal in men.

In our study deformity related depression were more after recovery hence prevention of deformity with usage of appropriate splintage, wound management, early grafting and intense physiotherapy will produce a drastic change in their wellbeing and coping ability and help long term rehabilitation and return to normalcy.

In summary

- early identification of pre morbid psychopathology
- management of acute stage psychiatric problems
- proper counseling of patient and their nearest family members
- deformity prevention by various methods mentioned above
- intense deaddiction programme and prevention of relapse
- psychiatric evaluation of all suicidal burns patients will ensure better functional outcome

When addressed properly we can improve the survival rate of suicidal burn victims and return them to normalcy at the earliest.

BIBLIOGRAPHY

1. Batra AK. Burn mortality: recent trends and sociocultural determinants in rural India. *Burns* 2003;29:207-5
2. Bilwani PK, Gupta R, Epidemiological profile of burn patients in LG Hospital, Ahamadabad. India *J Burns* 2003;11:63-4
3. Bhattacharya S, Ahuja RB, Management of burns disaster. *Indian J Burns* 2003;11:57-60
4. Fauerbach JA, Lawrence J, Haythornthwaite J, McGuire M and Munster A. Pre injury psychiatric illness and post injury adjustment in adult burn survivors. *Psychosomatics*. 1996. 37: 547-555.
5. Fauerbach JA, Lawrence J, Haythornthwaite J, Richter D, McGuire M, Schmidt C, et al. Preburn psychiatric history affects posttrauma morbidity. *Psychosomatics*. 1997. 38: 374-385.
6. Gupta M, Guta OK, Yaduwanshi RK, Upadhyaya J. Burn epidemiology: The pink city scene. *Burns* 1993;19:47-51
7. Hanumandass ML. Some thought on organization of delivery of burn care in India. *Indian J Burns* 2003;11:18-20

8. Horner BM, Ahmadi H, Mulholland R, Myers SR and Catalan J. Casecontrolled study of patients with self-inflicted burns. *Burns*. 2005. 31: 471-475.
9. International Classification of Impairments, Disabilities and Handicaps. 1980, Geneva: World Health Organization.
10. Jayaraman V, Ramakrishnan MK, Davis MR. Burns in Madras, India: An analysis of 1368 patients in one year. *Burns* 1993;19:339-44
11. Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey. *Arch Gen Psychiatry*. 1994. 51: 8-19.
12. Kildal M, Andersson G and Gerdin B. Health status in Swedish burn patients. Assessment utilising three variants of the Burn Specific Health Scale. *Burns*. 2002. 28: 639-645.
13. Kildal M, Willebrand M, Andersson G, Gerdin B and Ekselius L. Personality characteristics and perceived health problems after burn injury. *J Burn Care Rehabil*. 2004. 25: 228-235.
14. Kringlen E, Torgersen S and Cramer V. A Norwegian psychiatric epidemiological study. *Am J Psychiatry*. 2001. 158: 1091-1098.

15. Kumar V. Burnt wives: A study of suicides. *Burns* 2003;29:31-5
16. Malt UF. Long-term psychosocial follow-up studies of burned adults: review of the literature. *Burns*. 1980. 6: 190-197.
17. Patterson DR, Finch CP, Wiechman SA, Bonsack R, Gibran N and Heimbach D. Premorbid mental health status of adult burn patients: comparison with a normative sample. *J Burn Care Rehabil*. 2003. 24: 347-350.
18. Patterson DR, Everett JJ, Bombardier CH, Questad KA, Lee VK and Marvin JA. Psychological effects of severe burn injuries. *Psychol Bull*. 1993. 113: 362-378.
19. Perry S, Difede J, Musngi G, Frances AJ and Jacobsberg L. Predictors of posttraumatic stress disorder after burn injury. *Am J Psychiatry*. 1992. 149: 931-935.
20. Puri V. A retrospective analysis of suicidal burns in Indian women. *Indian J plast Surg* 2000;33:73-7
21. P.K. Dalal, Rahul saha, Manu Agarwal; Psychiatric aspects of burns. *Indian J Plast* 2010;43:s136-142

