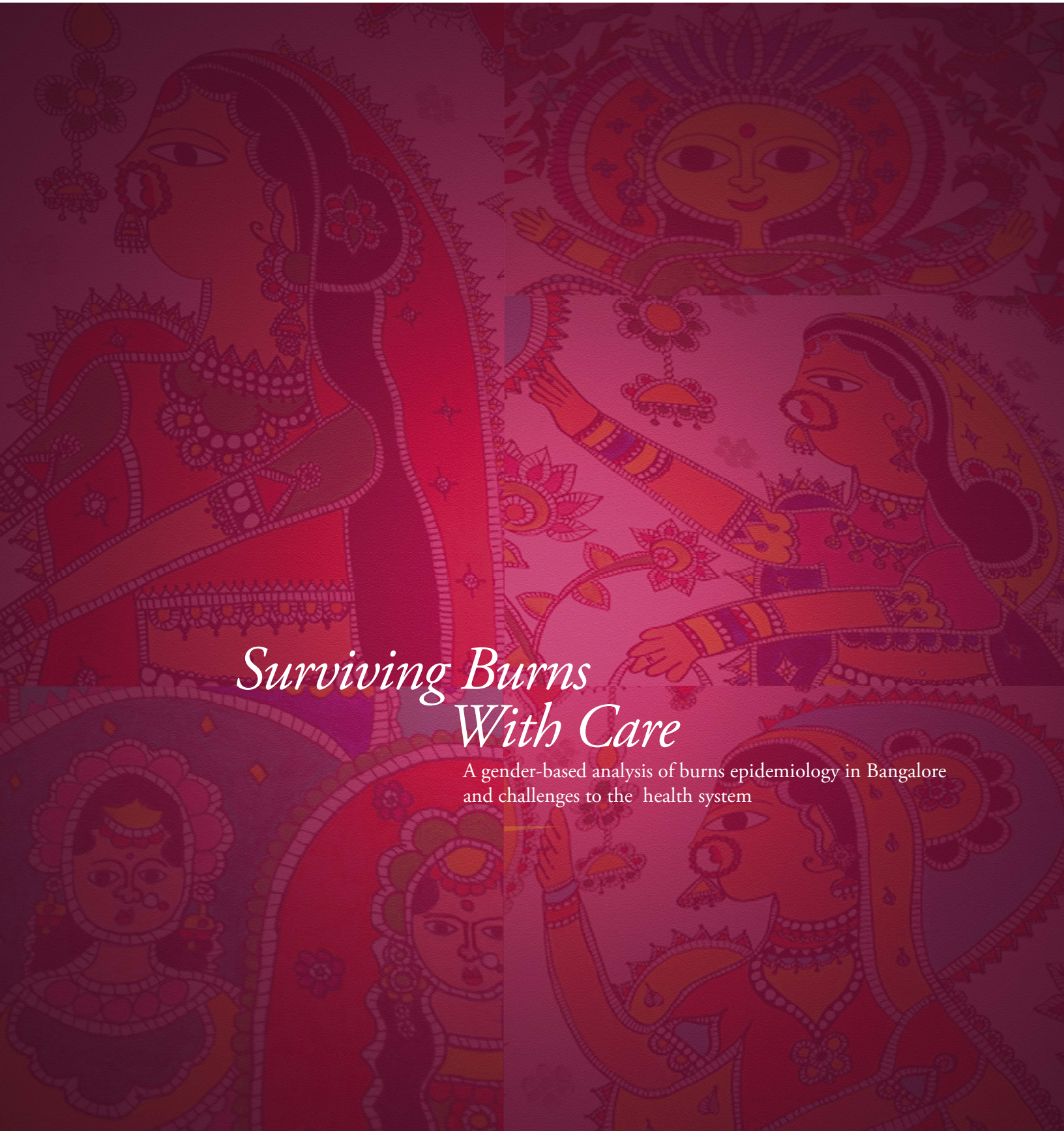

Surviving Burns With Care

A gender-based analysis of burns epidemiology in Bangalore and challenges to the health system

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SOCHARA
(Society for Community Health Awareness, Research and Action)

and

VIMOCHANA
Forum for Women's Rights

July 2016

Streelekha Publications

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and challenges to the health system

SOCHARA
and
Vimochana

July 2016

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Dr. Adithya Pradyumna

Executive summary

Death by burns is one of the largest contributors to the number of unnatural death[1] cases in India. In Bangalore alone, the total number of burn cases in 2012 far exceeded 1600 and the number of deaths was 854. The two dedicated burns wards available to victims in Bangalore are at Victoria Hospital with fifty four beds and St. John's Medical College with six beds. While burns admissions in Bangalore has been increasing over time (by 43% between 2001 and 2011), the availability of dedicated beds has remained the same.

The frequency of burns was disproportionately higher among women than men (by 40 to 60%), with admitted women being more severely affected on an average (56% body surface area for women, and 36% body surface area for men). Though majority of cases were reportedly accidental (70% and 51% respectively among men and women), a significant number of cases among women were associated with abetted suicides and homicides (at least 38% of the cases). It is also noted that at least 19% of the cases reported as accidents were actually suicidal or homicidal burns. From a statistical perspective, burns as a method of suicide was more common among women as compared to men (more than double). While there were several other associated factors for suicidal burns, homicidal burns were largely associated with dowry cases (at least 15% of all burns deaths among women). Also, a large proportion of victims of all dowry deaths had a single female child as compared to single male child (odds of 2.6 to 9.6).

[1]Unnatural deaths include accidents, suicides, homicides, conflict-related deaths, and execution, which are not describable as due to natural causes.

As several of these cases of intentional burns occur at home, children often become the only witnesses to these tragedies. Such child witnesses require special support to recover from the traumatic experience of seeing their mothers burn. They also require care during judicial proceedings. It has been noted that these children are at a higher risk of suffering from long term impacts such as malnutrition, behavioural and emotional disturbances, and becoming perpetrators or victims of violence later in life.

Though several burns cases received first aid, there is an absolute need for further improvement of management of burns at peripheral centres.For example: a delay of over 4 hours was associated with unfavourable outcomes (overall chances of survival reduced from 60% to 40%); improved coordination between burns centres, peripheral hospitals and the lay public may reduce the time taken for admission of cases of burns.

The number of dedicated burns wards in Bangalore has not increased over the past decades despite the fact that there has been an increase in the number of cases. The Victoria Hospital burns ward has seen improvements over the past decade through various interventions such as restrictions on the entry of visitors, improved sanitation and diet, air conditioning and curtailing corruption. Keeping in mind that it is one of the largest burns ward in South Asia, there is a need to aspire for higher standards and quality of care that match international standards. Research on burns care has been inadequate, possibly due to the generally poor quality of research at medical colleges as also the lack of hypothesis-driven research and neglect of qualitative research design. Due to this there are large gaps in our knowledge of at-risk groups, quality of care and cost-effective interventions.

Some of the main issues affecting governmental healthcare services in burns care are shortage of human resources (which

is a cross-cutting issue in most government health centres), especially nurses as they are critical in providing individual attention needed for severe burns cases. As burns ward is not "profit-generating", the resources diverted to it is minimum. While burns care at Victoria Hospital is free,there is also provision for patients from poor financial background to avail ofthe Vajpayee Arogyashree Scheme for necessary care and follow-up (including surgeries) in private hospitals. It is not clear as to how many are availing of this scheme. It has been suggested that improvement in human resources be taken on priority, and increase the number of "dressers" and nurses to provide efficient nursing care and support to individual cases.

The outcome of burns treatment (which may be either recovery or death of the patient) is determined by many factors: percentage of body surface area affected by degree of burns, age of victim, co-morbidities, transport time, asepsis, early surgery and post operative care including good diet. The outcome of moderately and severely burnt patients (those with more than 30% deep burns) is generally poor. At Victoria Hospital, the mortality rate was found to be over 53% among men and over 71% among women. Outcomes were found to be universally poorer among women as they suffer more severe burns on an average.

In families where burns occur, they are affected both financially and emotionally, in addition to the stigma suffered by the victim associated with burns disfigurement.Survivors become dependents, as they often lose their jobs, do not get employment and become socially ostracised. Many of the victims do not get the support of their families for various reasons thus rendering them more vulnerable. There are several other additional long term health impacts on those who have suffered burns due to intimate partner violence, which include depression and other emotional disturbances, eating

and gastrointestinal disorders, post traumatic stress, suicide attempts, headache, back pain, abdominal pain and overall poor health.

Police, doctors and tashildars have a critical role in recording statements of admitted cases. However, it has been noted that there is gross neglect and lack of will in making spot visits to corroborate the statements made by victims. In addition, there are several external factors that influence the statements made by victims (such as the presence of husband and his family members, pressures arising out of social norms, fear about children's future, etc). There are also cases of women who have attempted suicides initially reporting the burns as accidental, later changing their statement to indict the person responsible for the burns, but such changed statements are often not considered legally "trustworthy". Additionally,court cases take several years to be decided that it discourages family members in pursuing legal redress.

Several recommendations have been made by experts, researchers and social workers to reduce the incidence of burns cases and improve treatment facilities. These recommendations are directed towards healthcare administrators, non-government organizations and most importantly towards government departments and officials. The recommendations and levels of intervention include: home (including technical improvement of stoves and electrical appliances), community (creation and presence of support groups, gender sensitization), burns care training (hemodynamic shock management, nurse training, training of burns care assistants), burns care centres (sanitation, funds, human resources), legal procedures (protocol for investigation, fast track courts), and societal

interventions (prevention of suicide, support groups, counselling centres, providing economic security for victims). There is a need for all actors associated with the sector – including victims, surgeons, medical students, nurses, paramedical staff, social workers, hospital administrators, public health researchers, police, and policy makers (health and social) to come together to identify and address gaps related to burns care and rehabilitation.While there has been some focus on burns care, there is a need to relook at the issue from a public health perspective so that a renewed vigour is pumped into addressing violence against women in society. Working with burns survivors would give insights into that aspect as well.

The Background

Vimochana, a non-profit women's organisation working on issues of violence against women in Bangalore since 1979 (more details about their work in Section4.1), had, as a result of a prolonged campaign (struggle), earned for itself the unique opportunity of placing at its own cost two of their members as volunteers at the Victoria Hospital burns ward since 1998.

And through their experience in the burns ward since 1998, many reflections have emerged. The first was that almost 10,000 women had been admitted in the burns ward over a period of approximately 10 years, which was significantly more than the number of men who were being admitted. Secondly, many of these women had either attempted suicide or were deliberately set on fire. Thirdly, the availability of beds in the burns ward was not adequate. It was often noticed that patients who were in visible discomfort were accommodated on Rexene beds placed on the floors in the corridors between the wards, with relatives crowding around the burnt women who were already vulnerable to infection due to burnt skin. Fourthly, in this kind of situations 90% of the admitted women eventually succumbed to their burns. Very few survived; and they faced stigma, were discriminated and rejected by the society both in private space and public place. Finally, legal hurdles come in the way of their access to legal redress. Each of the above levels has been further explored in the report.

SOCHARA, a resource group for community and public health, has been involved with research, advocacy and training in Bangalore since 1991 (and since 1984 as Community Health Cell or CHC). CHC since its inception in 1984 has been engaged with Vimochana (and the Centre for Informal Education and Development Studies), on several public cause campaigns. Vimochana contacted the SOCHARA team to analyze the data collected by them of the women admitted over the 15 years from a public health perspective, following which this project was taken up.

Objectives of the situational analysis

* To estimate the frequency and distribution of burns cases in Bangalore from a gender perspective
* To assess the availability and adequacy of burns care facilities in Bangalore
* To understand the challenges faced by these healthcare centres in providing cost effective and quality burns care to victims
* To identify the key determinants of the treatment of burns and their outcomes
* To understand long term and immediate challenges faced by burns survivors and their families
* To gather information on efforts being made towards addressing the issues faced by burns victims

Burns as a public health issue in the context of violence against women

The World Health Organization (WHO) has recognized violence against women as a "major" public health issue (World Health Organization, n.d.), and as an "urgent" issue in another WHO publication (Garcia-Moreno and Watts, 2011). Domestic violence is highly prevalent in India, and manifests in the form of attempted or completed suicides and homicides in the form of burns, poisoning and hanging (Yee, 2013).

These reports suggest that the health system sees just the tip of the epidemiological iceberg of domestic violence (Figure 1). Other forums have also voiced their concerns over violence against women. Freedom from violence was stated as a human right in the context of women's health (Participants of the National Dialogue: Women, Health and Development, 2007).

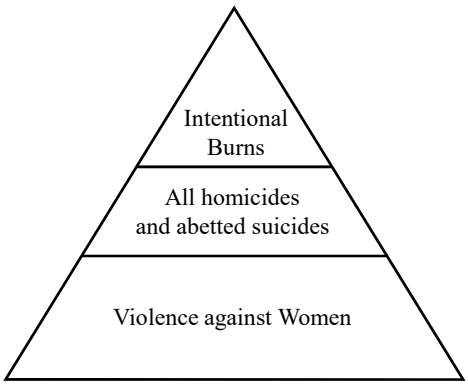

Figure 1: Iceberg phenomenon of burns in the context of violence against women

The scope of violence against women was broad and inclusive of physical, sexual, emotional and psychological harm, neglect and denial of rights (National Coordination Committee, 2006). Some indicators are declining sex ratio, female foeticide, rape, and honour killings amongst others. It therefore can be seen that violence occurs systematically at a societal level, even before the birth of a girl child (Tathapi, 2001).

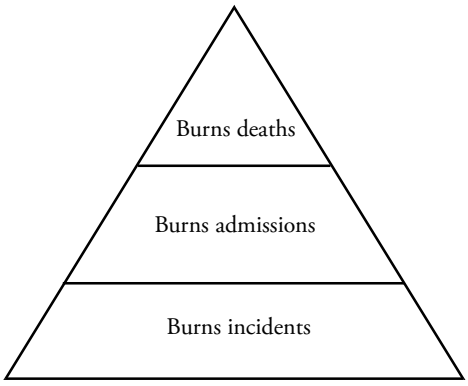

Figure 2: Iceberg phenomenon of burns

Burns form the tip of the epidemiological iceberg of violence against women, as will be demonstrated later in this report. There are several risk factors associated with violence against women, which vary with power relations. Evidence suggests that low education, a violent family history, alcohol abuse, having multiple partners and patriarchal attitude are each associated with males becoming perpetrators of violence against women. Marital discord and difficulty in communication are also associated with intimate partner violence (World Health Organization, n.d.).

WHO has reported that burns is largely preventable (World Health Organization, 2012). However it is unclear if this statement can be generalised to intentional burns (suicides and homicides). It may apply more to burns in the context of occupational safety or cooking appliances and fuels.

The information presented in this report on burns as a form of violence against women needs to be looked at in the broader context of violence against women.

Method

The report is based on three major sources of information:

- an array of literature
  - Media articles on burns burden and burns care in Bangalore
  - Thesis reports by postgraduate medical students in Karnataka on burns epidemiology (including burden,aetiology/causes, outcomes, and burns care)
  - Articles published in journals and academic reports on burns and burns care situation in Bangalore
- In-depth interviews with
  - Senior burns specialists
  - Social workers in the burns ward (informed consent was taken from all interviewed persons)
- Statistical analysis of data collected by Vimochana at the Victoria Hospital burns ward.

Situational analysis of burns as a public health issue in Bangalore

Figure 3 represents the broad framework used to understand burns as a public health issue among women in Bangalore. The framework was developed iteratively based on an initial framework and subsequent data which came in through the literature review and interviews.

Based on the framework presented in Figure 3, the body of findings has been divided into three parts:

- *The context, precipitating factors and burns burden*
- *The availability, accessibility and quality of care*
- *The support systems for the survivors and the families*

A guiding list of questions was prepared iteratively from the start of the process. The enquiry into each sub-theme has been guided by these questions. The full list of questions for each sub-theme is given in the **Appendix.**

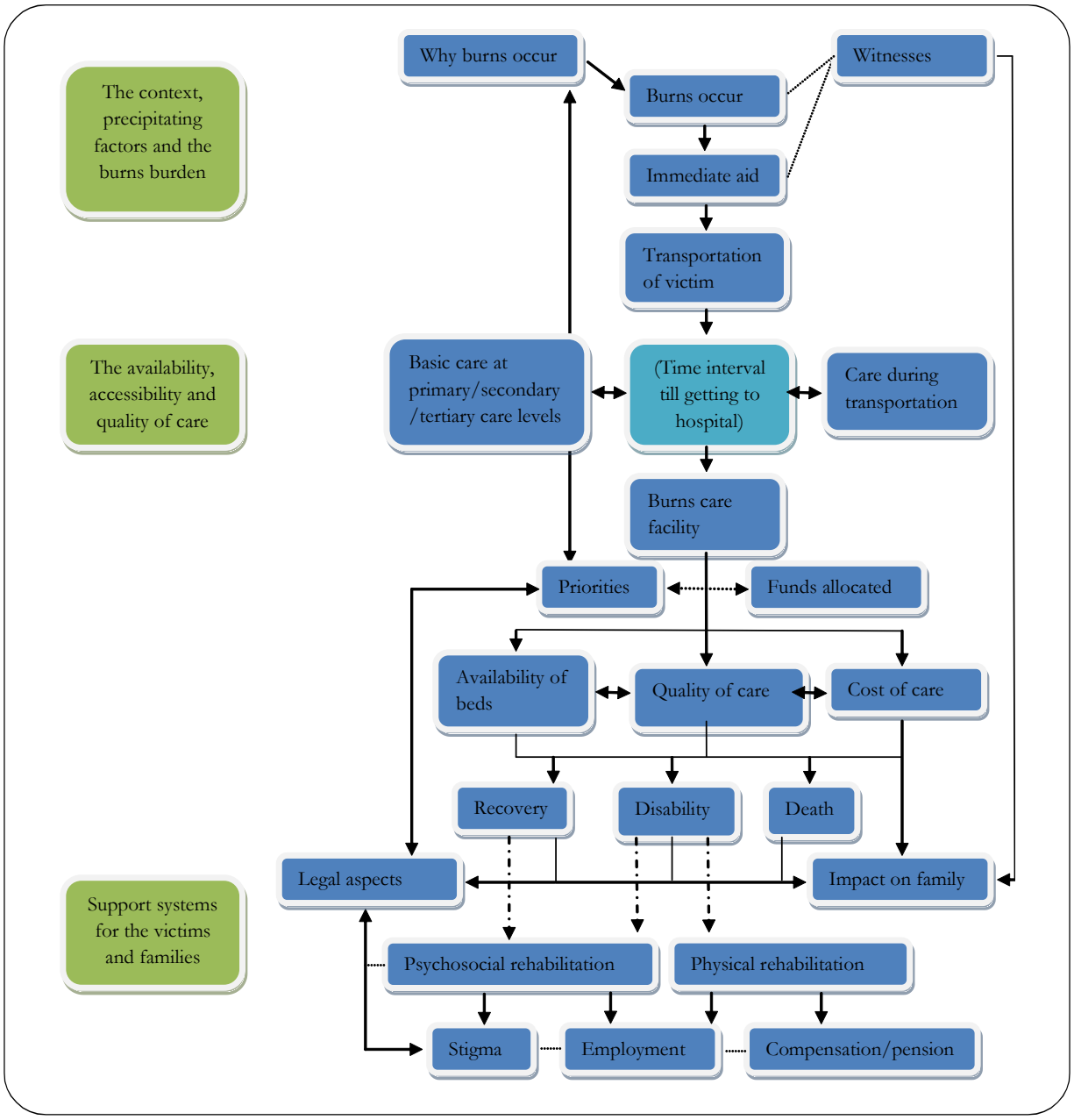

Figure 3: A framework to understand burns as a public health issue among women in Bangalore

Findings

1. The context, precipitating factors and burns burden

1.1."Burns event occurs" - statistics of burns cases

This section discusses the burns burden (number of victims) and demography (background) of victims in Bangalore. This will help us answer the descriptive epidemiological questions of: "how many" (disease frequency), and "who" (disease distribution).

