

Original Article

Characterization of acid burn victims in two selected health facilities in Dhaka city

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Abstract

This descriptive cross sectional study was carried out in Dhaka Medical College Hospital (DMCH) and Acid Survivors Foundation (ASF), Dhaka from January to June 2010 among the acid burn patients admitted in DMCH and acid burn victims taking services from ASF to find out the socio-demographic characteristics, physical extent of injury, and to identify the reasons behind acid burn in selected institution in Dhaka city. A total of 112 samples were taken purposively and data were collected by face to face interview. Among the respondents most were female (58.04%). Mean age was 20.3 years and most came from rural and semi-urban areas (91.82%). Most of the incident occurred at the mid-night and at the time of sleeping (69.09%). 23% of the respondents lost their partial or full eye sight or hearing or both. Post burn complications developed in old burn patients 75.8%. Most of the victims (83%) faced various type of problems. Among the respondents, 65.2% suffered from superficial burn, 31.2% from mixed burn and 3.6% from deep burn. About 15.2% suffered from > 20% of total Body Surface (TBSA) burn. The main cause of acid burn was intentional (98.2%). Only 1.8% was accidental. In the female the intentional causes were presence at the site (21.9%), marriage proposal rejection (15.6%). In case of male the main causes were personal enmity (30.4%), presence at the site (28.3%).

Key words: Burn, acid burn, violence

Introduction

Burn is one of the oldest injuries that man still suffers from. Ever since man discovered fire he also accidentally started to burn himself. Chemical burn, mainly acid burn is recent one. The mortality and morbidity rate by acid burn is high in Bangladesh. But in developed countries it is much lower. Above all the mortality rate is much higher in chemical burns, than all other burns. In fact, acid burns don't cost more life but disfiguration, disability and post-burn complications like hypertrophic scars, keloid formation, acute and chronic duodenal ulcer, marjolin's ulcer, protein losing enteropathy, chronic renal failure, immune deficiency are usual. The patients suffer from physical and psychological disability for whole life. They become crippled, deformed and handicapped¹. Acid burn are mostly from violence i.e. from acid throwing in our country. In other countries it is totally due to accidental or industrial hazards. So it has become a important public health issue in respect of prevention, management and rehabilitation of the patient. Homicidal acid burns for ill motives of the perpetrator, mainly came to notice in 1980s. Then scattered occurrence was notified and no systematic data of cases were available. Acid burn cases begin to increase gradually by acid throwing. At first, 'Prothom Alo' a renowned daily newspaper, started keeping the systematic record of acid throwing from 1996. They recorded only acid throwing cases wherever it occurred in Bangladesh but not all the cases from acid burns.²

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Social burden from acid burns affects both the family and patients. It hampers the patient employment and carrier. Quality of life is also deteriorated. Patients suffer from various mental agony, physical pain, psycho-social stresses. Family harmony is disrupted. Social stability is decreased by divorce, or breaking intrafamilial relationship. Lifestyle also altered by social isolation and ultimately the patients dissolute or becomes orphan or widow.

Acid is such a liquid substance that it melts skin, muscle and even bones of human being whenever it comes in contact. The perpetrator uses mainly sulphuric acid in case of acid throwing as it is cheap and easily available. It is used in carpentry work for permanenting / lasting color of cloth. It is also used in jewellery shop, laboratory, studio, battery shop, television and radio repairing shop, paint industry etc. On the other hand price of nitric acid is high and not easily available as sulphuric acid, though nitric acid

is more destructive than sulphuric acid. The main target of the culprits is to the face of the victims. Face becomes horrific, distorted and blindness may occur. Nose, lips and ear are melted, hair is lost and throat is attached to chest as a complication of post burn contracture. The normal elasticity of the burn area is lost and permanent scar and contracture developed the burn area. The victims are living critically at the edge of life and death.²⁻⁹

Though acid violence is becoming increasingly alarming, few scientific studies are available on acid violence. This study was conducted to explore the causes of acid burn and its extent of the injury among the patient; and to identify the socio-demographic status, economic status and characteristics of the victims of acid burn.

Methods

This descriptive cross sectional study was conducted in Dhaka medical College Hospital and Acid Survivors Foundation (ASF), Dhaka from January 2010 to June 2010 among the acid burn patients admitted in DMCH and victims who received services from ASF. A total of 112 samples were included purposively. Data were collected through face to face interview by a pre-tested semi-structured questionnaire and then data were analyzed by SPSS program for windows. Ethical issues, specially written consent and confidentiality of the victims were maintained during the study.

In fact, most of the acid burn patients from various corner of Bangladesh are admitted in DMCH, so the patients admitted here represent the phenomena of acid burn of the whole country. ASF is a Non Government Organization (NGO) which was established on the 12th May 1999 to tackle the problem of acid violence in Bangladesh and to rehabilitate the victims. So data from there also represent the country picture. Both sexes of any age and both new and old cases were included in the study. Any duplication and those who were unwilling to participate were excluded from this study.