22. R. Raja shanmugakrishnan, V. Narynan, P. Thirumalaikolundus-ubramanian: Epidemiology of burns in a teaching hospital in south India. *Indian J plast*;2008;41:34-7
23. Spiegel D, Cardena E, Spitzer R. Brief reactive dissociative disorder. *DSM-IV source Book*. Washington (DC): American psychiatric Association: 1992
24. Subrahmanyam M. Epidemiology of burns in a district Hospital in western India. *Burns* 1996;22:439-42.
25. Tedstone JE and Tarrier N. An investigation of the prevalence of psychological morbidity in burn-injured patients. *Burns*. 1997. 23: 550-554.
26. Total burn care, D.N. Herndon, Editor. 2002, W.B. Saunders: London. 40-50.
27. Van Loey NE, Maas CJ, Faber AW and Taal LA. Predictors of chronic posttraumatic stress symptoms following burn injury: results of a longitudinal study. *J Trauma Stress*. 2003. 16: 361-369.
28. Vitale M, Fields-Blache C and Luterman A. Severe itching in the patient with burns. *J Burn Care Rehabil*. 1991. 12: 330-333.

29. Wiechman SA, Ptacek JT, Patterson DR, Gibran NS, Engrav LE and Heimbach DM. Rates, trends, and severity of depression after burn injuries. *J Burn Care Rehabil.* 2001. 22: 417-424.
30. Williams EE and Griffiths TA. Psychological consequences of burn injury. *Burns.* 1991. 17: 478-480.
31. Willebrand M, Andersson G, Kildal M, Gerdin B and Ekselius L. Injuryrelated fear-avoidance, neuroticism and burn-specific health. *Burns.* 2006. 32: 408-415.

PROFORMA

Name :

Age :

Sex :

Address :

Ip no :

Date of admission :

Date of discharge :

Date of death :

Date of ama :

Occupation/Education:

Income/employment detail:

Parents name/occupation/Education:

Other members in family:

Are you married yes/no

If married

1) Was married life happy yes/no

2) How frequently do quarrels crop up between you and your spouse

(a) Never

(b) Rare

(c) Frequent

(d) Always

3) If there is quarrel what is the reason

(a) Addiction

(b) Alcohol

(c) Smoking

(d) Suspicion

(e) Gambling

(f) Misunderstanding

(g) In laws problem

(h) Others

4) Do any other family members have psychological problems

5) Do you live with your spouse

6) If separate what is the reason

If not married

1. Are you worried of your marriage yes/no

2. Love failure yes/no

3. Not satisfied with your occupation reason

4. Hurdles in education

5. Economic problem

6. Problem with parents

7. Deserted by others

Prior to incident

Have you ever felt desperate in your life

1. Have you ever had suicidal ideas before
2. Have you ever attempted suicide yes/no

If yes

- a) How
 - b) How many times
 - c) When
 - d) What is the out come
3. Did you have the ability to face the problem

Medical history

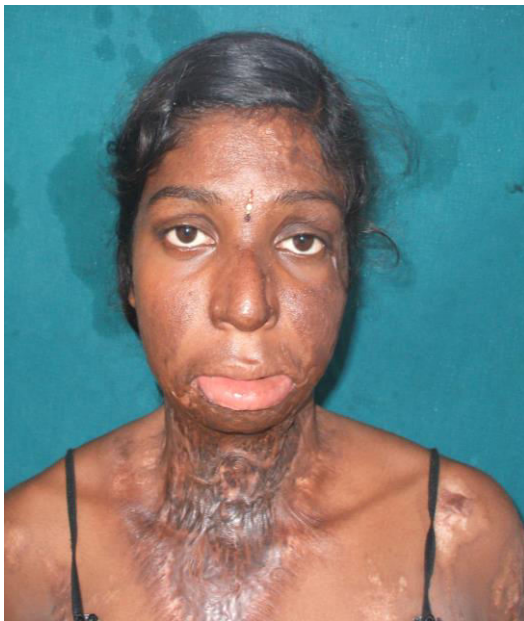
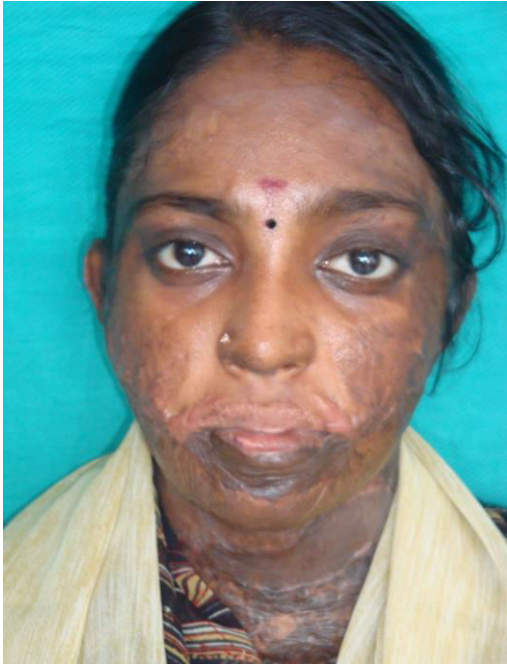
1. Do you have any chronic illness yes/no
2. Do you have any mental illness yes/no
3. Do you have any addiction problem yes/no