1.1.1. Number of burns cases

* To answer the question of "how many", we will look at two groups of people:
  those reaching the hospital alive (data will be available as "admissions") and
* those brought dead (directly to mortuary)

  Disclaimer: As Victoria Hospital has the largest burns ward (it possesses approximately 90% of all dedicated burns beds in Bangalore, as discussed later in this report), and conducts almost all burns autopsies, data from Victoria Hospital may be taken as representative of Bangalore's burns situation for some calculations. Wherever available, supplementary data from other big hospitals have been added to give a more complete picture.

Cases brought alive to hospital

Table 1: Admissions and deaths in Victoria Hospital Burns Ward in 2012*

Year 2012	Admissions	Deaths (% of admissions)	Deaths+DAMA^{+} (% of admissions)
Women	830	589 (71)	674 (81)
Men	591	225 (38)	274 (46)
Children	232	40 (17)	69 (30)
Total	1653	854 (52)	1017 (62)

*Source: Data documented by Vimochana volunteer activists at Victoria Hospital (Vimochana, 2012)

+Discharged against medical advice

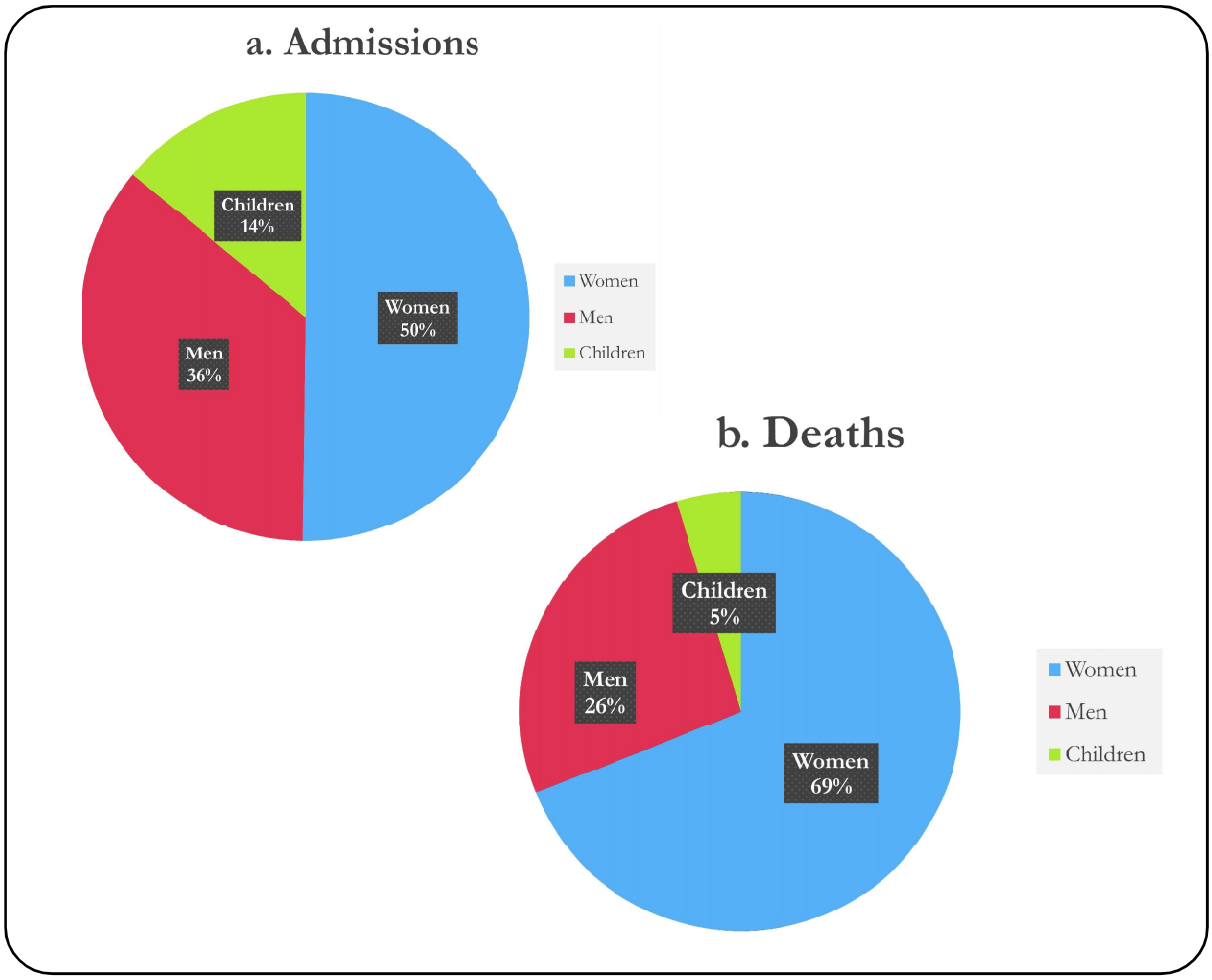

Figure 4: Distribution of (a) admissions and (b) deaths during 2012 in Victoria Hospital

Table 1reports the number of deaths that have occurred among admitted individuals. In addition to this, reportedly 9.5% of admitted cases (8.3% of admitted men and 10.3% of admitted women) get discharged against medical advice (DAMA) and also have a very low chance of survival due to severe burns. Ideally these individuals too should be included in the death tally, as shown inTable 1. Reportedly, around 10 new burns patients are seen each day at Victoria Hospital (Bangalore Mirror, n.d.). Unofficial figures for St. John's Medical College show that the annual average number of cases is 180 (at approximately 15 cases per month) (Guido, 2013).

Cases where death has occurred prior to arrival at hospital

An estimate of this has been made as hard data was not accessible. The calculation has been based on the following assumptions:

* 1+All burns deaths are autopsied (as per official medico-legal protocol for unnatural deaths) (Guido, 2013)
* The ratio between the number of male and female victims has remained constant over the past decade
* The ratio of brought dead males: females is same as the ratio of deaths between males and females of admitted patients (calculated as 1:2.6 for 2012 data), and for children (1:14.7)
* The death rate among admitted women in 2003-2005 is same as in 2007 (76%)

The estimate of brought dead cases between 2003-2005= 34 (refer appendix for calculation) Therefore the estimated number of spot deaths in burn cases in a year would be around 17.

The total number of spot deaths is about 1.4% of the total deaths due to burns among women at Victoria Hospital, Bangalore. Based on information from Vimochana activists, all deaths due to burns from the ward are autopsied. Unofficial estimate by Vimochana activists on the number of autopsies conducted on spot deaths is less than 5 cases per month.

Unofficial figures from the mortuary at St John's show that approximately 25 burns autopsies are conducted each year, of which only upto two (8%) are spot deaths (undisclosed, 2013). In contrast, it was reported from Gulbarga that 151 (21.6%) of the 698 autopsies performed there were spot deaths (Karaddi, 2008). Other medical colleges have reported either no or few burns autopsies. For instance, B R Ambedkar Medical College and MSRamaiah Medical College reported very few autopsies on burns cases in a year (Karthik, 2010)(Hugar, 2008), and in KIMS, 8 burns related suicide cases were autopsied (all of which were women) (Jagannatha, 2006). The data from Victoria Hospital gives us a good insight into the estimate on the number and distribution of cases in the population.

Comparison of Bangalore's situation with all India figures

At each level, the figure for burns burden/ mortality varies: from 32,509 deaths in a year (Gururaj, 2005) to 20,772 deaths (the official figure) (NIMHANS, n.d.) to 1,63,000 burns deaths (with 1,06,000 female deaths), figures which are many times higher as compared to

police data{cited in (Kavita et al., 2011)}. An older report shows that around 2,50,000 admissions to burns services were registeredeach year in India (Munster, 1994). A senior government official in a statement to the press stated that the total number of burns cases may be around 7 million nationally each year (Express News Service, 2012). In Karnataka it was 1587 deaths (NIMHANS, n.d.).Yet another study looked at the 2007 figures for Bangalore and reported that 2517 admissions took place in 21 Bangalore based hospitals, of which 360 persons died.

Statistics from other districts in Karnataka are as follows (some may be outdated): Mysore had 80 admissions annually (for 10 dedicated beds), Hubli-Dharwad had 150 admissions (no dedicated beds), Manipal had 101 admissions (12 dedicated beds) (Munster, 1994). Davangere too saw a higher number of women burns cases (184f:117m) (Iliyas, 2011) while Gulbarga saw higher number of male burns admissions (166m: 136f) (Das, 2004). And Belagavi reported an annual total of 173 female burns admissions (Shankar, 2006). The total figure based on the above statistics is 705 burns admissions outside Bangalore in Karnataka each year (underestimated/conservative, considering the trend in burns numbers and lack of data from other districts and hospitals).

An estimate has also been made on the ratio of burn deaths: burns hospitalisation: minor burns injuries H" 500:5000:15000 (NIMHANS, n.d.). This statistic appears contrary to the data available from Victoria Hospital (where the ratio of deaths to admissions is a lot higher). However, a large number of burns cases also go unreported (Gururaj, 2005) which may skew the statistics available at the Victoria Hospital.

As will be discussed later in this report, percentage of burns (including percentage of deep burns) is also an important factor while considering the burden of burns, as size of affected area determines outcomes to a great extent (Gurumurthy, 2013).

1.1.2. Year-wise admission of women in Victoria Hospital Burns Ward

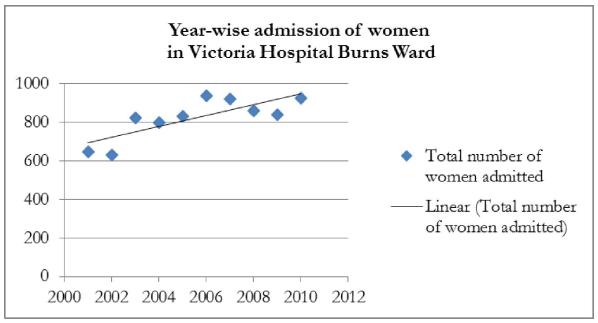

Figure 5: Number of women admitted with burns at Victoria Hospital

Figure 5 shows the number of women being admitted each year at Victoria Hospital burns ward, along a simple linear regression line (which shows an increasing trend of approximately 28 cases per year). Senior burns experts claim that more than 90% of the victims accessing care at Victoria Hospital and St John's are from Bangalore (Guido, 2013; Gurumurthy, 2013) and Vimochana's data suggests that at least 68% are from Bangalore (54% from Bangalore Urban, 14% from Bangalore Rural). Therefore, it would be important to consider this trend in relation to the growth of Bangalore's population.

Table 2: Comparison of the number of women burns cases in Victoria Hospital with the female population of Bangalore*

Year	Female population in 1000s (a)	Number of women burns patients in Victoria (b)	Burns rate[1]: b/a (per 1,00,000 female population)
2001	3110.525	350	11.2
2011	4598.89	500	10.9

* Source: Based on the data from Vimochana, 2012, 54% of total cases were estimated to be from Bangalore urban

The burns rate estimates from Table 2 provide no indication that the overall rate has changed for women in Bangalore. This indicates that though the number of victims is increasing each year, the burns rate has remained almost the same. As the numbers continue to increase, it is important to identify the subgroups of population at high risk, and also the adequacy of burns services to meet the needs. It may also be possible that there maybe more number of victims accessing care in private setups, the data for which is unavailable.

It has been reported that burns caused the highest number of deaths among women in the age group 15 to 34 in Bangalore. This was followed by suicides, tuberculosis, poisoning and maternal deaths

[2]Burns rate has been measured as burns admissions per 1,00,000 women in Bangalore in a year

(NIMHANS, n.d.). Among men, it was placed either third or fourth for the age group 15 to 34.

One large survey reported a higher incidence of burns (4100/100,000) in slums and rural areas (2300/100,000) as compared to the city (Gururaj, 2005). The reasons for this are unclear. A study conducted by Vimochana in 1998 also reported that the majority of cases were from poor communities including slums and migrant labourers (Menon, 1999a), but the denominator was not defined. According to a senior plastic surgeon, cases of intentional burns (that are relatively more severe) primarily come from the city, and from rural areas it is mostly accidental burns cases (which have lesser percentage of burns) (Gurumurthy, 2013). It would be useful to study the reason for these differences in risk to plan appropriate interventions in each of these communities.

There are several other descriptive features reportedly associated with burns, such as illiteracy (Jutla and Heimbach, 2004), but none of the studies has compared the figure with an appropriate denominator/population to help us decide whether an association exists. Some reports which provide insights on religious background of victims have not provided information on size of the population of each religious group in the area, making interpretation difficult. Interviews with senior plastic surgeons showed that patients do come from all classes, but the number of non-accidental burns cases from rich families is reducing (Guido, 2013).

1.1.3. Gender disaggregation of burns

Number of cases

As seen in Table 1, the number of burns admissions (1.4:1) and burns deaths (2.6:1) is higher among women as compared to men admitted to Victoria Hospital. Other hospitals in Bangalore too have reported more number of female patients (for flame burns), with unofficial figures from St John's Medical College Hospital showing 2.3:1 ratio between women and men for flame burns admissions (Guido, 2013).

Several newspapers have highlighted this difference in burdens in Bangalore (Nambiar, 2006)(Staff Reporter, 2011a)(Staff Reporter, 2012). This is especially seen among young women between the ages of 18-25 (Kumar, 2002). Occasionally some centres have reported equal number of cases for both genders, such as a thesis report from Bidar which showed a ratio of 33:32 (Tapse et al., 2012). National level statistics show the ratio of burns cases between women and men to be 1.6:1 (Gururaj, 2005), which are similar to our findings for Bangalore.

Degree of burns [3]

Data suggests that not just the number of women affected by burns is greater, but also that the average severity of burns is higher among women.

* Average burns for admitted cases for women in 2012: 56%
* Average burns for admitted cases for men in 2012: 35.6%

[3]It is important to note that all publications and data available on burns provide information on total body surface area (TBSA) involved in burns. The total area affected could include superficial and deep burns. From the point of view of severity, the area affected by deep burns is more important in determining survival, but this data is unavailable. Therefore, in this report, TBSA involved has been considered as the marker of severity, assuming that deep burns are proportionate with TBSA involved in men and women.

Table 3: Burns cases by gender and involved surface area in Victoria Hospital in 2012

Percent burns	Total patients (%)	Male victims (%)	Female victims (%)	Odds ratio[1] (f:m)
<40%	613 (43.1)	343 (58)	270 (32.5)	1
40-60%	289 (20.3)	110 (18.6)	179 (21.6)	2.07
>60%	495 (34.8)	114 (19.3)	381 (45.9)	4.24
Total	1421	591	830	-

odds ratio has been calculated in each case against the baseline figures of Row 1 of the table

The odds of finding women with higher percentage burns as seen in the above table were at least twice greater than for men (Table 3). The direction of findings was similar to those reported from Belagavi, Karnataka (seeTable 4), which also showed the severity of burns relatively (measured here by percentage of body surface area involved) suffered by women compared to men. Based on these two studies, it can be concluded that female gender may be associated with higher body surface area involvement (the nature of this association needs further exploration, based on Figure 6).

Table 4: Gender vs TBSA (data from Belagavi, Karnataka)

Percent burns	Male victims (%)	Female victims (%)	Odds ratio[4] (f:m)
<40%	107 (74.8)	70 (40.4)	1
40-60%	13 (9.1)	36 (21.3)	4.23
>60%	23 (16.1)	67 (38.3)	4.45
Total	143	173	-

Source: Shankar, 2006; odds ratio has been calculated in each case against the baseline figures of Row 1 of the table

In addition, most burns autopsies are of female cases. Autopsies of burns victims are almost exclusively women according to a forensic expert in St. John's Hospital (undisclosed, 2013). Figures from Gulbarga show female: male autopsies at 2.73:1 (Karaddi, 2008). This is due to two reasons:

* more number of women are exposed to burns (relatively higher incidence), and
* on an average, a higher surface area is affected with deep burns among women (relatively higher severity per individual case).

[4] Odds ratio compares the odds of exposure in two situations. When odds ratio is greater than or lesser than 1, it indicates a difference in the odds of exposure in the two outcomes being compared. This estimate can help identify associations between variables in the study.

Burns is the eighth highest cause of death among all females, just below cardiovascular diseases and above kidney disorders, tuberculosis, and liver diseases (NIMHANS, n.d.).

Statistics of dowry deaths

Dowry deaths in India have increased over the decades - from around 400/year in 1980s to around 5,800/year in 1990s, based on official figures. Police have registered a total of 7,618 cases of dowry deaths in 2006. Police statistics of dowry related burns shows more than 2,500 such cases annually (Campaign Against Dowry System, n.d.)(IANS, 2009a). Dowry was responsible for 2% of all injury related deaths in India in 2009 (NIMHANS, n.d.). Figures from a forensic study from Bangalore Medical College showed that 21.7% of unnatural deaths among women were related to dowry, and 63.1% of all dowry related deaths in Bangalore were by burns (both suicidal and homicidal) (Jatti, 2006). In Belagavi, 7% of unnatural deaths were related to dowry (Shankar, 2006). Other cities such as Delhi have also reported around 70 cases of burns among women due to dowry (Ash, 2003).

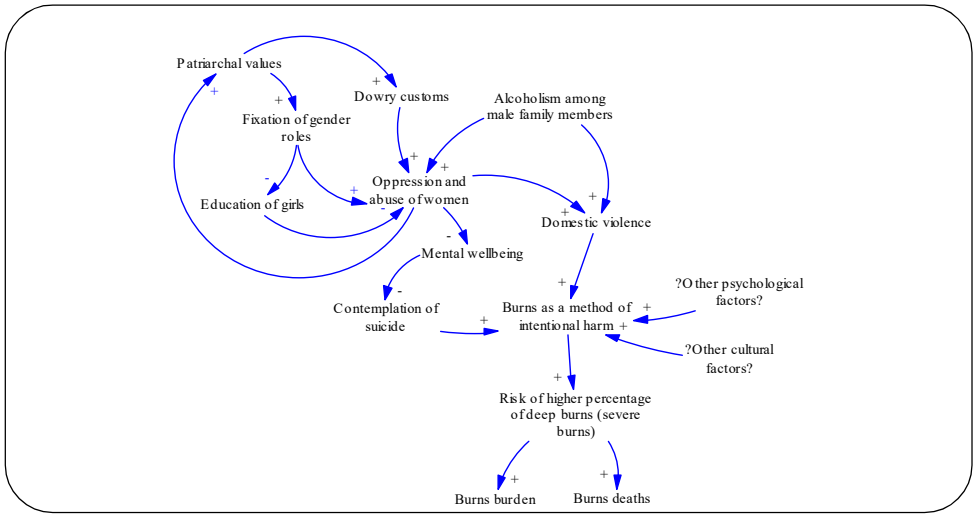

Figure 6: Causal loop diagram depicting the linkages between gender and burns burden

Figure 6 is based on evidence presented in various parts of this report linking gender with burns burden (number of cases and number of deaths). Rate of suicide and homicide by burns was found to be disproportionately higher among women, and as these usually result in more severe forms of burns, they are linked with higher mortality as well.

1.1.4. Comparing burns with other public health problems

A comparison of burns with other "public health problems" has been presented here. This is important from the perspective of prioritisation and allocation of resources for prevention and treatment.

* Road traffic and other accidents in Bangalore: In 1997, 3826 deaths were recorded as accidents (including fire related) and in 1999, it was reported that 704 traffic accident related deaths occurred in Bangalore and 726 in 1998 (Menon, 1999a). In comparison, fire related and stove/gas burst related accidental deaths accounted for 1715, which is almost 50% of all accidental deaths (Menon, 1999a). In Victoria Hospital itself, 3120 road accident cases were attended to in comparison with 2488 burns cases (Bio-Medicine, n.d.). In 2012, 755 killed and 4471 injured by RTA's in Bangalore (Bangalore City Traffic Police, 2013), the 2012 figure for burns cases/deaths from Victoria Hospital is: 856 deaths and 1653 cases (Vimochana, 2012). As a cause of accidental injury, burns was the third most common cause in rural Karnataka (17.8% of all accidental injuries) after falls from height and injuries from sharp objects (Masthi et al., 2012).

* Comparison with communicable disease: for instance, when 44 persons in Surat, Gujarat died due to plague in 1994 (Menon, 1999a)it assumed a national crisis like situation.

* Comparison with other emergencies: The other emergencies handled were patients who hadconsumed poison (2347), snakebite victims (707), rape victims (16) and other emergencies (2632) (Bio-Medicine, n.d.).

* Comparison with chronic diseases: In Bangalore Rural, 698 cancer cases from a sample population in 2001 (National Cancer Registry Programme, 2010).

1.2. "Why burns occur" - an insight into burns causation

While there are gaps in our knowledge about the burns burden, most of the severe cases reach hospitals and mortuaries. Studying those cases has provided some insight into why burns occur. It is important to study the causes as well as the determinants of burns, which will help us understand the scope and approaches towards evidence based prevention and remediation interventions.

Two approaches will be used to understand burns cases : Burns agent and Burns intent

Common burns agents include – flames (caused by petrochemicals such as cooking gas, kerosene and petrol), electricity, and chemical acids (Guido, 2013).

Based on intent, burns can be classified as – accidental, suicidal and homicidal. The available

data and evidence suggests that a significant number of suicidal and homicidal burns deaths among women are associated with dowry harassment[5] among other risk factors and associated features.

1.2.1. Burns agent

Among men admitted to Victoria Hospital, only 79 out of 591 admitted cases suffered from non-flame burns (electrical or acid) (Vimochana, 2012). In St John's burns ward as well the majority of burns cases admitted were due to flame burns (Guido, 2013).

A Bangalore-based survey has reported that causes of burns mainly include fire (71%), firearms (10%), electrocution (7%) and explosion (2%) (Gururaj, 2005). Data from Belagavi suggested flame burns constituted 92.5% of burns cases in females where cooking appliances were exclusively responsible for 45.0% of cases. In Davangere, it was seen that 93% of burns cases were due to flame burns (Iliyas, 2011). Many of these burns are related to use of kerosene, and was earlier associated with alleged use of kerosene stoves. Majority of the electric burns are seen in men (Guido, 2013; Shankar, 2006).

Types of burns and their medical consequences (Guido, 2013)·

* *Flame burns* – these are most common, and are caused by exposure to fire (such as in the situation of flames from fuels or other household appliances catching fire), and have a high mortality. In case the affected area is relatively small, the patient can survive and not have any physical disability if managed in a timely and appropriate manner. Disfigurement is usually present. If flame burns cases are not hydrated soon or thoroughly, superficial burns can turn into deep burns which makes the management of burns more complicated. Though the percentage of deep burns in the total affected area is unpredictable, a method used for indirect assessment by a senior surgeon is: for a patient with X% burns, approximately 2/3rd will be deep. The main cause of death in flame burns is sepsis. In the current healthcare context, a burns case should not be allowed to die of hypovolemia. In young children, it is more common to see scalds which are caused by hot liquids (usually bath water). Scalds are superficial and hence can be easily managed, relatively.

* *Electrical burns* – these are showing an increasing trend, with men being the main victims through occupational exposure (mainly due to inadequate safety and precautions taken by BESCOM). Some of them are non-occupational causes also, but related to poor safety of electrical infrastructure. Electrical burns often cause loss of limbs.

* *Acid burns* – are decreasing greatly with time and are much lesser in number than before. They were mainly seen among women, and the intention was to disfigure rather than to kill.

[5]According to the new section 304-B of the Indian Penal Code, where the death of the bride is caused by any burn or bodily injury or occurs other than under normal circumstances within 7 years of her marriage, and it is shown that soon before her death she was subjected to cruelty or harassment by her husband or any relative of her husband for, or in connection with, any demand for dowry, such death shall be called 'dowry death' and such husband or relative shall be deemed to have caused her death. There are several sections of the IPC (including 304-B, 498-A, 113-A, 113-B) which are either directly or indirectly related to dowry death legislation, with the offenders potentially getting a sentence for any number of years from a minimum of 7 years in prison to a maximum of life.

1.2.2. Burns intent

Burn injuries can be accidental, suicidal or homicidal. Studies report that accidental deaths are a majority, followed by suicidal deaths and homicidal deaths (Gururaj, 2005).

Table 5: A gender perspective of burns intent based on Victoria Hospital data*

Burns intent (2012)*	Men (%)	Women (%)	Odds ratio
Accidental	414 (70)	427 (51.6)	-
Suicidal	102 (17.3)	267 (32.2)	2.54
Homicidal	9 (1.5)	41 (5)	4.41
Unknown	66 (11.2)	93 (11.2)	NA
Total	591	828	NA

* Source: Vimochana, 2012; odds ratio has been calculated in each case against the baseline figures of Row 1 of the table

Table 5 provides insight into the prevalence of each type of burns intent. The data used here is based on interviews conducted by members of Vimochana with cases admitted and not the official data. The reason for this is that several suicidal and homicidal burns were reported as accidents. The number of accidental burns is comparable between men and women, but the difference lies in the number of suicidal and homicidal burns. The official suicide data for India suggests an overall ratio of 64.8:35.2 between men and women (which works to odds of 1.8) (National Crime Records Bureau, 2012). However, one in-depth study from Tamil Nadu established that suicide rates were 2.5 times higher in women as compared to men. This was also corroborated by other data presented for Bangalore (Gururaj, 2005).

Literature has also shown variations in the relative prevalence of accidental, suicidal and homicidal burns between admitted cases and spot deaths (see Table 6). Due to severity of suicidal and homicidal burns they contribute relatively more to spot deaths despite lower occurrence.

The relative prevalence of accidents:homicides:suicides varies between men and women, with age groups and with intent (Kavita et al., 2011). It was reported that most of the non-fatal burns were accidental (Kavita et al., 2011). However, an older study which analysed a hundred consecutive

Table 6: Difference in burns intent and the relative prevalence between admitted cases and spot deaths

Intent	Admitted cases (Shankar, 2006; Veeresh, 2003) in %	Spot death (Tapse et al., 2012) in %
Accidental	81.6 to 91	46
Suicidal	6 to 15.8	25
Homicidal	2.6 to 3	29

admissions of 15-40 year old female burns victims in Madurai reported 70% suicide, 25% accident, 3% homicide, and 2% non classifiable (Rao et al., 1989).

Accidental burns

Based on Table 5, 59.2% of all burns admissions are of accidental burns (51.6% of female cases and 70% of male cases), with men having a relatively higher prevalence despite absolute numbers being higher among women. While electrical burns are almost always accidental (Guido, 2013), flame and chemical burns could be accidental or intentional. One study from rural Karnataka reported that the incidence of accidental burns was 1.7% per year (mainly seen in 0-4 age group) with 100% survival (Masthi et al., 2012). A senior burns specialist and secretary of the National Academy of Burns in India stated that nearlya quarter of the cases are due to kerosene stoves (Dugger, 2000). It is also important to consider here that "stove burst" has become a common phrase to refer to kitchen burns (whether accidental or otherwise), irrespective of whether they are actually connected with stove bursts. Gas cylinder related accidents are also increasing (Guido, 2013).

Vimochana's experience, insights from senior plastic surgeons, and other evidence suggest that a significant number of reported accidental burns are actually either homicidal or suicidal deaths in reality. Table 7 shows that at least 19% of accidental burns cases may actually be suicide cases.

Table 7: Comparison of data related to the reporting of burns intent by women victims at Victoria Hospital*

Year	**Police data**	**Vimochana data**		
2007 data	Accidental burns	Accidental burns	Cases reported as accidental to police, but as suicidal/homicidal burns to Vimochana	Intention unknown (unable to enquire whether it was accidental or intentional)
	721	414	137	170

* Source: Vimochana, 2007

In an older study, it was reported that of the 31 women who stated accidental burns in their dying declarations, 26 of them later confided that it was suicide (Rao et al., 1989). Women choose not to disclose this information for various reasons (Dugger, 2000), some of which are listed here based on Vimochana's interviews with the patients:

* Pressurised to state the burns as a domestic accident, as disclosure (according to victims) would not only bring shame and affect the woman's family, but would also jeopardize her social position within her own family.
* Some women might already be socially isolated. This is often the case of women who have eloped without their parents' consent, or of women who have lost their parents, or of those who do not have any ties with their natal family (either because they are deceased, or because they believe that once their daughter is married they are no longer responsible for her wellbeing). In such cases, women have no support systems they can turn to. This is reinforced when women have children; in such cases women often fear that their children will be left alone without any financial security if they disclose the abuse.
* Some cases may be associated with deliberate burns in order for the family to claim insurance money.

However, there are other sources which state that since attempting suicide (until 2014) is an offence in India, women choose to state it as accident. It has been stated by doctors from burns wards that patients often change their statements when they come to realise that they will not survive (Bangalore Mirror, n.d.).

Table 8: Different methods used by women to commit suicide in Bangalore

Serial	Suicides (by method)	1997	1998
1	Burns	224	318
2	Hanging	108	121
3	Poisoning	99	136
4	Drowning	19	34
5	Others	96	114
6	**Total**	**546**	**723**

Source: Menon, 1999a

Suicidal burns

Based on Table 5, at least 26% of all burns admissions were caused by suicidal intent, with occurrence being higher among admitted women (odds ratio of 2.54). As the intent was not established for 11.2% of women, it is likely that the suicidal burns burden may be even higher among women.

FromTable 7, it can also be noted that 19% of accidental burns cases (as reported to police) are actually suicide and homicide cases. A senior police officer in Bangalore has stated in an interview that the fact that daughters-in-law are exclusively affected by stove bursts warrants detailed investigations (Menon, 1999a).

With 11% of all suicides among men and women, burns is the third most common way of committing suicide in India (Gururaj, 2005). A thesis from Victoria Hospital reported that 54 of 266 suicides in young adults (men and women) was by burns (Katageri, 2010). Figures for this however vary in each region (Gouda, 2006). A gender-based comparison of the choice of burns as a method of suicide is shown in Table 9.

Table 9: Gender-disaggregated data for method of suicide

Modality of suicide	**Males**		**Females**		**Odds**	**Odds**
	Gulbarga* n (%)	**India** n (%)**	**Gulbarga* n (%)**	**India** n (%)**	**Gulbarga (f:m)**	**India (f:m)**
Burns	31 (13.1)	**4279**	69 (30.3)	**7587**	2.22	1.77
Hanging	83 (35.2)	**30667**	35 (15.4)	**14348**	0.42	0.47
Poison	100 (42.4)	**28201**	100 (43.9)	**15164**	1.00	0.54
Others	22 (9.3)	**24692**	24 (10.5)	**10647**	1.1	0.43
Total	236	**87839**	**228**	**47746**		

Source: * Vijayamahantesh, 2005
** National Crime Records Bureau, 2012

Burns was found to be relatively more popular among women. It was also noted that all other methods were far more popular among men, giving "burns" a distinct identity. We have already seen from Table 5 that burns

are relatively more popular as a method of suicide among women in Bangalore. Based on the above information, it would be important to identify why women choose burns as a preferred method of suicide over other methods such as consuming poison or hanging. Some analysis from the perspective of theories of psychology have been initiated at Vimochana (Vimochana, 2013).

In yet another report, despite overall higher incidence among women, men of older age groups were shown to have relatively higher number of suicidal burns as compared to older women in rural Tamilnadu (Gajalakshmi and Peto, 2007), indicating the presence of area and demographic specific variations.

A study in Kerala showed that burns as a method constituted 1.7% of failed suicide attempts among men and women (62.5% cases among women), whereas it constituted 14.2% of completed suicides (with 80.6% cases among women), which shows an observable difference between method adopted by those who attempted suicide and those who committed suicide (Kumar, 2004). This could either mean that those who attempted survived because they adopted less lethal mechanisms, or it could mean that they were not hoping to die.

Based on the data from Victoria Hospital(Jatti, 2006; Vimochana, 2012), it was found that dowry contributed to at least 10.2% of attempted suicides by burns among women. Apart from this, the other main reasons as seen from Vimochana's experience with burns of married women at Victoria Hospital include (Sophie, 2011):

* Suspicion of the husband over the wife's faithfulness
* Extra-marital affairs by the husband
* When the woman discovers that she is the second wife
* Financial difficulties (such as being unable to pay school fees)
* The woman being forced to hand over Self Help Group savings
* Fertility problem (such as not having children, or having only girls)
* Control by the husband (e.g. she is scolded for coming home late after visiting her natal family) or not adhering to societal expectations of her role and duties
* Verbal abuse (such as being called a prostitute) and other violent forms of psychological abuse
* The husband being an alcoholic, not working and not providing for his family's needs

As stated by Stein, these suicides are "a severe comment on the ethos of 'marriage at all cost' " {as cited in (Sophie, 2011)}. Data collected by Vimochana suggests that approximately 12% of admitted women were unmarried (Vimochana, 2007). Most unmarried women and young girls attempted suicide (based on actual case documentation at Victoria) because of:

* Failure in love
* Parents refusal to allow their daughters to marry their boyfriend or forcing the girl to

get married despite her ambition to complete her studies
* Eve-teasing or harassment from employers particularly domestic servants
* School pressure or ill-treatment by teachers or other students
* Fights between siblings (in the age group of 13 and14 years)
* The father's suspicion of the daughter's character
* Parental control

A senior plastic surgeon mentioned that suicides by burns are also committed by individuals who have financial problems. In some cases, it may berelated to suicidal mentality (psychiatric disorder) (Gurumurthy, 2013). Therefore, from an intervention perspective, it is important to differentiate between those who commit suicide because of no other option and those who have a psychiatric problem (Gurumurthy, 2013). It is also important to keep in mind that 15-25% of those who have attempted suicide repeat their efforts within the year {cited in (Gouda, 2006)}.

A 1989 study reported that 51% of suicidal burns among women was related to marital problems such as an alcoholic husband or extramarital affair by the husband, and only 8% were dowry related. Interpersonal problems (with in laws, academics or love affair) too contributed to 36% of the suicides. 23% were associated with psychiatric disorders and 15% was due to physical illness such as abdominal pain (Rao et al., 1989).

Studies show that mortality is higher among those attempting suicide by burns, as compared to other methods of suicide (where relatively very few die). In addition, there is a degree of misreporting of homicides and suicides as accidents(Rao et al., 1989).

Homicidal burns

Based on Table 5, at least 3.5% of burns admissions are due to homicidal intent, with occurrence being higher among women admitted as compared to men (odds ratio of 4.41).

Apart from Victoria Hospital's mortuary, other centres report almost no homicidal burns except KIMS Hospital reporting one homicidal death by burns on an average each year (Kumar et al., 2011). The reason for this may be that homicidal burns are usually very severe and such cases are either brought directly or referred to Victoria Hospital.

Homicidal burns have the highest mortality as compared to accidental or suicidal burns (discussed in Section2.8). Allegedly, only a small percentage of women who faced homicidal burns report it and which could be because of their inability to make a statement due to severity of burns. And fire destroys evidence of previous abuse.

Based on data from Victoria Hospital (Jatti, 2006; Vimochana, 2007), it appears that almost all homicidal burns in women were related to dowry. Literature attributes violence against women to

the status of women in society, patriarchy, lack of education, and unemployed status. Other associated factors include family responsibilities, extramarital relations, power relations, rights, sexual abuse, alcohol, and personality (Gururaj, 2005). These may apply to the context of burns as well.

In cases of intentional burns (suicidal and homicidal burns) at the SJMCH, a senior plastic surgeon said that there is almost an 80% reduction in cases of total burns when compared to previous decades, and currently it contributes approximately 15% to the total burns cases admitted there (Guido, 2013). The case load shows variation across the years as well, as can be seen between the two reports from Davangere, the 2005 report showing four burns suicides (Gouda, 2006) , and the 2010 report showing 38 burns suicides (Iliyas, 2011).

Homicidal burns are also associated with some of the factors mentioned in the section on suicidal burns, such as patriarchy, abuse, dependence, social status, alcohol, mood and personality (Gururaj, 2005) and inability to perform household duties (Jutla and Heimbach, 2004). It was also noticed that impulsive actions following a violent quarrel also contributed to burns (Sahu, 2009). In several situations, where dowry may not be the reason, there are drunken, abusive, irregularly employed husbands (Dugger, 2000).

A majority of women have even stated in a survey that domestic violence[6] is a normal part of married life (Jutla and Heimbach, 2004), with 37% women reporting experience of physical violence post marriage in the NFHS-3 (Kavita et al., 2011). Burns demonstrates only the tip of the iceberg with reference to domestic violence, as majority approach health agencies and police as a last resort (Kavita et al., 2011).

Dowry related statistics

Based on Vimochana's data, 28 (or 3.3%) of the burns admissions of women were registered as dowry death cases in 2012 (Vimochana, 2012). While this data is related to the admitted cases, thesis reports on mortuary data report a higher number of burns associated with dowry deaths (see Table 10).

While data from Table 10 reveals that the majority of dowry deaths were abetted suicides (57%) which corroborates with the findings of other surveys (Nuchhi et al., 2012; Radhika and Ananda, 2011), the most frequent method of dowry deaths was burns (63% of cases). A study from Bijapur shows that 46% of dowry deaths were by burns (Nuchhi et al., 2012). In contrast, a study from KIMS Bangalore reported burns being associated with only 8.33% of dowry deaths (Radhika and Ananda, 2011). This could be because most burns cases in Bangalore are taken directly to Victoria Hospital as it has an exclusive burns ward. However, majority of dowry deaths due to burns documented at Victoria Hospital were homicidal (65.5%). In addition, it also comes to light that burning is most common in dowry abetted suicides as compared to suicides among women

[6]Domestic violence may be understood as "Minimally construed as the physical, mental, emotional and sexual abuse of a woman in her intimate relationship, domestic violence in the Indian context includes intimidating acts by the members (both men and women) of her marital family"(Poonacha, 2000). Epidemiology of violence in India has been poorly documented and understood, as it has not been considered as a health problem (Gururaj).

Table 10: Forensic data on dowry deaths in Bangalore and Bijapur

	Method leading to dowry death	**Intention**		
Victoria Hospital (Jatti, 2006)		Homicide	AbettedSuicide	Total
	Burns	112	59	171
	Hanging	2	69	71
	Poison	0	18	18
	Total	114 (43%)	146 (57%)	260
Bijapur (Nuchhi et al., 2012)				
	Burns	4	12	16
	Hanging	3	6	9
	Poison	4	3	7
	Total	11 (34%)	21 (66%)	32

in general (Table 9). These aspects need further causal studies. Also, among all homicidal dowry deaths, 99% were due to burns (Jatti, 2006).

It has also been seen that there is an increase in the number of dowry related deaths, approximately 15% every year as reported in KIMS (Radhika and Ananda, 2011). A comparison between 1995 level and 2005 level show a 46% increase in the number of registered cases (IANS, 2009a). This trend may be explained at least partly by Bangalore's growing population (as shown in Table 2). One study has indicated a possible connection of this trend with capitalist ethos, consumerism and black market economy, alongside continued devaluation of women in India {cited in (Jutla and Heimbach, 2004)}.