Physical(Burn related)

- a) How did the incident occur
- b) How much % of burns
- c) What are the parts affected

- d) What was the intention of act to die/threaten
- e) Did your mind change during the incidence
- f) Did you take any effort to save yourself
- g) Did anybody come to rescue
- h) Why did you prefer this method
 - (a) Easily available
 - (b) Definite risk of death
 - (c) Momentary decision

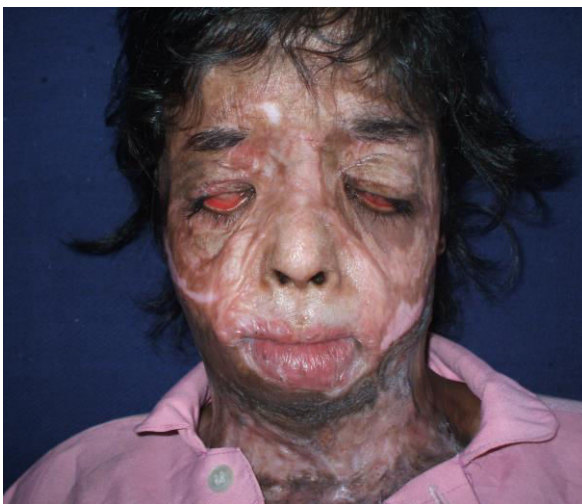
POST BURN DISFIGUREMENT



FUNCTIONAL IN ABILITY



POST BURN DEFORMITY



MASTER CHART

sl no	name	age	sex	ip no	marit	economic status	education	employment	previous medica	previous pshychiatric illness	substance abuse	percer	type	mode	reason	survival
1	thenmozhi	32	f	30000	m	low income	primary	dependent	nil	depression	nil	75	flame	sucidal	husband alcoholic	d
2	catherin	25	f	30051	m	low income	secondary	un skilled	nil	nil	nil	100	flame	sucidal	supect infidelity	d
3	jeyanthi	15	f	30060	um	low income	secondary	student	chronic abd pain	depression	nil	90	flame	sucidal	abd pain	d
4	vijayakumari	35	f	30114	m	low income	un educated	un skilled	nil	nil	nil	100	flame	sucidal	husband alcoholic	d
5	anjalidevi	29	f	30149	m	low income	secondary	dependent	nil	nil	nil	81	flame	sucidal	husband hass affair	d
6	malini	25	f	30179	m	middle class	secondary	dependent	nil	depression	nil	40	flame	sucidal	supect infidelity	s
7	subramani	38	m	30192	m	low income	secondary	un skilled	nil	depression	alcoholic	22	flame	sucidal	influence of alcohol	s
8	gessy	33	f	30293	m	middle class	secondary	dependent	nil	nil	nil	100	flame	sucidal	quarrel wih spouse	d
9	nazeema	19	f	30366	um	low income	secondary	dependent	nil	depression	nil	51	flame	sucidal	supect infidelity	d
10	anjalai	55	f	30430	m	low income	secondary	un skilled	nil	schizophrenia	nil	43	flame	sucidal	quarrel wih spouse	d
11	angappan	28	m	30464	m	low income	secondary	un skilled	nil	personality disorder	alcoholic	100	flame	sucidal	quarrel wih spouse	d
12	mariammal	32	f	30538	m	low income	un educated	dependent	nil	nil	nil	50	flame	sucidal	qurral with husband	d
13	leema	26	m	30387	m	middle class	secondary	dependent	nil	nil	nil	33	flame	sucidal	quarrel wih spouse	s
14	kalpana	26	f	30687	m	low income	primary	dependent	nil	depression	nil	45	flame	sucidal	quarrel wih spouse	d
15	boopalan	21	m	30389	um	low income	primary	dependent	nil	nil	nil	80	flame	sucidal	love failiure	d
16	vanitha	42	f	30694	m	low income	primary	dependent	nil	nil	nil	50	flame	sucidal	quarrel wih spouse	d
17	annaporna	38	f	36	m	low income	primary	dependent	nil	depression	nil	90	flame	sucidal	quarrel wih spouse	d
18	neelavathy	37	f	101	m	low income	primary	dependent	nil	nil	nil	100	flame	sucidal	quarrel wih spouse	d
19	mariammal	35	f	110	m	low income	un educated	dependent	stomach pain	depression	nil	65	flame	sucidal	stomach pain	d