These figures should be read in the context of 2276 suicidal dowry deaths officially reported for India by the national crime records bureau (Prajapati et al., 2011), and 6787 dowry deaths in total in 2005 (IANS, 2009a). Other studies report an estimate of 15,000 such deaths each year in India {cited in (Jutla and Heimbach, 2004)}. The difference in official and other figures may indicate a gap in recording all dowry deaths. On the other hand, several researchers and legal professionals state that often domestic violence cases are inappropriately classified as dowry deaths (Dugger, 2000).

Also, based on national level data, the most common method adopted is immolation {cited in (Jutla and Heimbach, 2004)}, and a majority of these occur in the second year of married life (Radhika and Ananda, 2011), and among women aged between 18 and 25 (Guido, 2013; Radhika and Ananda, 2011).

Dowry deaths occurs in the context of several other instances of gender based violence such as female infanticide, denial of opportunities, rape and neglect (Radhika and Ananda, 2011). Data presented in Table 11 shows that the odds of dowry burns for women with single female child against single male child was between 2.6 and 9.6, which is a very significant finding.

Table 11: Comparison of dowry related burns cases based on number and gender of children

Number and sex of children*	Dowry deaths per year in Bangalore (Jatti, 2006)	Dowry deaths per year in Bijapur (Nuchhi et al., 2012)
No children	79 (29%)	8 (23%)
Female child only	106 (39%)	13 (37%)
Male child only	11 (4%)	5 (14%)
One male and one female	25 (9%)	2 (6%)
Newly married	50 (18%)	7 (20%)

*Z-test for difference in proportions of deaths among women with one female child showed no evidence of difference in proportions between Bangalore and Bijapur {see appendix}.

Despite several cases being officially reported as kitchen accidents, studies have attributed burns burden among young women to cultural (female child birth, dowry related), social (socio-economic status), environmental (cooking fuel and appliances) and psychological factors (distress and vulnerability)(Kavita et al., 2011). These deaths also contribute to India's sex ratio (Jutla and Heimbach, 2004) which is currently 940 women: 1000 men (Census 2011). Seen as a global health problem, the disability adjusted life years (DALY[7]s) for violence against women is comparable to tuberculosis and HIV, to which dowry deaths contribute {cited in (Jutla and Heimbach, 2004)}.

[7]Disability Adjusted Life Years is a method by which impact on health outcomes can be quantitatively summarised. It provides a framework through which all diseases and the impact of interventions on health and life can be compared or summated. One DALY = one year lost due to ill health.

1.3. "Witnesses" - impact on those witnessing burns incidents

The following section will mainly focus on the issue of child witnesses to violent burns of their mothers. Based on Vimochana's experience, some victims informed that their children were witnesses to the husband perpetrating the violent act. The health impacts of concern are three-fold:

* *Mental trauma* due to witnessing the act, and of having to testify in the court of law. There is also pressure from the family members of the child not to disclose the incident/crime. Children, very often being the only witness of domestic violence, their statement becomes crucial and it is important that their testimonies are considered. The presence and support of a psychologist for the child witness is recommended. Sensitivity in handling child witnesses is also essential {cited in (Sophie, 2011)}. More detailed recommendations on managing child witnesses are available (Aiyappan, n.d.)

* *Potential physical trauma* of suffering burns along with the mother. This is seen less frequently nowadays, where earlier women would attempt suicide along with the child especially in situations where the father suspects the paternity of the child, or when the women believed that no one would take care of her children after her death

* *Loss of a care giver* impacts the health and wellbeing in the long term as well (which occurs in many of the burns cases). These incidents can also reinforce the belief that violent behaviour of men, and for women to face violence is acceptable

* *Other long term impacts* children exposed to such violence may suffer behavioural and emotional disturbances. They are at a higher risk of perpetrating or suffering violence themselves later in life. Also, children of such families have higher rates of mortality and morbidity for a variety of diseases such as diarrhoea and malnutrition (World Health Organization, n.d.)

1.4. "Immediate aid" - interventions made prior to reaching burns centre

1.4.1. Immediate response following incident

Data reveals that first aid is rarely given at the injury site (1%) (Kavita et al., 2011). It has also been noted that traditional unscientific practices at household level in some instances adds to the severity (Gururaj, 2005). Most people are unaware that application of cold water after the incident helps in controlling the damage and with healing (Gurumurthy, 2013; Gururaj, 2005). In one of the study based in Belagavi, it was observed that 31.5% cases were doused with water, and cloth was used for putting the fire out in 25% of cases whereas the remaining 29% responded by shouting for help (Shankar, 2006).

According to a senior plastic surgeon, it is more important to make arrangements for immediately shifting the patient to a burns care centre for

appropriate management of fluids and early surgery. The earlier the patient can be brought to a burns care centre, the better the chance of survival (Gurumurthy, 2013).

2. The availability, accessibility and quality of care

2.1. "Transportation of victims"

Data on injury victims shows that the most common modes of transportation in Bangalore were private vehicles and auto-rickshaw (Kavita et al., 2011). From experience, a senior plastic surgeon also corroborated that private vehicles are the main mode of transport for bringing patients to the hospital(Gurumurthy, 2013). While the 108 ambulance facility is also available, it's service was reportedly used in less than 20% of burns cases of women (Kavita et al., 2011). However, access to transportation for burns patients may not be an issue in most situations (Gurumurthy, 2013).

In cases where access to transportation is not an issue, many victims die within few hours of the incident depending on the severity of burns. In one study, it was reported that 74% of deaths that occurred on the first day had occurred within the first hour (Tapse et al., 2012), because of the time taken to transport the patient to the hospital.
Access to care is a greater challenge in peripheries, and in other districts (Gururaj, 2005), which adds to the burden of burns morbidity and mortality.

2.2. "Care during transportation, including interim care"

In most instances of burns cases/victims, the priority during transportation is to take the patient as quickly as possible to a burns care centre. Only in situation of respiratory burns,there is a need for aid and support during transportation (Gurumurthy, 2013). It is also seen that most of the cases received first aid at first contact hospitals, which included 54% of the non-fatally injured, and 80% of fatally wounded (Kavita et al., 2011). However, a senior plastic surgeon informed that most doctors are unskilled in managing shock (Gurumurthy, 2013). According to a new report, there have been instances during which private hospitals have refused to administer first aid to burns victims (Joshi Datta, 2012).

2.3. "Transit time"

A senior plastic surgeon stated that most victims who approached Victoria were from Bangalore, and hence were able to reach within one hour of the incident (Gurumurthy, 2013). Table 12 provides data on locations from where women patients who utilised services at Victoria Hospital burns ward in 2012 came from.

The proportion of cases from Bangalore urban has remained the same over the last few years (the 2007 statistic was 52% of total cases). A 1994 paper suggests that the average time between injury and first care at burns centre in India was

40 hours, as patients from villages take a lot longer than those in cities to access burns care (Munster, 1994). This figure may have changed due to better road access and presence of tertiary care centres in districts. An indication of the importance of transit time and first care is demonstrated inTable 13.

Table 12: Locations from where patients came from*

	Bangalore urban	Bangalore rural	Others (Karnataka and outside)
Annual average for 2012 (%)	53.8	13.8	32.4

*Source: Vimochana, 2012

Table 13: Transit time versus patient outcomes

Time to get to hospital (Iliyas, 2011)	Survival (survivors/total cases)	Survival (%)
<30 mins	71/110	64.5
30 mins to 4 hours	81/132	61.3
>4 hours	24/59	40.7

Based on the data in Table 13, it can be inferred that a delay in medical attention by over four hours can greatly decrease the chances of survival (odds ratio for survival between those receiving medical attentionmore than 4 hours after the incident to those attended to earlier was 0.41) {calculations in Appendix}. This inference is based on the assumption that the relative prevalence of other determinants of treatment outcome is the same for all transit times.

2.4. "Availability of burns care facilities and hospital beds"

Only two hospitals in Bangalore have dedicated burns wards – Victoria Hospital and St John's Medical College Hospital. Previously several private hospitals would admit burns patients but it has reduced now (Guido, 2013; Gurumurthy, 2013). There could be many reasons for this such as

a. the cost of care is high and chances of survival low which creates situations of conflict between the families and the hospital staff.
b. Legal formalities that accompany burns care and running dedicated burns wards needs human resources (Guido, 2013) and infrastructure (Joshi Datta, 2012).
c. In addition, it has also been reported that burns care is more time consuming and not as lucrative compared to other avenues of plastic surgery for the surgeon (Sahu, 2009).

Private hospitals now occasionally admit burns patients with relatively low percentage of burns, almost never exceeding 40% burns (Gurumurthy, 2013) and minor burns are treated more commonly (Joshi Datta, 2012).

Figure 7 shows the locations from which patients have accessed burns care at Victoria Hospital. The data is based on women admitted to Victoria in 2012 (Vimochana, 2012).

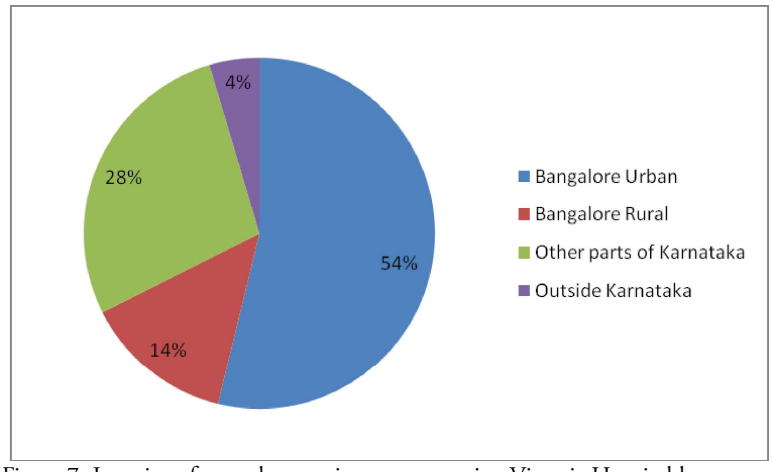

Figure 7: Locations from where patients are accessing Victoria Hospital burns ward

Victoria Hospital burns ward, as it stands now was donated by Venerable Acharya Buddharakkhita, and monks from the Mahabodhi Society (after which it is named) (Maha Bodhi Society, n.d.). The ward had approximately 50 beds (Bangalore Mirror, n.d.) (now reportedly 54 beds (Vimochana, 2013)), of which 21 beds are available for men, 17 for women, 9 for children

and 7 for post-operative care. While the number of beds is adequate to meet the needs, occasionally they have had to manage with beds on the floor to accommodate excess admission.

Table 14: Growth in Bangalore population vs number of burns beds at Victoria Hospital

Year	Population of Bangalore district (Census of India 2011, n.d.)	Burns beds in Victoria Hospital	Annual admissions in Victoria (all cases)
1991	4.8 million	53 (Munster, 1994)	1420[+] (Munster, 1994)
2011-12	9.6 million*	54 (Vimochana, 2013)	1653 (Vimochana, 2012)

*growth partially attributed to expanding geographical limits of Bangalore, but primarily to in-migration to Bangalore (Staff Reporter, 2011b)

[+]can be partially explained due to data gaps arising out of men being admitted to general wards whereas only women and children were admitted to burns ward (Munster, 1994)

The Victoria Hospital burns ward catered to an estimated population of 20 million persons in 1994(Munster, 1994). However, the number of beds has not increased over the past 20 years, though the population covered has increased (as the population of Bangalore itself has increased). One plausible explanation could be that the average days of hospitalisation for burns patients was 36 days and it is quite likely that this average has reduced for two reasons:

* Due to advancement in care – less days of hospitalization is adequate for same/improved outcomes (for instance, early surgery and better nutrition)
* Patients may be discharged before full recovery to accommodate patient inflow (This would be a matter of concern, as outcomes are compromised if quality is neglected)

And more admissions are taking places in private hospitals about which we do not have sufficient information.

This is in contrast to the observations made by members of Vimochana at Victoria Hospital, who state that the number of beds is inadequate to accommodate the increasing number of victims as many patients were being

admitted to other wards, which leads to poorer quality of care for those patients (Sophie, 2011). An ICU facility was introduced quite recently in 2005 in the burns ward (Nagaraj, 2008).

According to a news report, Victoria Hospital reportedly struggled to accommodate patients at the time of a particular tragedy(Joshi Datta, 2012) which is corroborated by a statement made by a state government official who doubts the capacity of the institution to manage a fire disaster(Deepthi, 2013). He cites, for example, the historically famous 1983 circus tragedy, where 300 people were injured and of whom, 119 were treated in Victoria Hospital and of which 17 died, and others were reportedly saved due to timely interventions (Das, 1983). Based on inputs from Vimochana activists, it is very rare to see vacant beds except when they fumigate the rooms in rotation by shifting patients together into other rooms (Vimochana, 2013).

SJMCH has a dedicated ward with 6 beds (which is always full), and take up to four additional cases in private wards based on the limits of the human resources available (Guido, 2013). Also, SJMCH caters primarily to cases from Bangalore, but patients from neighbouring districts of Anantpur (Andhra Pradesh), and Dharmapuri (Tamil Nadu) are also seen occasionally. The main reasons for patients from outside Bangalore to come to SJMCH were non-availability of beds locally in their district and because of their faith in SJMCH (Guido, 2013). Approximately one case is referred from the emergency department at SJMCH to Victoria Hospital each day due to lack of beds (Guido, 2013), which amounts to around 30 cases a month and 360 a year.

SJMCH also offers additional services where the Physical Medicine and Rehabilitation department supports burns care by evaluation and training of patients with self-care activities, hand function, sensory re-education and muscle re-education (Dept of PMR, n.d.).

Based on an India level estimate from 1994, it was reported that there was 1.5 dedicated burns beds per million population (Munster, 1994). Burns care facilities are usually manned by the plastic surgery department, and ideally need to be associated with a dedicated ICU facility (Gurumurthy, 2013). The average length of admission was calculated to be 36 days based on 1994 data (Munster, 1994), which may have changed due to improvements in burns care.

Other places in Karnataka were surveyed in 1994 as well, which showed that the medical colleges in Mysore had 10 beds, Manipal had 12 beds and there we no dedicated beds in Hubli-Dharwad and Belagavi though burns cases were treated there (Munster, 1994). More recent reports show that Belagavi has 20 beds (in JNMC (Shankar, 2006)) and Gulbarga has 38 (20 in Government General Hospital and 18 in Basaveshwara Teaching Hospital in Gulbarga)(Das, 2004). There have also been reports of patients having travelled from other parts of the country and waited for several hours to get treatment in Karnataka (DHNS, 2010a).

2.5. "Priority and funding for burns care and research"

At the state level, all government medical colleges have beds for burns patients and the private hospitals should give first aid before they refer the cases to other government hospitals. Regarding the allocation of resources to burns ward, a senior plastic surgeon is of the opinion that:

* The best way to integrate a good burns ward into a medical institution is to include it in it's plan prior to the start of the project which will then give an opportunity to plan for as many beds as is necessary/appropriate, and include features that will improve quality of care, such as air conditioning, barrier nursing and ICU beds (Gurumurthy, 2013).

* In established state run tertiary care hospitals, the medical superintendent takes decisions about allocation of resources, both financial and human, where the superintendent's home department may be favoured, or the departments generating the maximum revenue (Gurumurthy, 2013).

The presence of advocacy by Vimochana has impacted upon the priority given to the burns ward at the Victoria Hospital and to mobilise funds from the government and other institutions such as Infosys which was used to improve facilities at the ward (Gurumurthy, 2013)

Apart from this and in an attempt to improve availability of care,in 2010, there were plans to include a burns wards in a new and upcoming 250-bedded government hospital in the outskirts of Bangalore (HRBR layout, Banashankari 6th phase, Magadi Road and Leprosy Hospital), a move which was also welcomed by the senior plastic surgeons from Victoria Hospital (Bangalore Mirror, n.d.). However, these plans have not materialised as yet and neither have the plans of creating a 10-bedded burns ward in Bowring Hospital (DHNS, 2010b) nor previously when in 2006, the Rotary Club had been approached to consider sponsoring a burns ward in Bowring and Lady Curzon Hospital (Staff Reporter, 2006).

More recently, emphasis on increasing availability of burns care and prevention programmes were also expressed at a national level, and establishment of burns units in all government medical colleges was seen as a priority for the 12th plan period (Express News Service, 2012). The need for political will to improve burns care was expressed by a senior plastic surgeon (Gurumurthy, 2013).

Burns like other public health problems such as tuberculosis or antenatal care require enormous funds to

* Increase human resources (there always exists the challengeto get adequate number of nurses to manage a large burns ward. Increasing the number of "dressers" would be useful to reduce the burden on nurses) (Guido, 2013)
* Reduce cost of care

* Improve quality of services – there is need for at least 5-10 ICU beds attached to burns general ward; barrier nursing is important to prevent infection and to reduce the need for antibiotics
* Provide vocational training for survivors
* Provide jobs compulsorily (especially in government services)
* Increase prevention activities and programmes towards reducing burns
* To appoint doctors and provide specialised training in burns care
* For large burns centres, there is a need for many doctors to be involved to run the department. MBBS graduates can be given specialised training in burns care and appointed, instead of focusing on plastic surgeons. Appropriate salaries should be given as incentive. These doctors would work under the head of department of plastic surgery
* Skin bank is also needed in Bangalore. Currently, patients import skin from centres in Mumbai. It is also reported that SJMCH is in the process of setting up a skin bank in association with Rotary Club, Bangalore
* To set up a skin bank in Bangalore

Research on burns epidemiology and care in Bangalore and India

Violence has not been studied or understood from an epidemiological perspective and as a public health problem. While some efforts are being made to understand burns distribution through surveys and secondary data (which includes thesis reports), little effort has been made to identify, implement and evaluate community level preventive interventions, perspective of burns victims about care and rehabilitation, adequacy of burns care, quality of care and causes for high rate of violent burns. Based on the literature review conducted for this report, the range of topics addressed in the thesis reports are presented in Table 15.

However, a review of thesis reports of students from colleges affiliated with Rajiv Gandhi University of Health Sciences (RGUHS), Bangalore do provide some insight into the burns burden and burns care available to victims in Bangalore, Davangere, Belagavi and Gulbarga. They make no attempt to

* address epidemiological or health systems related questions such as availability of care at city/district level, access to care, quality of care,

medico-legal reporting procedures, cost of care, at risk population, situation of care-givers, impact of counselling and rehabilitation services, doctor-patient ratio etc

* step outside the medical college to get information on source population, inputs from police and NGOs, situation of burns care in other tertiary care hospitals in the district etc
* speak with the patients (in depth interviews or discussions) about their problems with accessing care, quality of care and support services

Table 15: Thesis topics from various RGUHS medical colleges in Karnataka

Focus population in thesis	Bangalore colleges	Davangere colleges	Gulbarga colleges	Belagavi Colleges	Total
Descriptive epidemiology of general burns admissions	-	1	1	1	**3**
Descriptive epidemiology of suicide attempters (including burns)	1	1	-	-	**2**
Nature of post-burns infections	-	-	-	1	**1**
Descriptive epidemiology and outcomes of patients accessing post burns contracture surgical care	2	-	-	-	**2**
Descriptive epidemiology of dowry and/or unnatural deaths (all methods or burns)	1	-	1	1	**3**
Descriptive epidemiology of completed suicides (including burns)	3	-	1	-	**4**
Descriptive epidemiology of homicides (including burns)	2	-	-	-	**2**
Total	**9**	**2**	**3**	**3**	**17**

2.6."Quality of care"

The quality of care provided such as presence of adequate staff (nurses and doctors), sanitation (barrier nursing), availability of medicines, empathy and counselling, good protein rich diet to a burns victim plays a crucial role in the survival or otherwise of the patient.