20	arthi	23	f	111	um	low income	primary	dependent	nil	gender identity disorder	nil	90	flame	sucidal	social fmily problem	d
21	latha	52	f	132	m	upper class	degree	dependent	nil	nil	nil	70	flame	sucidal	quarrel wih spouse	d
22	bhuvaneshwari	22	f	141	m	low income	un educated	dependent	nil	depression	nil	70	flame	sucidal	quarrel wih spouse	d
23	dharman	58	m	162	m	low income	un educated	un skilled	nil	nil	alcoholic	50	flame	sucidal	quarrel wih spouse	d
24	ashok kumar	27	m	213	um	low income	primary	un skilled	nil	nil	alcoholic	100	flame	sucidal	love failiure	d
25	elumalai	28	m	226	m	low income	primary	un skilled	nil	nil	alcoholic	45	flame	sucidal	quarrel wih spouse	s
26	kamala	18	f	228	um	low income	secondary	un skilled	nil	PTSD	nil	79	flame	sucidal	work related adulatory	d
27	gomathi	30	f	233	m	low income	secondary	dependent	nil	depression	nil	61	flame	sucidal	quarrel wih spouse	d
28	suguna	52	f	260	m	low income	secondary	dependent	nil	nil	nil	50	flame	sucidal	quarrel wih spouse	ama
29	suseela	22	f	349	um	middle class	degree	dependent	nil	depression	nil	75	flame	sucidal	love failiure	d
30	manjula	25	f	370	m	low income	primary	dependent	nil	depression	nil	98	flame	sucidal	quarrel wih spouse	d
31	ponnamal	26	f	449	m	low income	secondary	dependent	nil	nil	nil	68	flame	sucidal	quarrel wih spouse	d
32	vijayalakshmi	20	f	495	m	low income	secondary	dependent	nil	depression	nil	95	flame	sucidal	quarrel wih spouse	d
33	sutha	22	f	500	m	low income	secondary	dependent	nil	depression	nil	100	flame	sucidal	quarrel wih spouse	d
34	mallika	35	f	512	m	low income	un educated	un skilled	nil	depression	nil	100	flame	sucidal	depression	d
35	selvaraj	30	m	614	m	low income	un educated	un skilled	nil	nil	alcoholic	95	flame	sucidal	quarrel wih spouse	d
36	lakshmi	50	f	670	m	low income	un educated	dependent	nil	depression	nil	90	flame	sucidal	quarrel wih spouse	d
37	varatharajan	17	m	678	um	low income	primary	dependent	nil	depression	nil	100	flame	sucidal	depression	d
38	mythili	31	f	684	m	middle class	degree	dependent	nil	nil	nil	100	flame	sucidal	quarrel wih spouse	d
39	vasantha	25	f	689	m	low income	un educated	dependent	nil	nil	nil	100	flame	sucidal	quarrel wih spouse	d
40	rajalakshmi	20	f	716	um	middle class	secondary	dependent	nil	depression	nil	100	flame	sucidal	love failiure	d
41	subramani	40	m	732	m	low income	un educated	un skilled	nil	depression	alcoholic	6	flame	sucidal	influence of alcohol	s
42	sundari	48	f	741	m	low income	un educated	dependent	nil	nil	nil	100	flame	sucidal	financial debt	d
43	ramamoorthi	60	m	825	m	low income	un educated	un skilled	nil	nil	alcoholic	91	flame	sucidal	quarrel wih spouse	d
44	ravi	40	m	826	m	low income	un educated	un skilled	nil	depression	alcoholic	100	flame	sucidal	financial debt	d
45	suguna	19	f	845	m	low income	collage	dependent	nil	nil	nil	97	flame	sucidal	supect infidelity	d

sl no	name	age	sex	ip no	marit	economic status	education	employment	previous medica	previous pshychiatric illness	substance abuse	percer	type	mode	reason	survival
46	nagaraj	29	m	849	m	low income	primary	un skilled	nil	nil	alcoholic	90	flame	sucidal	quarrel wih spouse	d
47	parimalam	36	f	864	m	low income	un educated	dependent	nil	depression	nil	90	flame	sucidal	quarrel wih spouse	d
48	sholaiammal	25	f	884	m	low income	secondary	dependent	nil	depression	nil	90	flame	sucidal	quarrel wih spouse	d
49	shanthi	25	f	888	m	low income	un educated	dependent	nil	nil	nil	80	flame	sucidal	quarrel wih spouse	d
50	valli	39	f	890	m	low income	un educated	dependent	nil	depression	nil	100	flame	sucidal	quarrel wih spouse	d
51	jayamoorthy	20	m	910	um	low income	primary	dependent	nil	personality disorder	alcoholic	50	flame	sucidal	love failiure	d
52	devan	40	m	952	m	low income	primary	un skilled	nil	nil	alcoholic	78	flame	sucidal	quarrel wih spouse	d
53	suresh	27	m	955	m	low income	un educated	un skilled	nil	nil	alcoholic	100	flame	sucidal	quarrel wih spouse	d
54	anushya	28	f	981	m	middle class	collage	skilled	nil	depression	nil	43	flame	sucidal	quarrel wih spouse	d
55	poongavanam	20	f	984	m	low income	secondary	un skilled	nil	nil	nil	38	flame	sucidal	quarrel wih spouse	s
56	bhagyalakshmi	35	f	995	m	low income	un educated	dependent	nil	depression	nil	100	flame	sucidal	quarrel wih spouse	d
57	bhuvaneshwari	18	f	1097	m	low income	secondary	dependent	nil	nil	nil	100	flame	sucidal	quarrel with mother	d
58	rajeshwari	28	f	1105	m	low income	secondary	dependent	nil	schizophrenia	nil	50	flame	sucidal	mental illness	d
59	selvi	35	f	1174	m	low income	secondary	semi skilled	nil	nil	nil	49	flame	sucidal	quarrel wih spouse	d
60	murugammal	34	f	1253	m	low income	primary	dependent	nil	depression	nil	32	flame	sucidal	threten spouse	s
61	elanjiammal	29	f	1262	m	low income	primary	dependent	nil	depression	nil	86	flame	sucidal	quarrel wih spouse	d
62	ruth mary	30	f	1269	m	low income	primary	dependent	nil	depression	nil	43	flame	sucidal	quarrel wih spouse	s
63	saraswathi	70	f	1413	m	low income	un educated	dependent	nil	PTSD	nil	45	flame	sucidal	loss of spouse	d
64	kalem muhammad	33	m	1418	m	low income	un educated	un skilled	nil	nil	alcoholic	100	flame	sucidal	quarrel wih spouse	d
65	pappu	20	f	1449	um	low income	secondary	dependent	nil	nil	nil	69	flame	sucidal	supect infidelity	d
66	chandrasedkar	30	m	1459	m	low income	secondary	un skilled	nil	native rx for deaddiction	alcoholic	67	flame	sucidal	irrelevent speech for	d
67	murugan	39	m	1477	m	low income	secondary	semi skilled	nil	nil	alcoholic	98	flame	sucidal	quarrel wih spouse	d
68	lalitha	32	f	1483	m	low income	primary	un skilled	nil	depression	nil	56	flame	sucidal	quarrel wih spouse	d
69	sekar	32	m	1491	m	low income	secondary	semi skilled	nil	depression	nil	16	flame	sucidal	threten spouse	s
70	pavithra	22	f	1494	um	low income	secondary	dependent	nil	gender identity disorder	nil	54	flame	sucidal	depression	d
71	ravi	52	m	1529	m	low income	un educated	un skilled	nil	nil	alcoholic	100	flame	sucidal	quarrel wih spouse	d
72	rajesh	35	m	1540	m	low income	secondary	semi skilled	nil	nil	alcoholic	80	flame	sucidal	quarrel wih spouse	d
73	praba	30	f	1069	m	low income	un educated	un skilled	nil	nil	nil	25	flame	sucidal	quarrel wih spouse	s
74	kalaimathi	28	f	1621	m	low income	primary	dependent	nil	depression	nil	100	flame	sucidal	quarrel wih spouse	d
75	srividhya	29	f	1665	m	low income	secondary	dependent	nil	depression	nil	100	flame	sucidal	quarrel wih spouse	d
76	elavarasi	23	f	1692	m	low income	secondary	dependent	nil	nil	nil	15	flame	sucidal	threten spouse	s
77	rajeshwari	21	f	1698	m	low income	primary	dependent	nil	depression	nil	66	flame	sucidal	quarrel wih spouse	d
78	saraswathi	22	f	1710	m	low income	primary	dependent	nil	nil	nil	13	flame	sucidal	threten spouse	s
79	jayalakshmi	45	f	1781	m	low income	secondary	dependent	nil	depression	nil	72	flame	sucidal	quarrel wih spouse	d
80	bakiyarnary	26	f	1798	m	low income	secondary	dependent	nil	nil	nil	81	flame	sucidal	quarrel wih spouse	d
81	renuka	30	f	1825	m	low income	secondary	dependent	nil	nil	nil	84	flame	sucidal	quarrel wih spouse	d
82	jothi	25	f	1837	m	low income	un educated	dependent	nil	depression	nil	98	flame	sucidal	quarrel wih spouse	d
83	thenmozhi	48	f	1862	m	low income	primary	dependent	nil	depression	nil	79	flame	sucidal	quarrel wih spouse	d
84	kalyani	35	f	1928	m	low income	primary	dependent	nil	depression	nil	28	flame	sucidal	quarrel wih spouse	s
85	ganesan	28	m	2039	m	low income	primary	un skilled	nil	nil	nil	51	flame	sucidal	quarrel wih spouse	d
86	govindaraj	38	m	2096	m	low income	secondary	un skilled	nil	nil	nil	48	flame	sucidal	financial debt	d
87	poornima	24	f	2049	m	low income	secondary	dependent	nil	depression	nil	100	flame	sucidal	quarrel wih spouse	d
88	anithamary	29	f	2164	m	low income	un educated	dependent	nil	schizophrenia	nil	18	flame	sucidal	mental illness	s
89	kumar	29	m	2176	m	low income	un educated	un skilled	nil	nil	alcoholic	68	flame	sucidal	quarrel wih spouse	d
90	devi	32	f	2184	m	low income	un educated	dependent	nil	depression	nil	70	flame	sucidal	quarrel wih spouse	d
91	desingh	37	m	2186	m	low income	un educated	un skilled	nil	nil	nil	16	flame	sucidal	threten spouse	s
92	jeya	36	f	2261	m	low income	secondary	dependent	nil	nil	nil	40	flame	sucidal	quarrel wih spouse	d