A 1994 report highlights the key issues related to quality of burns care in India: it was noted that in many government hospitals, there were no staff positions created for burns care as it was not considered a speciality which has led to delegating the responsibility to plastic surgeons who are already overworked. In addition, less than half of the burns units had physical rehabilitation personnel (Munster, 1994). It was also identified that despite the non-availability of dedicated burns wards in private hospitals, surgeons were able to manage cases of medium sized burns due to availability of human resources but this was accessible to only those who could pay. Yet another important point was the attrition rate of nurses which was high and their lack of special training limiting their judgements and interventions (Munster, 1994). It may not be incorrect to say that these issues are relevant for today's context as well.

One another report states that the chances of survival was very low in Victoria Hospital and even among cases with low percentage of burns (Nambiar, 2006). The following section deals with key challenges that were faced in improving quality of care at Victoria Hospital and how some of these have been addressed (based on available evidence).

2.6.1. Issues and challenges for improving the quality of care at Victoria Hospital

Various newspaper articles throw some light on the issues and challenges in providing quality care at Victoria.

Human resources

A newspaper article reported that there was a shortage of nurses in all the wards in Victoria and it was not specific to burns ward alone. It had a nurse:bed ratio of 1: 9.6 (at any point in time during the day), a low ratio in comparison to the minimum requirement of 1:3 for burns ward which led to a overload of work on nurses resulting in reduced quality of care for patients (Charan, 2001). A senior plastic surgeon at the Victoria Hospital added that it is an absolute requirement to have one nurse per patient at all times for burns patients with an affected area of over fifty percent but there were only three nurses available for each shift for almost 50 patients in the ward (Menon, 1999b). And this situation probably continues even till today(Bangalore Mirror, n.d.).

This apart and according to sources within Victoria Hospital, the number of doctors attending to burns patients is also inadequate. While the number of consultants has increased from three in 1999 (Charan, 2001) to four in 2010, along with five resident doctors (Bangalore Mirror, n.d.), it is still insufficient as the ideal situation for a 50 bedded burns ward would be to have 15 doctors and 30 nurses (Bangalore Mirror, n.d.). This lack of human resources reflects on the quality of care, which in turn impacts the treatment outcomes (Guido, 2013). In 2009, based on a public interest litigation (Staff Reporter, 2009), the High Court of Karnataka directed the Government to come up with a proposal to fill the vacancies of medical and

paramedical staff in government facilities, but this was not done. In addition, professional bodies such as the National Burns Association of India had expressed an interest to train nurses and paramedics in burns care (IANS, 2012) but it is unclear to what extent this has been operationalised.

From a quality of care perspective, plastic surgeons are needed to provide best quality interventions for burns patients to prevent contractures and minimize scars and in cases of non-availability of such specialists, general surgeons could be asked to intervene (Gurumurthy, 2013). It is also important to train medical interns to stabilize burns patients, especially in shock management (Gurumurthy, 2013).

The need for values such as dedication and empathy among nurses and doctors for the victims was emphasised as also the importance of talking to the patient which is an integral part of the care and healing process (including confidence building for the patient and family) as it directly impacts quality of care.

A unique human resource opportunity at Victoria Hospital came in 1998, when Vimochana activists were given space to work in the burns ward (Gurumurthy, 2013; Menon, 1999b; Sophie, 2011). This was facilitated based on the demands of Vimochana, the support from a former minister, Dr. Shankar Naik (Vimochana, 2013). Details of their work in the burns ward is given in Section 4.1, but to briefly mention: counselling families at a personal and legal level, eliciting real stories, monitoring police documentation of cases and providing a supporting shoulder (Menon, 1999b).

The situation of the other burns ward in Bangalore at St John's was also documented where the burns ward (general ward) has six beds and with a provision to admit three cases in the private ward. The burns ward is managed by six nurses in rotation, three "dressers" (who are school graduates trained to do burns dressings), six consultants and five residents which is the appropriate and adequate human resource necessary for managing nine patients (Guido, 2013).

While the situation of the two burns wards exist in differing contexts, reflection is still needed from the perspective of quality of care for patients, especially for those who cannot pay.

Infrastructure and sanitation (barrier nursing)

The burns ward in Victoria Hospital exists above the emergency room which was supposed to be relocated and the space to be made into a burns triage[8] area and procedure room (Guido, 2013), both from the perspective of improving quality of care as cross infections were repeatedly high due to inadequate space for patients and with the vision of making this a burns institute.

While interventions by Vimochana has facilitated the construction of the burns unit on a new floor (Menon, 1999b),the Infosys Foundation has funded the centralized air conditioning for burns

[8]First contact room for patients entering the Emergency Room, where the doctor decides about the urgency needed for managing the case.

ward (Karmayog, 2006; Menon, 1999b). Unfortunately, these installations which were critical in improving comfort and quality of care of patients were not maintained and have fallen into disrepair.

It has also been recorded that previously there were no restrictions for entry of visitors into the ward which added to the possibility of contamination within the ward (Sophie, 2011). This however, has been addressed to a great extent over the past few years (Vimochana, 2013). However, one recent improvement to be noted is that the male, female and child patients have been given separate spaces to improve care.

The future of the ward is at a crossroads at this point in time – due to the inevitable demolition planned to make way for the metro line. In the new burns unit being planned in the KPTCL block at Victoria, 220 beds are expected, but the schedule/timeline for this however remains uncertain.

Some of the other aspects related to quality of care that need to be considered include

* it has been highlighted that Victoria Hospital lacks ICU facility in prevention care (Nagaraj, 2008)
* availability of collagen sheets which can help operate on the very first day of the event itself by which 30-40% burns can be managed effectively (Gurumurthy, 2013)
* the need for a skin bank, where skin of deceased donors can be stored for use has been expressed by them repeatedly over the past few years, but no action has been taken (Goswami Bhattacharya 2012; Guido, 2013; Gurumurthy, 2013). As early as 1994, it was identified that India did not have legislation for establishing skin banks, and only 4/19 centres at that point in time had banks for relative donors (Munster, 1994). Currently, other larger cities such as Mumbai, Pune, Nagpur and Indore have established skin banks
* innovation in improving the chances of survival of burns patients is happening internationally and there is a need for large burns centres locally to keep abreast with and adopt developments that have proven to be effective
* the importance of quick interventions to halt the progression of severity of depth of involved area, which requires fluid management and administering the drug heparin (Gurumurthy, 2013)
* good hydration to prevent the translocation of bacteria from intestines (which is an internal source of septic infections in burns patients)(Gurumurthy, 2013)

2.7. "Cost of care"

One of the main challenge for any burns ward is the escalating cost of care as there is a need for full time monitoring, repeated blood tests, oxygen monitoring, blood transfusions, special diet,

dressings, barrier nursing and surgery (Gurumurthy, 2013). This cost is borne by the patient in a private setup or by the government in a government setup.

A 1994 report states that it took an average of 17 days to do the first surgery in an Indian burns ward (Munster, 1994). While this situation may have improved in many burns facilities, the cost of care has increased simultaneously. Even in 1994, the cost of care was between Rs. 2000 to 3000 per day (Munster, 1994).

A patient with approximately 30% burns needs one major and one supplementary surgery and a total of three weeks of admission in the hospital. And if the admission is done in the general ward, it would cost approximately Rs. 60,000 for the total period.

While poor patients access Victoria as they can ill afford other hospitals, one other option that is available to poor families is to access surgical care at other hospitals through the Vajpayee Arogyashree scheme which has many packages for burns care in a network of 130 private facilities – for both conservative care and surgeries including follow up such as contracture release (Department of Health and Family Welfare, Govt of Karnataka, 2012; Gurumurthy, 2013). However, it is unclear as to which patients are eligible for this scheme and of those eligible, how many are able to access it. But Vimochana is sceptical about the adequacy of these schemes in addressing burns care needs of the victims (Vimochana, 2013).

2.8. "Outcomes" - what becomes of burns admissions

The possible outcomes of burns are – recovery, recovery with disability, death. The immediate factors deciding the outcome of burns are as follows (Guido, 2013):

- Percentage of deep burns
  Almost all cases of superficial burns are salvageable. For cases with >60% deep burns, chances of survival are very less.

- Age and co-morbidities
  Burns victims who have diabetes and are obese are associated with worse outcomes

- Delay in reaching the hospital
  Delay in reaching the hospital progressively increases the problem, as dehydration increases the degree of burns from being superficial to deep. According to a senior burns specialist, an important but seldom followed intervention is that if the degree of burns is less than 70%, then, fluids should be given orally. This has changed, for now, hydration is administered as a routine as soon as the patient is brought to the emergency centre. (Guido, 2013; Gurumurthy, 2013).

- Quality of care
  * *Asepsis and barrier nursing*
    * It is important, but practically difficult to wear a full gown with the required accessories when administering barrier

care. However, it is advised that caps, gowns and masks be used as appropriate barrier nursing can minimise the risk of external infection (Guido 2013; Gurumurthy, 2013).

* Counselling, empathy and moral support adds to better treatment outcomes
* Presence of adequate staff members
* Availability of medicines

❖ Early surgery
For patients with >20% deep burns, once they are haemodynamically stable they should be taken in for surgery and it usually takes around 36 hours for them to stabilise. The idea is to excise the wound without which they become more prone to infection which can lead to septic shock and organ failure (Guido, 2013; Gurumurthy, 2013).

❖ Good diet
High protein and high calorie diet (such as curd rice, eggs)is recommended(Guido, 2013).
A rule instated by Stern and Warsbren suggests that for a patient aged over 20 years, if age+%burns is >75, the chance of death is >50% {cited in (Das, 2004)} and the causes of deaths, could be shock, infections and lung complications {according to Alexander JW Wixson cited in (Vinayak, 2004)}.

Apart from this, the incidence of wound infection is also proportional to burns area and depth {cited in (Vinayak, 2004)}. Based on opinions of senior burns experts, currently, death due to hypovolemia is rare in patients who are brought alive to hospitals (Guido, 2013; Gurumurthy, 2013).

A senior burns surgeon opines that for patients who have >30% burns, there is always an increased chance of death despite any level of intervention. The probability of death increases with increasing area of deep burns (Gurumurthy, 2013). It was unofficially reported from St. John's Medical College that approximately 90% of cases with 30% deep burns survive,whereas the number drops drastically for cases with 50% deep burns(Guido, 2013).

Based on 2012 statistics of women admitted to Victoria Hospital, 76% women with less than 40% burns survived, and only 6% with more than 40% burns (including those with 100% burns) survived (these may be overestimates as it includes DAMA cases in the denominator as well).

In modern medical management, flame burns should ideally lead to no residual disability in the patient, but it does occur rarely when initial treatment is incomplete. In other forms of burns – electrical and acid burns, residual disability and contractures respectively are common (Gurumurthy, 2013).

The outcome statistics for male and female patients at Victoria Hospital have been shown in Table 16. The odds ratio for death among female patients as compared to male patients was: 2.71.

Table 16: Outcomes among male and female patients in Victoria Hospital*

Outcome (2012)	Male	Female	Total
Recovery	225 (38.1%)	154 (18.6%)	26.7%
Death	317 (53.6%)	589 (71.1%)	63.8%
Unknown (DAMA)	49 (8.3%)	85 (10.3%)	9.5%

*Source: Vimochana, 2012

A senior surgeon was quoted in a newspaper article stating that the mortality in Victoria was high mainly because the cases referred to this centre have high percentage of burns. Further, he stated that shortage in nursing staff added to the challenge in managing patients well at Victoria (Menon, 1999b).

The disparity in outcomes between male and female cases is corroborated through other studies as well. Statistics from a study in Belagavi are also revealing about the disparity in nature and outcome of cases between male and female patients (Shankar, 2006).

Table 17: Outcomes among male and female patients in a hospital in Belagavi

Outcome	Male	Female
Recovery	80 (66.1%)	31 (20.5%)
Residual disability	15 (12.4%)	33 (21.9%)
Death	26 (21.5%)	87 (57.6%)

*Source: Shankar, 2006

A large difference in mortality between female and male burns victims was noted, with odds ratio for death (odds of death among female cases/odds of death among male cases): 4.97. Evidence from other articles corroborates the direction of the relationship in outcomes between male and female cases

(Gururaj, 2005). For instance, it has been reported from Wardha that 6.3% of male victims and 44% of female victims succumb to their burns (Gururaj, 2005). One of the determinants of the percentage body surface area affected is the burns intent. Results from one burns outcome study has been presented in Table 18.

Table 18: Comparison between burns intent with TBSA involved and outcome*

Burns intent	TBSA involved	Mortality amongst admitted cases
Accidental burns	>50% involvement in only 19% of cases	25%
Suicidal burns	>50% involvement in 87% of cases	96%
Homicidal burns	NA	100%

*Source: Rao et al., 1989

In addition, it has already been seen that women are associated with suicidal and homicidal burns (see Table 5). It would also be useful to analyse trend in fatalities among admitted cases (see Table 19).

Table 19: Change in case fatality among admitted women*

	2007 (%)	2012 (%)	Difference in proportion
Deaths in cases with less than 40% burns	30.7	24.1	p value: 0.086
Deaths in cases with more than 40% burns	93.1	93.6	p value: 0.732

*Source: Vimochana, 2012, 2007 {p-value was calculated using z-test for difference in proportions}

It can be seen from Table 19 that there is suggestive evidence for reduction in mortality in cases with less than 40% burns, but no evidence of reduction in mortality in cases with over 40% burns. This analysis did not account for degree of burns or other factors that might have affected outcomes, and so there is need for further study on trend in survival.

Other aspects relating to outcome

The importance of timely access to medical care was demonstrated in Table 13, where the chances of survival of the burns patient depended on the time taken to get medical attention following the incident. The odds ratio of survival for patients accessing care after four hours and those accessing care before four hours was shown to be 0.41, which shows reduced chances of survival if emergency care is delayed. Other studies have arrived at this conclusion as well (Gururaj, 2005).

Apart from this, the existing health systems also contribute towards determining burns outcome:

* first aid (which may be more relevant in some types of burns such as inhalational injury (Gurumurthy, 2013)) including application of cold water (Gururaj, 2005)
* improved facilities in peripheral hospitals (Gururaj, 2005)
* presence of intensive care facility (Jutla and Heimbach, 2004)
* early surgery (but this is often hampered by late admission and lack of adequate blood components (Munster, 1994)

And, several times, extreme poverty and lack of motivation can drive a patient away from the government hospital leading to incomplete recovery (Sahu, 2009). Burns was reported as the second leading cause of death among intentional injury victims in Bangalore, and second to road accidents in non-fatal unintentional injuries (Kavita et al., 2011).

3. Burns impact on victims and families

3.1. "Impact on family"

A large number of burns victims are the providers of their family – either economically productive or as housewives and both victims and families face huge challenges due to the burns event (Guido, 2013)

3.1.1. Healthcare challenges

A narrative by an NGO based in Maharashtra which also works with women, gives some idea about the mental situation of a woman who has attempted suicide with burns: *"Physically, the woman is weak, exhausted, dizzy and nauseated. She is in shock. Many conflicting emotions are at play. She is guilty, angry, sad, frustrated, traumatised, depressed, listless, desolate and numb. She blames herself and others, she justifies that this was the only way to teach a lesson to the wrong doer. She denies the attempted suicide and blanks out. She has bouts of crying or sits still and refuses to talk. She is stigmatised within the family and the immediate community as having caused disgrace to the family. Her children and other family matters are neglected, which affects her in turn. Economically, she loses her daily wage if she is working outside home thus adding to her difficulties. These women are from the lowest socio-economic class. There is then the additional burden of hospitalisation that has to be borne by them. They are held responsible for this loss."*(Deosthali et al., 2005)

* The victim feels physical pain and helplessness, whereas both the victim and the family can be psychologically impacted. They do not routinely undergo counselling except for instance, in the case of attempted suicide. A senior burns specialist reflected that it was important for plastic surgeons to additionally take up the role of counsellors and spend adequate time with patients and family, as it is an important part of patient care (Gurumurthy, 2013).
* Quite often relatives donate skin for the graft surgeries and they may have to be admitted for a few days as well as the surgical wounds usually heal in 12-14 days. However, donating skin may not be possible for relatives if they are the only one caretaker, or if they are old and frail (Guido, 2013).
* Life becomes more challenging for the patient victim who survive as society does not readily accept them due to the scars which remain on the skin (Bangalore Mirror, n.d.).
* Longer term impact due to residual physical disability is not usually seen now, as with modern care, complete functional rehabilitation is expected (Guido, 2013; Gurumurthy, 2013).
* Some cases may need psychiatric support as there may be greater tendency to re-attempt suicide(Rao et al., 1989).

3.1.2. Other familial challenges

❖ Children are sometimes victims of burns physically (intentionally or unintentionally), but most often they suffer emotional trauma upon witnessing the act performed by another family member such as their father. Such cases require a holistic approach towards emotional recovery.

❖ Several challenges are also faced by child witnesses during legal procedures and measures need to be taken to prevent additional trauma and stress (Sophie, 2011). Some suggestions made by Vimochana activists include:

* Statement made by child should not be refuted on grounds of their age, especially because they are often the only witnesses of suicides and homicides by burns and domestic violence.
* Though children may be influenced to make a false statement, detailed questioning can reveal what they really witnessed.
* The trial should be conducted soon after the incident to prevent recurrence of trauma by recollecting the event.
* A briefing about what they can expect and what they are expected to do in court should be given prior to the trial. And it is essential for the presence and support of a female psychologist prior to, during and after the hearing. It is ideal for the child to be able to meet the lawyer and judge prior to the trial
* Lawyers and judges too should be trained to handle child questioning so that it can be done in a non-threatening, non-leading and non-confusing manner

* The presence of the perpetrator of violence towards the mother is traumatic for the child and therefore facilities should be made for the hearing to be conducted in a separate room via video-link so that the statement can be made without fear. If this is not possible, the hearing should be conducted in the presence of the judge, lawyers and the psychologist.

❖ "Stigma": The women survivors suffer from low self-esteem and confidence, which increases whenever they see the mirror. Due to this low self-esteem and confidence, the relationship with others is also impacted. There is a change in the way others, including family treat them. Though support is needed by the victim, it may be difficult to get. This is especially seen in the context of long drawn-out treatment which does not end with discharge after the first admission. There is no one who follows up with the patients after discharge (Vimochana, 2013).

❖ Social withdrawal and isolation are also seen, especially when the husband plans to abandon the victim or remarry (Rao et al., 1989). And the woman is forced to remain at home as an "invalid" due to various constraints imposed by family and society (Sahu, 2009).

❖ There is also a significant financial burden on the family, both because of the healthcare costs and also due to the dependent status of most victims (Kavita et al., 2011)

❖ Families are also emotionally broken (Rao et al., 1989) and psychiatric care becomes much needed for several family members of survivors (Rao et al., 1989).

3.1.3. Long term impacts on survivors

❖ The main issue faced by survivors is the disfigurement due to scars (Gururaj, 2005). Earlier many burns survivors were left with contractures and deformities despite appropriate interventions. However, recent management protocols for burns cases aims to ensure prevention of contractures in the victim.

❖ Some victims suffer pain for long durations, decline in functional capacity and consequent loss of income (Rao et al., 1989).
Other impacts on women who have suffered intimate partner violence are as follows (World Health Organization, n.d.):

* Depression, sleep difficulties, post-traumatic stress disorder, eating and emotional disorders, and suicide attempts
* Delivery of low birth weight babies and higher risk of miscarriages
* Headaches, back and abdominal pain, fibromyalgia, gastrointestinal disorders and poor overall health.

3.2. "Physical and psychosocial rehabilitation of victims"

The psychosocial rehabilitation of the burns victim is extremely important for her to lead a

normal life (Vimochana, 2013). Based on the experience of Dilaasa, a Maharashtra based NGO and Vimochana (2013), the following psychosocial needs are to be looked at in a holistic manner(Deosthali et al., 2005):

* cases which are referred are those that are already less amenable to counselling
* there may be concomitant physical agony
* at the wards, privacy is difficult to maintain
* due to taboos and stigma, women find it difficult to share history of domestic violence
* there are mixed feelings of guilt, anger, frustration and loneliness
* grief counselling for both victim and family nutrition may be one component that could be improved

The other health care challenges in treating burns patients are:

* Motivational exercises and sessions for nurses as they are exposed to the condition in the ward for long durations which could impact them. Therefore, an increase in the number of days of leave from work is recommended
* To extend support for the social workers based in such wards as they will also be affected psychologically and physically (infections and immunity)
* There is a need for a rehabilitation centre in the Victoria Hospital burns ward similar to the one established in NIMHANS
* Nurses, despite being the keystone in burns care within a burns unit have not been adequately prepared as a resource with specialized training to take independent decisions while in the ward. In addition, a high turnover (for which there are several other reasons) adds to the challenge in developing them as a burns unit resource(Munster, 1994)
* There is inadequate focus on research directed towards improved quality of care, patient requirements, studies on traditional burns remedies (Munster, 1994) and health systems requirements for handling burns load

3.3 Challenges in social justice

Several acts are in place to protect women: The Protection of Women from Domestic Violence Act of 2005, Protection of Women against Sexual Harassment at Workplace Act (Ministry of Law and Justice, 2013), the Equal Remuneration Act of 1976 (Government of India Ministry of Labour, 2010) {cited in (Kavita et al., 2011)}. However, the effectiveness of these acts need to be documented as the cases on atrocities against women in Bangalore's Special Court has the highest pendency rate for a session's court anywhere in the country. The time taken for these cases to be disposed of on an average was six to seven years (Menon, 1999a).

Yet another challenge in obtaining justice has been that many female victims are forced to return to the perpetrators of their condition (Sahu, 2009) due to various circumstances (social conditioning, lack of family support, lack of education, financial dependence, fears and trauma) and lack of options.

3.3.1 "Legal aspects" – documentation of cases and judicial redressal

It has been observed by treating surgeons based on their conversations with victims that husbands tell their wives to report the incident as an accident, for which they would take care of them well, following discharge (Gurumurthy, 2013; IANS, 2009a). This often happens with the husbands hoping that the woman would expire. Care is shown by the in-laws until the statement is made, and this may be mistaken by the woman for a change in heart (Sophie, 2011). Several times, after days of treatment when the woman survives and notices that she has already been abandoned, she gives a second statement (Gurumurthy, 2013; Jutla and Heimbach, 2004).

Several times, the women decide to make false statements keeping the future of their children in mind, as has been observed by activists who work with burns victims (Sophie, 2011). Concerns about financial and physical security are both expressed. Societal influences are also significant, with women being taught to keep private matters to themselves, especially if married to a relative (Radhika and Ananda, 2011; Sophie, 2011). For the same reason, support is not often found from the parents' side to file charges against the in-laws. In addition, in several situations, parents of the girl may not show adequate support with the fear of social ridicule within their community (Jutla and Heimbach, 2004).

Often the recording of the dying declarations by the doctors or/and the police in the presence of the spouse and the in-laws can cause the victim to utter falsehood as to the actual cause and circumstances of the burning. This seems to happen more in private hospitals as reported in **Frontline** (Menon, 1999a).

There has also been a tendency not to probe for details by parents, police and doctors on statements made by women (Sophie, 2011).

An undue over-emphasis on dying declaration, with concomitant ignoring of circumstantial evidence has been identified as a large procedural bias (Staff Reporter, 2011a). Dying declaration has been shown to be unreliable in studies (Rao et al., 1989). It was shown in many studies that several cases of suicides eventually are not reported to police (Gururaj, 2005), which has been the experience of Vimochana activists in Victoria Hospital as well (as seen from Table 7). Bangalore's special executive magistrate also stated from his experience that women tend to report a "stove burst". He also mentioned that privacy during documentation of dying declaration is not maintained (Menon, 1999a). This may be attributed to several aspects such as stigma, lack of access to care, medico-legal barriers, social impact, cultural factors, possible mis-classification among other things (Kavita et al., 2011). The special public prosecutor stated that giving multiple dying declarations drastically weakens the case for the victim, and this happens often (Menon, 1999a).

Use of a non-local language by some victims added to poor documentation of facts by officials, as has been seen in some cases (Sophie, 2011).

Inadequate acknowledgement and accounting of the mental situation under which women make their testimonies, leads to poor management of recording statements, and inappropriate interpretations of multiple statements – which instead of facilitating justice, unfortunately leads to acquittal of the accused in several situations (Jutla and Heimbach, 2004).

The experience of Vimochana at Victoria Hospital suggests that providing a safe environment for the victims to disclose the truth is important, a matter that is often not taken as seriously by some doctors and police personnel. Confidentiality must be reaffirmed. The activists also provide counselling, which in turn builds trust between them and the victim. They are also able to guide victims of violence towards appropriate counselling facilities and provide legal advice as well.

3.3.3 Clues pointing towards intentional burns or foul play

In forensic medicine, a triangulation of anatomical findings, scene analysis and a psychological autopsy is suggested to ascertain what the cause was (Vijayamahantesh, 2005).

Occasionally, an important finding is one of post-mortem burns – those made by the perpetrator to hide a homicide. Lack of consistency in burns pattern and history provided by the alleged perpetrator can help in shedding light on the situation (Prajapati et al., 2011). Visiting the scene of crime becomes very important in this case.

The disproportionate number of women suffering from stove burst immediately after marriage is beyond what can be attributed to chance, as most women work in the kitchen from the age of 14 (Jutla and Heimbach, 2004; Karaddi, 2008). Nonetheless, one study showed that kerosene stoves are dangerous – of the 7165 that died due to this cause in 1998, 1280 were men. This shows that a large number of accidents due to stoves may have occurred, and therefore care should be taken while investigating the case to not wrongly attribute the burns to the marital family (Jutla and Heimbach, 2004). In one study it was reported that of 11 out of 38 cases where a history of kerosene stove burst was given, spot investigation showed the presence and use of a modern gas stove in the house (Jutla and Heimbach, 2004), again pointing towards the importance of spot visit.

The presence of full body burns as well is an indication of dousing the body with kerosene, which cannot happen with stove bursts or most other sources (Jutla and Heimbach, 2004).

In suicidal burns, most often the scalp, face, trunk and the posterior (in that order) is affected and seem to occur at odd hours. In contrast, accidental burns affect less surface area, mostly the anterior and usually occurs during cooking time(Rao et al., 1989).

3.3.4 Deviations from standard procedure and commonly encountered biases

Keeping the large burden and rising trend of violent burns occurring among women, questions have been raised about the adequacy of the current criminal and legal procedures in deterring these crimes (Menon, 1999a).

A newspaper interview with activists reported that the police most often intentionally classify all unnatural deaths as accidents, and sometimes as suicides as it reduces procedural and reporting work. This statement was based on family members of victims having testified grievances before the House Committee related to carelessness demonstrated while drafting FIRs (Menon, 1999a). Apathy and lack of commitment has also been noted even in stark situations when the victim may smell of kerosene. It has also been reported that occasionally advice is given to families to shift patients to private hospitals to avoid registration in police records (Nambiar, 2006; Sophie, 2011). Several of these suspicious cases are closed by the police due to apparent absence of "hard evidence" (Menon, 1999a). Another side of the argument is that this is done to protect the victim from further harassment, despite the criminals ending up free (Staff Reporter, 2011a). It was observed in one study that further investigation conducted in some cases showed links to dowry, which should have ideally been investigated by the magistrate at the beginning when the case was admitted (Radhika and Ananda, 2011).

It was stated in a newspaper article that spot investigations (visiting the site of the crime), which form an important component in collecting evidence about an unnatural death is not done in several situations. Such evidence from the scene of crime can reportedly lead to registering of a number of cases. For instance, in some situations when the victims or families report a stove burst, a site visit by activist would show that the incident occurred in the bathroom or living room (Staff Reporter, 2009), or in some situations, there would be no kerosene stove in the house at all (Sathya, 2012).

The number of cases that get registered is relatively small in comparison to the number of homicides and abetted suicides (Sophie, 2011). Perceived reasons for the same are: the natal family having lack of faith in the judicial system or lack of information/evidence about the violence that may have occurred. Parents of the victim often find it a financially unfeasible venture (as it could be as long drawn as ten years), or their poor health may not permit it (Sophie, 2011). There is a perceived laboriousness involved with police and legal proceedings, which discourages relatives and friends from pursuing cases (Menon, 1999a). In addition, the reality that winning the case will not bring back their daughter discourages the victims' parents(Sophie, 2011). Illiteracy was found among 90% of the victims, which increases difficulty in accessing judicial remedies (Jutla and Heimbach, 2004).

One study showed that despite 570 cases of dowry deaths registered between 1996 and 1998, only 22 persons were convicted (Jutla and Heimbach, 2004).

Delays in hearing cases that have been registered is another identified issue. For instance, it was reported that out of 68 dowry death cases, just 10 were heard during 2006-07 (Ashwini and Ambarish, 2007).

It has also been noted that due to the long drawn process of cases, evidence is tampered with and records are altered (Jutla and Heimbach, 2004).

Another bias has been the over-emphasis on using 498A, irrespective of whether dowry was one of the precipitating factors. This emphasis has allegedly been encouraged by police and lawyers, which may have inadvertently resulted from enthusiastic actions by women's groups. It is not clear whether this phenomenon exists in Bangalore as well (Kishwar, 2003). On the other hand, based on wide experience of working in burns ward, Vimochana activists suggest that several dowry death cases are eventually reported as accidents (either because women are severely affected to make a statement, or because they give a wrong statement to the police). Therefore, thereis a bias in recording lesser number of dowry deaths(Vimochana, 2013).

The same factors that cause violence against women also play a role in procedural biases. This includes role and status of women, dependent status, lack of education, and patriarchal nature of families (Gururaj, 2005).

3.3.5 Compensation

Based on inputs from burns care specialists and Vimochana activists, there are no specific pension or compensation available for burns victims (unless the burns event occurred within an occupational setup, for instance, BESCOM workers). The question of such pension or compensation which currently is for Rs. 3 Lakh for acid attack victims ("More skin-grafting centres for acid attack victims sought," 2013) arises primarily because of lack of job opportunities for survivors which may primarily be due to their appearance and also in some cases due to disability.

As burns are medico-legal cases, the victims and families are expected to apply to court to get monetary and other benefits including workmen's compensation and pension (based on what is relevant to that case). Due to various procedural and other delays, this takes up to several years. Also,the current policy does not recognise disfigurement (such as due to burns) as disability, though disfigurement often leads to loss of job.

3.3.6 "Employment"

There are very few women who survive the burns and of them many are unskilled labourers and come from poor families. Being the sole bread earners of their families they are unable to continue supporting their families. It would therefore be very useful if the government would come up with schemes to support them in a

government setup to augment other efforts done by civil society like for example, the support being provided through a leprosy based rehabilitation centre (Sumanahalli Leprosy Centre, a church based group), which offers training and support in candle making, an opportunity that is being used by some women victims/survivors.

4.Interventions of Civil society: Vimochana and other NGOs

4.1.Vimochana's role in burns care and rehabilitation

A senior burns specialist, who had the experience of working with Vimochana at Victoria Hospital, mentioned that (Gurumurthy, 2013):

* They provide an important service by speaking with the patients in the ward – which is comforting for both patients and families.
* Vimochana's presence and advocacy helped "open the government's eyes to this issue". Following their involvement, some funds were mobilized (Rs. 10 lakh) which was used to increase the much needed services and facilities in the ward.
* They were also able to mobilize funds from outside (such as Infosys Foundation, which provided Rs 40 lakhs) – which was used for improving quality of care and comfort for patients by fixing a specialized central air conditioning system with four-micron filters to prevent re-entry of infectious bacteria.
* They were able to persuade many women to give their true story, which were in turn informed to the senior surgeon. Based on that, a narrative statement of patient would be taken (including details such as the time, date, whether patient is conscious and oriented) which would serve as a
  * Statement if patient survived
  * Dying declaration if patient died
* Each of the above has helped in improving care, and in facilitating judicial remedy in cases of intentional burns.

History of Vimochana

Since its beginnings in 1979, Vimochana has been working with issues of violence against women, specifically on socially sanctioned *personal* forms of violence perpetrated on women within the home and outside, as in dowry tortures, murders and other forms of marital violence, sexual harassment and rape of women, trafficking and commodification of women.

Their work has focused on

- *Crisis Intervention*
  Extending support to victims and survivors of domestic and social violence through moral and legal assistance; facilitating negotiated settlements and providing a safe place to stay.
- *Campaigns*
  Focused campaigns on specific issues like dowry harassment and unnatural deaths of women in marriages, sex testing and sex

selection; sexual harassment at the work place and other campaigns for legal reform towards making the state responsible for the growing violence against women.

- *Community Support Groups*
  Strengthening community based support structures and women's/men's groups both in the city and surrounding districts to help them respond to violence against women. This apart from offering gender sensitisation programmes, strengthening alternative and more rooted notions of restorative justice.

History of involvement with burns victims

In September 1997, Vimochana initiated a campaign, "Campaign to Safeguard a Woman's Right to Life" (Sophie, 2011) in response to the large number of "stove burst" cases reported in the newspapers and closed as unnatural deaths of women. A part of this campaign was to highlight the status of the Victoria Hospital burns ward.

Unnatural deaths within Bangalore that occurred among married women between January 1997 and December 1998 (2 years) were investigated by Vimochana, which revealed that 1425 women had died. Follow up investigations and interviews with parents showed that a majority believed their daughters had been killed or subjected to harassment and cruelty by their in-laws which resulted in the women committing suicide.

However, Vimochana's site visits and follow up investigations (this was done initially during the late 1990s) for some of the reported "accidental burns" cases showed that several of these cases were actually homicidal or suicidal burns. This indicated that the number of women who were intentionally burnt were a lot larger than statistics suggested. In addition, it was seen that in several situations, burns had occurred late in the night which would also help in ruling out the commonly reported "stove burst theory" (Menon, 1999a).

As many of the stove burst cases suffered burns and were admitted to the Victoria burns ward, the Campaign was forced to look at the care and treatment facilities for the burns victims as also other related issues of corruption, negligence etc at the Hospital.

It was noticed that the number of burns admissions was reportedly higher following some traditional festivals (Menon, 1999a) (especially Ugadi, Id, Ganesha Chaturthi, Deepavali (Vimochana, 2013)). A relatively higher rate was also noticed among Tamil Christians and Muslims. Among Kannada speaking community, hanging as a method was seen more often.

In April 1998, a hunger strike was organized to bring pressure on both houses of legislature demanding a commission of enquiry into the state of the wards. Other demands that were made are(Sophie, 2011):

* a separate ward for children
* separate wards according to the percentage of burns
* to increase the number of doctors appointed to the Burns ward, by integrating post-graduate students, House Surgeons and nursing students, in order to provide round the clock medical treatment
* to provide free medicines needed for treatment, for until then the patient's relatives had to buy the necessary drugs.
* to appoint security guards to regulate the flow of visitors
* to hire cleaners in order to maintain hygienic conditions in the ward
* to install air-conditioners
* to allow two members of Vimochana to work in the burns ward in order to monitor the effective implementation of these demands.

Following this strike Rs.18 lakhs was sanctioned for the reconstruction of a new burns ward and the burns ward being declared a sterile area (Riti, 1999). And permission was awarded to post two volunteers from Vimochana in the burns ward since June 1998 (Menon, 1999b; Sophie, 2011). These volunteers, based on self-identified needs and gaps began to work with the staff members and maintain a register on individual cases besides talking with victims and families and providing information on legal procedures. They also monitored maintenance of hygiene, official recording of statements (Sophie, 2011) gaining the trust of the victims to share the true story behind their burns (Menon, 1999b).

In April 1999, due to Vimochana's sustained campaign, a Joint House Committee on Atrocities against Women was setup with the objective of investigating these deaths and identifying approaches to prevention. The report submitted by this committee in July 1998 mentions the following salient points (Menon, 1999a):

The systematic undermining at each stage of investigation was identified, for which detailed recommendations were made for each level of police investigation and judicial inquiry – registration of suspicious harm or death, FIR preparation, recording dying declaration, inquest, post mortem and forensic investigations and judicial processes. Draft bills were also submitted in the context of violence against women. Sensitivity, streamlining and efficiency was emphasised for investigation procedure. Sensitisation of the police force was also an important component (Menon, 1999a). In addition, specific recommendations on higher review committee for independent inquiries and that magistrates hold a public hearing presenting all evidence within one week of the woman's death, with the report being made available to all (Menon, 1999a).

As a part of their "Campaign to Safeguard a Woman's Life", a Truth Commission in the form of a public hearing was organised by Vimochana and the National Law School University in August 1999 where several testimonies were received from various parts of the state which revealed systematic irregularities in investigation

protocols and procedures, including neglect and corruption which eventually led to the accused being acquitted. The Truth Commission listened to these cases in the presence of a jury comprising of activists and retired judges to identify gaps in investigation procedures. Recommendations were made with respect to these gaps, and also specific suggestions were given to each individual victim (Riti, 1999). A handbook for sensitisation of police personnel was one of the outcome following this exercise (Vimochana, 2013).

Some of the other outcomes of the Campaign has been a manual on investigating offences against women brought out with the support of senior IAS officers. A forum, **Parihar**, was constituted under the police department for women who face crisis situations (Menon, 1999a; Sophie, 2011). Efforts were also made to create awareness in communities from where disproportionate number of violence against women's cases was being reported: JJ Nagar on Mysore Road, and Ulsoor area. In these areas, support group of women were created in adjoining roads of neighbourhood, where temporary shelter would be given to any woman who was being subjected to violence in the household. They would be sent back only on an issue of apology by the husband. Those houses would be informally monitored as well by the women. The women would also go to police stations to register complaints even at odd hours. All this had reportedly reduced incidence of violence in the areas.

As early as 1999, newspaper articles reported some of the impacts of Vimochana's involvement at Victoria Hospital: improved cleanliness, quality of nursing care and treatment (Menon, 1999b) – including the presence of round the clock emergency services and triage protocol (Riti, 1999).

In 2009, a large event *Daughters of Fire: the India Court of Women on Dowry and Related forms of Violence* based on the experience of the campaign was organised with the support of over forty women's organisations from India.

4.2. Other NGOs and institutions working with burns victims in Bangalore and in other parts of India

It was recognised that though affordable care was being provided at government hospitals, individualised attention to manage emotional trauma of patients was not possible due to lack of resources and motivation for follow up care and surgeries was low especially among poorer victims (Sahu, 2009).

Agni Raksha (see http://www.agniraksha.org/), founded in 1999, is a Bangalore-based NGO that helps burns victims and this initiative is supported by a few concerned burns surgeons from private hospitals. Medical care, home nursing, physiotherapy, counselling and occupational therapy are combined and offered free of charge to help rehabilitate victims into mainstream society. Male as well as female patients are provided with these services.

Efforts by other NGOs in India

CEHAT's Dilaasa Project in Mumbai, Maharashtra provides counselling and support to all women victims of domestic violence. And it was found that 80% of them were women and the main cause of death among women between the age group of 15-44 years was burns(Deosthali et al., 2005).