sl no	name	age	sex	ip no	marit	economic status	education	employment	previous medica	previous pshychiatric illness	substance abuse	percer	type	mode	reason	survival
93	sivagami	55	f	2264	m	low income	un educated	dependent	nil	depression	nil	100	flame	sucidal	deserted by children	d
94	venkatesan	32	m	2265	m	low income	primary	un skilled	nil	nil	alcoholic	65	flame	sucidal	quarrel wih spouse	d
95	rajendran	24	m	2394	m	low income	primary	un skilled	nil	nil	alcoholic	56	flame	sucidal	quarrel wih spouse	d
96	sundari	33	f	2439	m	low income	primary	un skilled	nil	nil	nil	34	flame	sucidal	quarrel wih spouse	d
97	janaki	22	f	2446	m	low income	secondary	dependent	abd pain	depression	nil	93	flame	sucidal	abd pain	d
98	anbarasi	23	f	2483	m	low income	primary	dependent	nil	personality disorder	nil	45	flame	sucidal	mental illness	d
99	suguna	28	f	2508	m	low income	un educated	dependent	nil	depression	nil	86	flame	sucidal	quarrel wih spouse	d
100	senthil	35	m	2613	m	low income	secondary	un skilled	nil	nil	alcoholic	62	flame	sucidal	quarrel wih spouse	d
101	kamatchi	28	f	2696	m	low income	un educated	un skilled	nil	depression	nil	100	flame	sucidal	quarrel wih spouse	d
102	elumalai	60	m		m	low income	secondary	un skilled	nil	nil	alcoholic	100	flame	sucidal	two wife problem	d
103	shobana	48	f	2699	m	low income	secondary	dependent	nil	schizophrenia	nil	100	flame	sucidal	mental illness	d
104	karthik	19	m	2764	um	middle class	un educated	dependent	def and dumb	personality disorder	nil	18	flame	sucidal	mental illness	s
105	dhinagaran	35	m	2822	m	low income	primary	un skilled	nil	nil	nil	26	flame	sucidal	quarrel wih spouse	s
106	thilaga	18	f	2133	m	low income	primary	dependent	nil	depression	nil	47	flame	sucidal	severe abd pain	d
107	rekha	17	f	2898	um	middle class	secondary	dependent	nil	nil	nil	100	flame	sucidal	pain abd	d
108	mythili	22	f	6122	m	low income	secondary	un skilled	nil	depression	nil	80	flame	sucidal	quarrel wih spouse	d
109	rangarajan	29	m	2989	m	low income	secondary	un skilled	nil	nil	nil	50	flame	sucidal	quarrel wih spouse	d
110	veran	26	m	3071	m	low income	un educated	un skilled	nil	personality disorder	nil	52	flame	sucidal	mental illness	d
111	sugunakumari	24	f	3180	m	low income	secondary	dependent	nil	nil	nil	100	flame	sucidal	quarrel wih spouse	d
112	selvakumari	38	f	3237	divor	low income	primary	dependent	nil	schizophrenia	nil	20	flame	sucidal	mental illness	s
113	senthilmurugan	28	m	3268	m	low income	primary	un skilled	nil	schizophrenia	nil	27	flame	sucidal	mental illness	s
114	chandra jothi	25	f	3304	m	low income	primary	un skilled	nil	nil	nil	57	flame	sucidal	quarrel wih spouse	d