While the experiment of Dilaasa (which began in 2000) is similar to that of Vimochana, its objective is to look at the issue of domestic violence from a public health perspective.

4.3. Responses by the State

* The Anti dowry cell was set up to investigate into all cases of dowry deaths.
* Vanitha Sahaya Vani, a help line for women that would respond to distress calls from women, provide counselling and protection whenever necessary, was set up within the office of the Commissioner of Police.

However, it was found that these female officers were ill equipped to handle issues of violence against women as attitudinal shifts had not taken place adequately. Secondly, as they are divided between their regular role as police and as a support to women in distress, they were unable to do justice to the women seeking their help.

One of the major criticismsabout Vanitha Sahaya Vani was that success was measured based on the number of cases reconciled rather than the number of additional offences detected (Menon, 1999a), or the number of women who approached it for counselling.

Conclusion

Summary findings of the two burns ward in Bangalore

- Bangalore has two dedicated burns wards. The ward at Victoria Hospital is one of the largest in Asia with 54 beds, and the one in St. John's has six beds.

- Based on recent data, the approximate number of burns admissions each year in Bangalore was 1830 (1650 in Victoria Hospital and approximately 180 in St. John's Medical College) and of which half were women (the rest were men and children). Of the total cases, over half (52%) of them died, and amongst those dead, 69% were women. Some (10%) of the cases were discharged against medical advise and so their outcomes are not known. Approximately 20 spot death cases per year (almost exclusively among women) also occurred. Among the admitted women, 32% of the cases were of attempted suicide and 5% were of attempted homicide; registered cases of dowry deaths by burns were between 3.3% and 10% of all cases.

- Death by burns is the tip of the iceberg of domestic violence against women.

- There is an increase in the total number of cases each year, but the gross prevalence remains almost the same. Further study is necessary to understand trends within subgroups of the population.
- Burns is the single largest cause of death among women ages of 15 and 34.
- The average degree of burns for women was 56% of total body surface area and for men it was 35%. This difference appears mainly due to women being disproportionately exposed to intentional burns which affects larger surface area.
- Several reasons were cited as the cause for forced suicides attempts and suicides ending in death. This included harassment, failure in love, suspecting fidelity, extramarital affairs and others and the reason for the choice of burns as a method of suicide were many, largely cultural and psychological.
- The choice of burns as a method of homicide largely relates to the ability to disguise the incident as accident (due to erasure of evidence of previous history of violence, occurrence of such stove bursts, inadequate enquiry by police, and victims not registering complaints).
- Based on documentation by Vimochana, at least 19% of cases documented as accidents by police were abetted suicides. The reasons for registering them as accidents are many, which include: pressure from marital family, inadequate support from parental family, concern for children, hoping for a change in the husband's behaviour, false assurance by husband of living happily hereafter etc.
- A majority of victims received first aid at peripheral centres, but a need for further training in first aid of burns cases was suggested. It was also seen that mortality increased greatly when cases were brought to hospitals after a delay of over 4 hours since the incident. Therefore there is a need for effective coordination between burns centres so that there is no time delay in shifting between hospitals. The peripheral centres and ambulances should have facilities to identify well beforehand as to where to take the victims and the locations of burns centres should be made common knowledge.
- Though the number of beds is adequate at most times, there are situations where the number of patients far exceeds the capacity. However, the need for burns beds has not increased in proportion with the total population possibly due to reduced hospitalisation time and also because survival rates have remained low. There have been plans reported of providing facilities for burns care in upcoming government hospitals in the city outskirts (HRBR layout, Banashankari 6th phase, Magadi Road and Leprosy Hospital) and also in Bowring Hospital, but these have not been implemented.

- Though statistical analysis of data of the women admitted between 2007 and 2012 indicated a marginal improvement in the survival rate of those affected by burns in less than 40% body surface area, there was no such improvement found in cases with over 40% involved area.There is a need therefore for further analysis and clinical studies to find ways to improve outcomes.

- Funding for burns care is a huge issue which directly impacts the availability and quality of care. While private hospitals cannot be forced to allocate a certain percentage of their funds for burns care, government hospitals have to ensure sufficient funds for human resources in burns wards and in hygienic environment (barrier nursing) in these centres. Currently, the nurse to bed ratio is almost 1:10, whereas the ideal ratio is less than 1:3.

- With cost of burns care admission and surgery being about Rs. 60,000 in general wards of private hospitals, there is a need to evaluate the utilisation and relevance of schemes such as Vajpayee Arogyashree Scheme which currently provides cover for the treatment of burns.

- Considering that Victoria Hospital has one of the largest burns care centres in South Asia, there is a need to identify and maintain it as a Centre of excellence. The aim should be to make available the best and latest technology with doctors trained to use the same. The need for skin banks also should be evaluated.

- There is a lack of any in-depth research on burns issues as can be gleaned from this report which relied on thesis reports and information from reports prepared by NIMHANS. Therefore, there is an urgent need to commission/institute research on burns as part of a larger thrust to build research capacity in public health and clinical medicine. This will involve encouraging postgraduate students to go beyond their comfort zone of research from descriptive (as was found in the literature review of this situational analysis) to other study designs (qualitative, cross-sectional, case control and experimental designs).
  The faculty in medical colleges should be encouraged to take up research after appropriate training and making available resources for the same (including human resources for guiding and executing research process).

- The need for supportive services for burns patients and their families is very crucial. Counselling of patients begins with empathy shown by doctors and nurses who may identify the need for professional support once medical/surgical treatment has been completed. Such support needs to be available in large hospitals. There is also a need for support on legal and other aspects related to family life which professional social workers and counsellors may be able to do. Support may be needed for care givers as well. Burns victims in the long run may also need vocational and financial support which is possible by bringing burns victims under the

department for disabilities and the Women and Child welfare department. Burns victims, especially women who have faced intentional burns should receive benefits similar to acid attack victims (with regards to compensation) and disabled persons (reservation of jobs in government sector). Women suffering burns are unable to continue their earlier jobs due to their physical inability as also due to stigma and ostracisation.

Interpretation of findings

From a public health perspective, any intervention in burns care treatment will benefit at various levels(Gururaj, 2005): (i) a reduction in deaths caused by burns (ii) a reduction in the number and severity of disabilities caused by burns (iii) an increase in the number of productive working years through reduction of death and disability (iv) a decrease in the costs associated with initial treatment and continued rehabilitation of burns victims (v) a reduced burden on local communities as well as the State and Central Governments in support of victims and (vi) a decrease in the impact of the disease on 'second trauma' victims—their families.

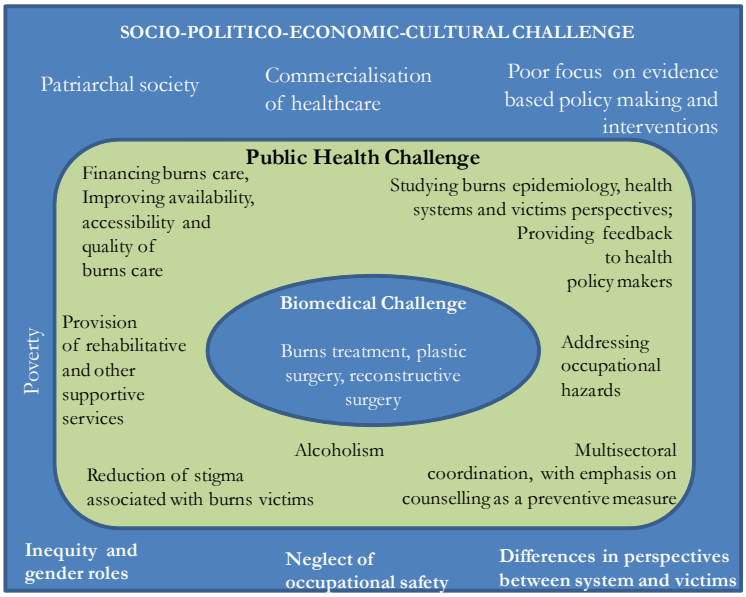

Figure 8: Levels of challenge in addressing violent burns

While accidental burns appear to contribute largely towards burns burden, the seriousness of burns cases is much higher in violent burns. In addition, several cases reported as accidental burns are actually heinous crimes. In addition, a disproportionate percentage of burns cases and average burns severity are female victims. Based on the findings of this situational analysis, burns have been understood at three levels – a biomedical challenge, a public heath challenge, and a larger societal challenge. Some insights into these challenges have been presented in Figure 8.

Understanding the reasons for the occurrence of inflicted burns (abetted suicide and homicide) and poor quality of services was also an important part of this situational analysis. A summary of the findings have been presented in Figure 9 and Figure 10.

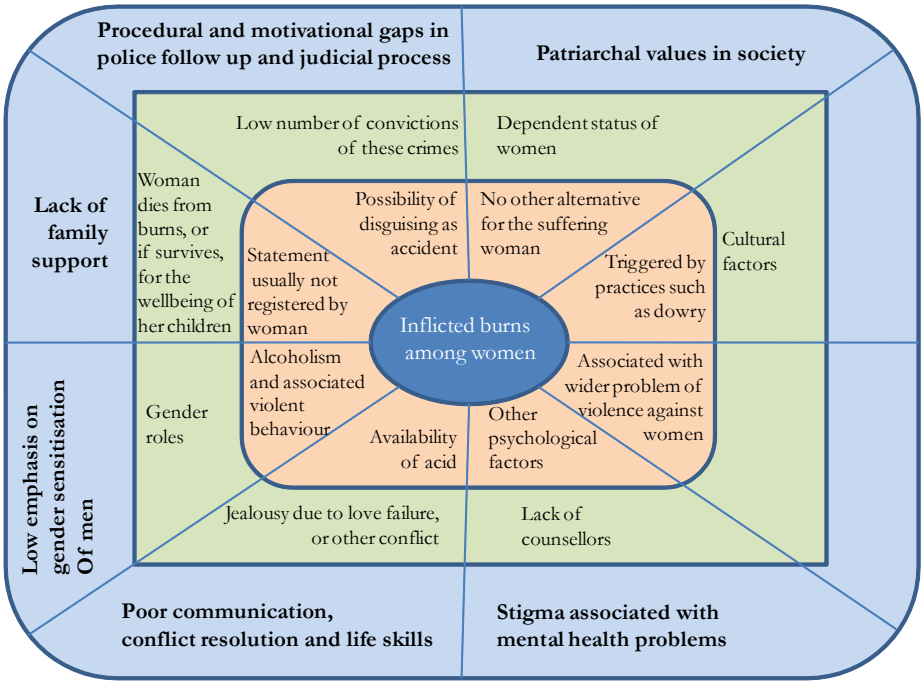

Figure 9: "Understanding Why": occurrence of inflicted burns

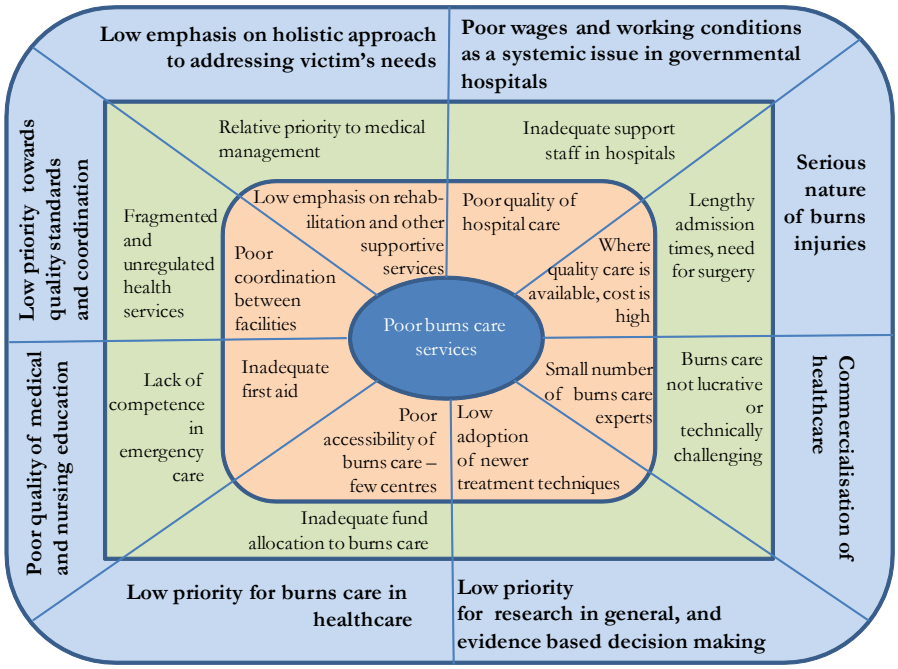

Figure 10: Understanding why: poor burns careservices

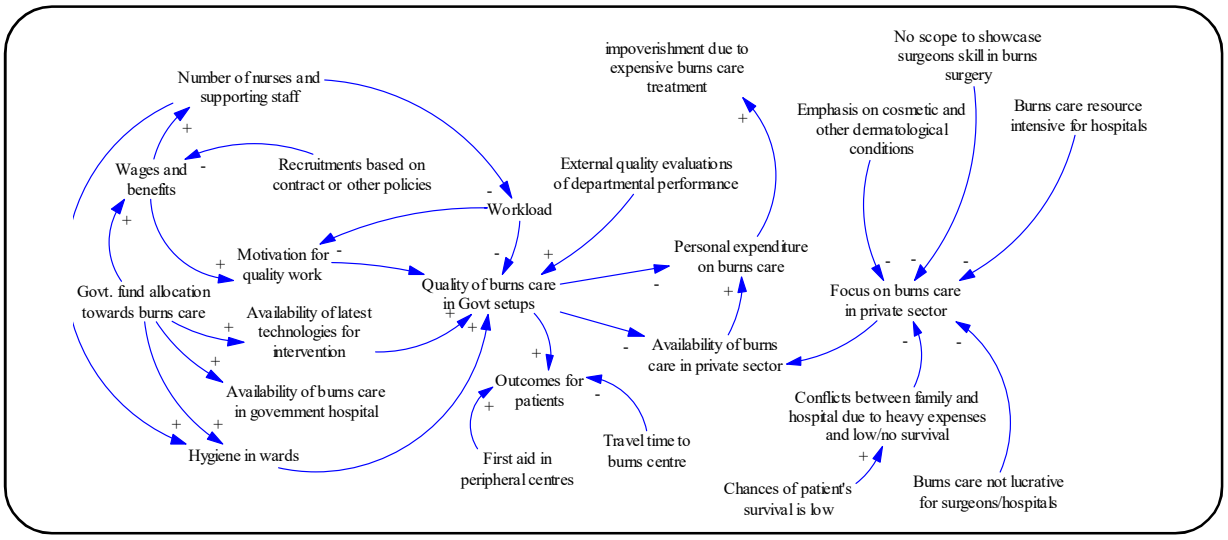

Figure 11: Causal loop diagram depicting major pathways affecting availability and quality of burns care

Recommendations

The various sources referred for this situational analysis provide some insight into interventions that could help prevent burns, reduce violence incidents, and improve safety, burns care and other rehabilitation and supportive services. The list may not be comprehensive in itself but gives us an idea as to how work could proceed. It is important to locate these interventions in the context of the levels of challenges and complexity of the issue as has been shown in Figure 8, Figure 9, Figure 10, and Figure 12.

Technical interventions (addressing accidental burns)

* Safety at home: safer cooking practices, better storage and handling of dangerous chemicals (Kavita et al., 2011), safer stoves, electrical appliances (Gururaj, 2005) and the promotion and use of less-inflammable fabrics (Gururaj, 2005)
* Occupational safety through appropriate technological interventions for those working as linesmen is also essential.

Burns care services (which is applicable to both victims of accidental or violent burns)

* With respect to injuries, it has been reported that improved pre-hospital (including first aid, early transportation to a definitive hospital) and hospital based trauma care accessible at various levels could reduce deaths by upto 30% (Kavita et al., 2011). There is a need for training to initiate IV fluids at peripheral centres prior to referral.
* Need for strategically setting up burns care centres for every 5 lakh to 20 lakh population outside cities as well (Munster, 1994). This needs to be verified against current health system needs.
* There is a need to improve human power in burns care, especially nursing staff. This will improve quality of care as well (Guido,(2013). The various burns associations should lobby for improvement in availability and quality of burns care (Munster, 1994).
* Involvement of general surgeons in burns units to reduce the load of plastic surgeons could be considered (Munster, 1994). The quality of

intervention may be poorer, but may help save lives in case of non-availability of plastic surgeons (Guido, 2013).

* Important to retain nurses in burns ward to improve their skills in burns care (Guido, 2013), as well as keeping them motivated during their service (Vimochana, 2013). This may largely be related to wages and quality monitoring.
* In areas where government services are not accessible, arrangements should be made with local hospitals, at least for appropriate first aid prior to referral. There is scope for clinical trials for locally appropriate and financially viable alternatives for care (Munster, 1994)
* There is also a need to evaluate the performance of burns wards and the public health department and to document outputs and outcomes to understand if improvements are taking place at an adequate pace as a result of the interventions and to locate the gaps that exist in interventions.For instance, governmental burns wards should document and report quality of care through standardised approaches.
* There is a need for supportive and paramedical services within hospitals such as counselling and physiotherapy facilities (Gururaj, 2005). A need for sensitization and training of all those involved in the care of attempted suicide victims is absolutely necessary and urgent to get the victim out of the self blame approach (Deosthali et al., 2005).
* Motivation of support staff in the burns wards needs to be improved through appropriate interventions and incentives (Vimochana, 2013).
* Hospitals can play a facilitating role in establishing women's support groups for survivors (Deosthali et al., 2005). Community health workers can be familiarised with available services to be able to appropriately refer cases (Deosthali et al., 2005).

Procedural suggestions (for cases of violent burns)

- There is a need to ensure protocol in post mortem examination, crime scene visit, history of harassment of the patient which will help determine the manner, mode and cause of death (Prajapati et al., 2011).
- Need for training and gender sensitisation of doctors and police officers in recording the dying declaration and investigation of cases, (Jutla and

Heimbach, 2004). Better recording of evidence is needed – both medical and other evidence, as often, lack of evidence becomes a reason for closing the case (Menon, 1999a). Doctors should be encouraged to write their interpretation of the injuries based on clinical examination , besides just noting down what the patient might tell (Deosthali et al., 2005).

* Proactive investigations are necessary in stove bursts cases where just the daughters-in-law are getting burnt (Menon, 1999a).
* A copy of the statement made by police should be made available to patients (Deosthali et al., 2005)
* The Dying Declaration alone should not be used to close the case as accidental.

Societal interventions (mostly relevant to violent burns)

* Prevention of suicides is a public health challenge and needs to be taken up at various levels (Deosthali et al., 2005), including at the community level (Gururaj, 2005). Suicide prevention is possible if there is an early recognition of mental health problems, control of alcohol abuse, enhancing social support systems, providing life skill education for children (Kavita et al., 2011), enhancing counselling facilities in educational institutions and at workplaces (Gururaj, 2005).
* A need to address larger determinants: gender inequities, enhancing rights of women, strengthening injury prevention programmes at all levels using integrated approaches and combining education, enforcement, engineering and emergency care (Kavita et al., 2011).
* Enhancing the skills of medical practitioners to identify domestic violence and mental health problems (early detection of depression, alcoholism and personality disorders) (Gururaj, 2005). There is also a need to educate on better first aid practices such as immediate application of cold water after sustaining burns and on responsible reporting of suicides (Gururaj, 2005).