MASTER CHART

sl no	name	age	sex	ip no	%	mode	intention	reason	survied	acute phase	1-3 m0nth	1 year	additional
1	malini	25	f	30179	40	flame	sucidal	supect infidelity	s	ATS	PTS	nil	
2	subramani	38	m	30192	22	flame	sucidal	infuence of alcohol	s	withdarwal	nil	lost follow up	
3	leema	26	m	30387	33	flame	sucidal	quarrel wih spouse	s	depression	depression	depression	fear avoidance
4	elumalai	28	m	226	45	flame	sucidal	quarrel wih spouse	s	withdarwal	depression	relapse	fear avoidance
5	subramani	40	m	732	6	flame	sucidal	infuence of alcohol	s	withdarwal	nil	lost follow up	
6	poongavanam	20	f	984	38	flame	sucidal	quarrel wih spouse	s	depression	depression	depression	fear avoidance
7	murugammal	34	f	1253	32	flame	sucidal	threten spouse	s	depression	depression	depression	fear avoidance
8	ruth mary	30	f	1269	43	flame	sucidal	quarrel wih spouse	s	ATS	PTS	nil	
9	sekar	32	m	1491	16	flame	sucidal	threten spouse	s	nil	nil	lost follow up	
10	praba	30	f	1069	25	flame	sucidal	quarrel wih spouse	s	depression	nil	nil	
11	elavarasi	23	f	1692	15	flame	sucidal	threten spouse	s	nil	nil	nil	
12	saraswathi	22	f	1710	13	flame	sucidal	threten spouse	s	depression	nil	nil	
13	kalyani	35	f	1928	28	flame	sucidal	quarrel wih spouse	s	depression	nil	nil	
14	anithamary	29	f	2164	18	flame	sucidal	mental illness	s	schizophrenia	schizophrenia	schizophrenia	
15	desingh	37	m	2186	16	flame	sucidal	threten spouse	s	nil	nil	lost follow up	
16	karthik	19	m	2764	18	flame	sucidal	mental illness	s	depression	depression	nil	fear avoidance
17	dhinagaran	35	m	2822	26	flame	sucidal	quarrel wih spouse	s	depression	nil	nil	
18	selvakumari	38	f	3237	20	flame	sucidal	mental illness	s	schizophrenia	schizophrenia	schizophrenia	
19	senthilmurugan	28	m	3268	27	flame	sucidal	mental illness	s	schizophrenia	schizophrenia	lost follow up	