* More research, both qualitative and quantitative, including surveillance components are necessary to understand the pathways of this situation to better identify appropriate intervention points (Kavita et al., 2011).
* Facilitating the formation of survivor's groups with the objective of improving confidence, acceptance and re-entry into communities (Munster, 1994) and ensuring social and economic security of distressed populations are necessary. There is also a need to provide spaces for affected persons to be involved in decision-making on matters that concern their welfare and empowerment.
* Welfare measures given to acid attack victims should be extended to victims of violent burns. Preference under disability quota for government jobs should also be given to burns victims (Vimochana, 2013).
* A welfare board under the department of disabilities to look into matters of both acid attack victims and burns victims should be set up (Vimochana, 2013).
* Identify communities from where maximum burns cases are reported. Campaigns on burns prevention must be sustained with the Burns Association of India.
* In these communities, train health workers in first aid and equip primary care centres appropriately.

Figure 12 consolidates these suggestions, and those that have emerged from the issues identified.

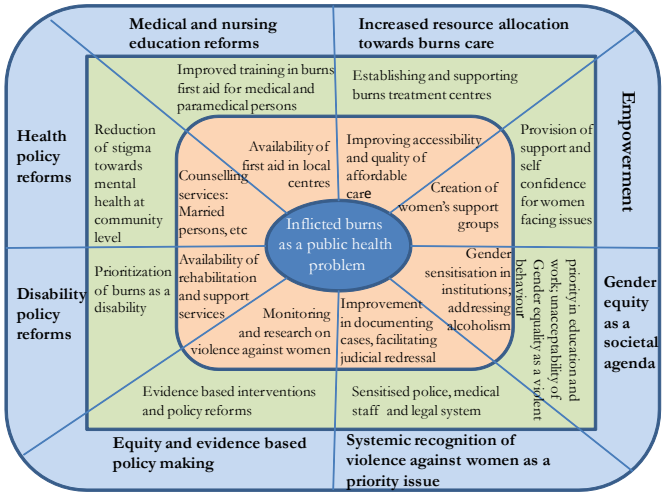

Figure 12: What can be done to address the issue of intentional burns

There is a need for concerned individuals and groups to come together and understand, discuss and address these issues, and also to take up responsibility in following up and coordinating action. There is a wealth of information available with organisations such as Vimochana which is based on their experience, but there needs to be an increased sharing of this information. Experienced groups should develop protocols and guidelines which can help with capacity building of the various departments and sectors that are involved (or could be potentially involved) with burns prevention, treatment and rehabilitation and mainstreaming support. While burns is being addressed as a biomedical challenge through hospital based care and to a certain extent as a public health problem (safety, education and services) and societal problem (anti dowry law and other legislations), the problem can be mitigated through greater emphasis on reduction of both violent and accidental burns. To address inflicted or violent burns, there is a need for systematic de-legitimisation of patriarchal values and female oppression at a cultural and societal level and to discuss gender equality as an issue with both men and women at all levels (including at schools and workplaces) as a cross cutting issue. To address accidental burns, there is a need for further ascertainment to confirm that the incident was due to accidental causes, and to understand further the factors leading to these accidents – which could include poor occupational safety practices and cooking practices.

This report is based on a wide range of information sources gathered from newspaper entries, thesis reports and interviews with senior burns experts and social workers. However, there was inadequate enquiry into any social sciences research on this subject. Secondary sources were also relied upon for qualitative information about burns (which was adequate from the perspective of this report).

In Lieu of an Afterword

What an ardous journey it has been! From accidentally stumbling upon the scores of women, charred and writhing in pain, left to die in the most dehumanizing conditions to getting engaged with overhauling a medical system!

Twenty years down the line the images that have remained with us are of wailing women, of peeling skin, blackened faces beyond recognition, the smell of burnt flesh emanating from the women laid on rexine beds on the cots, on the floor, in the corridors of the ward, relatives falling over their dear ones in shock, in disbelief – all a nightmarish experience of unimaginable pain and agony of the victims and the contrasting inhumanness shown by fellow human beings. We saw these women, face and hands distorted, disfigured lying in wait with excruciating pain for death to relieve them from their unbearable suffering.

While this report throws sufficient light on the inadequacies in the health system in responding to burns victims and testify to the two decade long struggle and various attempts of Vimochana to provide relief and solace both to the survivors and those dying, our concerted efforts in lobbying and advocacy in the last two years has borne concrete results. And this would not have been possible without commitments from the doctors fraternity, concerned Government officials (retired and in office) and dedicated individuals.

Our achievements since this report was completed have been:

a. The casualty department, which was the potential source of cross infection in the previous burns ward at Victoria Hospital and reducing the chances of survival, has been shifted to a new block.
b. A skin bank to facilitate speedy skin grafting for burns patients was recently inaugurated in 2016.
c. Monies to the tune of Rs 4.3 crores have been sanctioned towards the upgradation and reconstruction of the burns ward.
d. A committee under the chairman ship of the Principal Secretary, Medical Education and comprising of doctors, plastic surgeons, counselors, members of Vimochana and SOCHARA has been formed to monitor the reconstruction and functioning of the Burns Ward.
e. The proposal to establish a Burns Institute that will comprehensively look at the issue of burns/ integrate the varied aspects of burns has been accepted by the Department of Medical Education.
f. A proposal to formulate a Burns Policy along the lines of the National Burns Policy has been accepted.
g. A proposal to conduct regular training of medical doctors and to depute them to burns hospitals/centres in other cities and countries for understanding and studying best practices has been accepted.
h. The Rajiv Gandhi University of Health Sciences (RGUHS) will be prevailed upon to commission research into the issue of burns.

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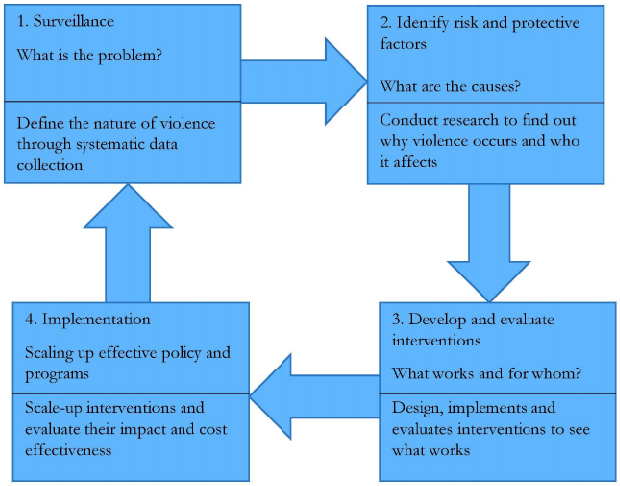
Appendix

1.Additional framework/s for understanding burns as a public health problem

Framework for violence as a public health problem (World Health Organization, n.d.)



2. Statistical tests

a. Estimation of number of spot deaths: Steps of the calculation

* Total female burns autopsies performed over a period of two years (2003-2005): 1246 (Jatti, 2006)
* Total female cases admitted during the same period in the Victoria Hospital burns ward: 1609 (Sophie, 2011)
* Total number of deaths among female patients in the ward during the same period: 1609*0.76 = 1223 (estimate)
* ratio of male:female admissions (2012)= 1:1.4
* ratio of male:female deaths in the ward (2012)= 1:2.6
* total number of male admissions (2012)= 591

* total number of male deaths in the ward (2012)= 225
* Therefore, estimate of brought dead females between 2003-2005: (1246-1223)=23
* And the estimate of brought dead males between 2003-2005: 23/2.6 = 9
* And the estimate of brought dead cases of children = 2
  The estimate of brought dead cases between 2003-2005= 23+9+2=34 (or 17 per year)

1. Z test for the difference in proportions in the percentage of women suffering burns based on the number of female children in Bangalore and Bijapur.
   Ho = There is no difference in the proportion of women with single female child in Bangalore and Bijapur
   Difference in proportions/percentages:
   39.1-37.1 = 2
   Test statistic = p1-p2/SE(p1-p2)
   For that, p(bar)is calculated = 106+13/(271+35)=119/306=38.9
   Therefore,

$$Z = 39.1 - \frac{37.1}{\sqrt{\left[\frac{38.9 * (100 - 38.9)271}{\square}\right] + \left[\frac{38.9 * (100 - 38.9)}{35}\right]}}$$

=2/8.7566 = 0.2278
Therefore p=0.4129 (which is the one sided-p value), two sided p value=2*0.4129=0.82
If the null hypothesis were true, the chance of finding this difference in proportion is 82 in hundred. Therefore there is no evidence against the null hypothesis of no difference in proportion between single female child in Bangalore and Bijapur studies.

b. Odds of survival v/s transportation time

Time to get to hospital Davangere (Iliyas)	**Survived**	**Did not survive**	**Survived (%)**	**Odds ratio**
<30 mins (baseline)	71	39	64.5	1
30 mins to 4 hours	81	51	61.3	0.87
>4 hours	24	35	40.7	0.38

c. Odds ratio of survival

Time to get to hospital (Iliyas, 2011)	**Survival (number survived/total cases)**	**Survival (%)**
<30 mins	71/110	64.5
30 mins to 4 hours	81/132	61.3
>4 hours	24/59	40.7

* Odds of survival if transit time < 4 hours: 152/90
* Odds of survival if transit time > 4 hours: 24/35
* Odds ratio of survival for those taking >4hours to those taking less than 4 hours: **0.41**

d. Comparison of mortality between 2007 and 2012

	2007 (%)	**2012 (%)**	Difference in proportion
Deaths in cases with less than 40% burns	30.7	24.1	Z=1.714
Deaths in cases with more than 40% burns	93.1	93.6	Z=0.347

The null hypothesis against which tests were conducted in each case (for <40% and for >40% burns) was that there was no difference in mortality between2007 and 2012. Two sided p-values were calculated by doubling the one sided values got from the statistical table.
For burns < 40%, the z value for difference in proportion was found to be 1.714, for which the two sided p-value worked out to: 0.043*2=0.086
For burns > 40%, the z value for difference in proportion was found to be 0.347; for which the two sided p value was found to be: 0.366*2=0.732

III. Questions that guided the drafting of each sub-section of the report

"Burns Incident"

* What is the number of burns incidents
* What is the proportion of men/women and children
* Was this burns accidental or suicidal or homicidal
* What was the cause of burns
* From which part of the city are they coming from
* What is their socio economic background
* What is their religious and caste background

"Why burns occur"

* Under what circumstances did the accidental burns occur
* Under what circumstances did people commit suicide by burns (which is included under the larger question of why people commit suicide, and specifically why women commit suicide by burns)

"Witnesses"

* Are there witnesses to the incidents of accidental and intentional burns
* Are there child witnesses
* How are they affected by it
* What is the kind of support that needs to be given to counsel the child following such a situation

"Immediate aid"

* In what ways do witnesses respond to minimize the burns
* What is being done to contact ambulances
* What is being done to provide first aid, support and comfort to the victim immediately after the incident
* How does one respond to a burns victim immediately after the incident
* How can we improve the general awareness to manage a situation of burns

"Transportation of victims"

* What was the transport option used to take the victim to the hospital
* Was an ambulance contactable

"Care during transportation"

* Was the ambulance equipped to give first aid to victims
* Were the paramedics trained to provide first aid to burns victims
* What needs to be done during transit to improve the condition of patient? And what needs to be done to prevent further deterioration of the condition of the patient

"Interim management by primary/secondary/ tertiary care centres"

* Do centres that do not accept burns patients provide first aid to burns victims before referring to a hospital
* What is being done for these patients
* What should be done by peripheral centres to improve the survival chances of patients in transit
* Are appropriate directions given to burns care centres

"Transit time"

* What is the average transit time taken for patients to access burns care
* What is the gender disaggregation of average time
* What is the average time taken for women facing intentional burns
* Why do patients from far off places come to Bangalore for burns care
* Do all districts having burns care facilities, operational
* What should be the required size of burns care ward in each district
* How does transit time affect outcome

"Burns care facility"

* How many hospitals offer burns care in the city
* What is the number of beds available for burns care in each of the hospital
* Is the number adequate for the city
* What is the disaggregation of beds reserved for men, women and children

"Priorities"

* Are there burns wards in government hospitals
* Are burns wards available in private hospitals
* Why are there none in some hospitals
* Is burns considered a public health issue by planners and policy makers
* Is there an expressed intent to improve burns care
* Is the government burns care facilities satisfactory

"Funds"

* Are specific funds allocated for the functioning and improvement of burns ward
* What are the funds available for maintenance and improvement of burns ward
* Who is providing these funds
* Are the allocations sufficient for burns care
* What aspects of burns care needs to be improved in government hospitals
* Are more funds needed
* If yes, for what
* How can additional funds be generated to address the needs of burns wards in government setups

"Availability of beds"

* What is the usage of beds in burns wards
* Is there a need for more beds to cater to burns care in the city

"Quality of care"

* What are the human resources available in the burns department - Doctors, Trainees, Nurses, Dressers
* What is the ideal ratio for beds: doctors, and beds: nurses
* Are skin banks important to improve outcomes
* Are medicines available to achieve good quality of care
* Is asepsis followed? To what extent? How
* Is appropriate diet available for burns patient at that facility
* Who should monitor quality of care
* Does the presence of social workers improve the quality of care as perceived by victims and families
* Are there blood banks and is antibiotics available

"Cost of care"

* What is the average cost of care for patients
* What is the minimum cost

* What can be the maximum cost of care
* What percentage of patients are insured
* Are new methods of cost effective care being tried/researched
* What are the other costs that families bear during the treatment and rehabilitation of victims
* Are the government centres providing free service
* Are more funds needed to keep this subsidized
* Are more funds needed to improve quality of care

"Outcomes"

* What are the main factors that decide outcomes for burns patients
* Below what percentage of deep burns are the chances of survival
* Below what percentage of burns is a chance of 100% survival
* Below what percentage of burns should there be 100% survival
* What is the percentage of patients who recover, is disabled, and die
* Are these ideal survival statistics being achieved
* What is the gender disaggregation for the outcomes
* What are the reasons for these ideal statistics not being achieved
* What can be done to improve these outcomes
* How many victims are brought dead to the mortuary

"Impact on family"

* What percentage of the victims were employed and what percentage were dependant wives
* Are the victims able to function as before after they recover from burns
* How do families cope with the loss of a family member to burns
* How does witnessing the incident impact the family
* How does the process of treatment in hospital impact the family
* Who supports the patient during the recovery/time at hospital
* Is support needed for the family
* Who in the burns ward helps the family with their questions and situation
* Who bears the cost
* What are the long term impacts of a burns survivor on the family
* What is the special care needed for child witnesses

"Physical rehabilitation"

* What percentage of victims suffer from disability
* What percentage of flame burns victims suffer from disability
* Are facilities for physical rehabilitation available and accessible to victims

"Psychosocial rehabilitation"

* What percentage of patients require counselling
* Is it only needed for those who attempted suicide or survived a homicidal attack
* What is the role of the plastic surgeon and nurse in counselling
* What is the role of a psychologist in counselling
* What are the main psychosocial issues that need to be addressed
* Do family members need psychosocial counselling
* Are such services available and accessible to victims and their families

"Legal aspects"

* What are the legal procedures to be followed in a burns case
* Do the police visit the site of burns in all cases
* What role do doctors play in recording legal statements
* Are patients counselled by someone prior to them giving their statements
* What are the challenges faced by the victims in accessing disability certificate, workman's compensation and pension

"Stigma"

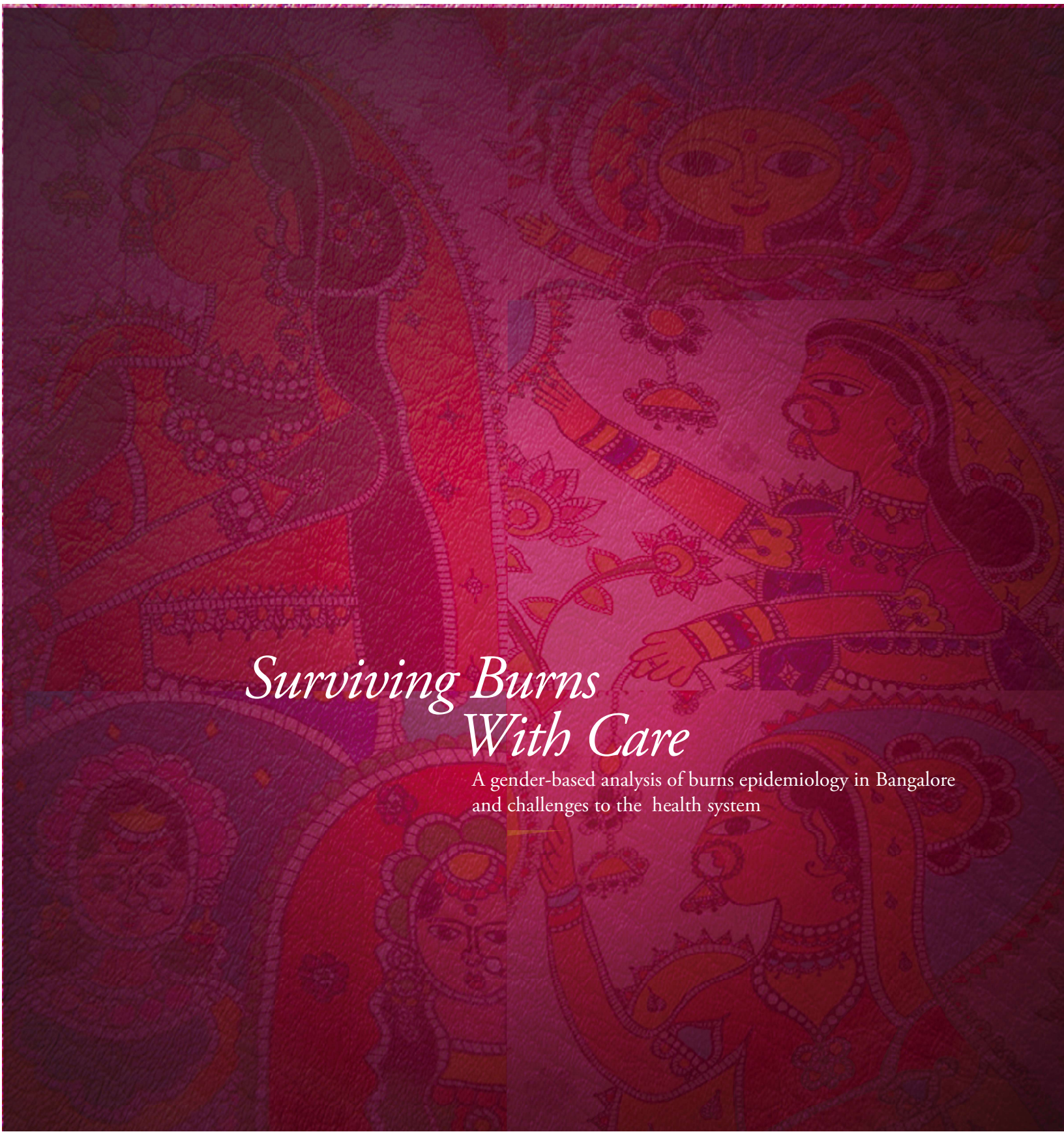
* Do burns victims face stigma and discrimination in society
* If yes, why
* What are the challenges faced by the victims due to stigma
* What can be done to reduce this situation of stigma
* What interventions can be made to prevent discrimination within the family

"Employment"

* Are victims able to resume their previous employment
* What percentage are able to resume
* For those who are not able to resume, is disability the reason or something else
* What can be done to assist women to be independent following recovery from burns

"Compensation/pension"

* Are all victims eligible for some support from government
* Are employees liable if it occurs in workplace
* What is the level of support offered



Surviving Burns With Care

A gender-based analysis of burns epidemiology in Bangalore and challenges to the health system