Result

Total 112 acid victims were evaluated. Most of them (58%) were female. Young age group was affected most (37.50% in 11-20 years age group). Married and unmarried subjects were more or less equally affected (54.95% vs 43.23%). Among the victims, 33.64% were illiterate. Respondents who attained secondary and higher secondary were 27% and 28% respectively. Regarding occupation, overall 25% were students. Low income group and people from rural areas comprised the most of the acid victims in this study (91.82% & 93.46% respectively). (Table - I) Among the victims, most (65.2%) suffered from superficial

Table-I: Socio-demographic characteristics of the respondents

Character	Frequency	Percentage
Age (in years)		
<10	13	11.61
11 -20	42	37.50
21 -30	32	28.57
>30	25	22.32
Sex		
Female	65	58.04
Male	47	41.96
Religion		
Muslim	105	93.75
Hindu	7	6.25
Marital status		
Married	61	54.95
Unmarried	48	43.23
Widow	2	1.81
Education		
Illiterate	37	33.64
Primary	30	27.27
Secondary	31	28.18
Higher secondary	3	2.73
Graduate	6	5.45
Masters	3	2.73
Occupation		
Students	28	25.46
Professionalist	2	1.82
Service holder	7	6.36
Businessmen	10	9.09
Farmer	9	8.18
Labor	4	3.64
Unemployed	10	9.09
Housewife	29	26.36
Others	11	10.00
Monthly income		
< 5000 BDT	100	93.46
5001 -10000	3	2.80
>10000	4	3.74

burn, and then mixed type of burn 31.2%. Rest 3.6% suffered from deep burn. Among the victims, 48.2% suffered from < 10% of total body surface area burn, 36.6% from 11-20% and the rest > 20% of total body surface area burn. (Table-II & Table-III)

Table-II: Distribution of the respondent (n=112) by types of burn.

Burn type	Frequency	Percentage
Superficial	73	65.18
Deep	4	3.57
Mixed	35	31.25
Total	113	100.00

Table-III: Distribution of the respondents (n=112) by the percentage of total body surface area (TBSA) burn.

% of TBSA burn	Frequency	Percentage
1 -10%	54	48.21
11 -20%	41	36.61
>20%	17	15.18
Total	112	100.00

Most affected part of the body was front side of the body 85(77.3%), next was head/face/neck 66(60.0%). As the respondents answered more than one category so the frequency was more than 110 respondents. (Table - IV)

Table – IV: Distribution of the victims by affected parts of the body

Area	Frequency	Percentage
Head /face/neck	66	60.0
Front side of the body	85	77.3
Back side of the body	40	36.3
Lower portion of the body (including genitalia)	36	32.7
Other sides	5	4.5

It was found that 74% of cases had permanent damage of any organ, i.e. eye or ear, skin or any part of GIT or reproductive organ. Fifty victims (75.8%) suffered from post burn complications, i.e. hypertrophied scar or keloid formation, ulcers or contracture deformities. 16(24.2%) patients did not arise any post burn complications.

Most of the cases (76%) occurred at mid night, 20% of the cases occurred at the evening. The lowest occurrence was in late night (2%). The most acid throwing cases occurred when the victims were in bed. It was about 2/3rd of the occurrence. In case of female it was about 3/4th and in case of male it was about 1/2 of the cases. Male were more victimized than female In the work place and on the way. Others stood for only 1.8% which were in ritual places , clubs or in neighbors or relatives house. (Table - V)

Table-V: Distribution of the victims (n=110) by acid throwing place

Place	All		Female		Male	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Work place	2	1.82	0	0	2	4.3
On the way	16	14.54	5	7.8	11	23.9
At home (awake)	23	20.91	13	20.3	10	21.7
At home (sleep)	67	60.91	45	70.3	22	47.8
Others	2	1.82	1	1.5	1	2.1
Total	110	100.00	64	100	46	100

Most of the acid burn occurred from intentional attack and a few were accidental. 90.9% of victims knew their attacker. Only 9.1% did not know their attacker previously. The most common reason behind acid burn was presence at the side with the victims.

it was about 27(%) of the whole reasons. In case of female it stood the highest (21.9%) position. But in case of male it was 28.3%. The commonest reason in case of male was personal enmity and 15.6% reason of acid burn in case of female was marriage proposal rejection. (Table - VI)

Table - VI: Distribution of the respondents behind the intentional attack (n=110)

Reason	All victims		Female		Male	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Love affair related	7	6.36	6	9.38	1	2.17
Marriage proposal rejection	10	9.09	10	15.63		
Offensive proposal	6	5.45	6	9.38		
Presence at the site	27	24.55	14	21.88	13	28.26
Conflict with husband	5	4.55	5	7.81	..	
Personal enmity	16	14.55	2	3.13	14	30.43
Familial dispute	11	10.00	4	6.25	7	15.22
Dispute over property	11	10.00	5	7.81	6	13.04
Wrongly victimized	5	4.55	4	6.25	1	2.17
Dowry related	6	5.45	5	7.81	1	2.17
Others	6	5.45	3	4.69	3	6.25
Total	110	100.00	64	100.00	46	100.00

Most of the victims (84%) faced problems following acid burn i.e. drop out from job, study, profession, social/familial negligence or dependent on others for their living in their day to day life specially after arising post burn complications. A few (16%) mentioned that they were able to lead their day to day life without facing aforementioned problems. (Table - VI)

Table-VII: Distribution whether the victims faced problems day by day lives after post burn complication (n=50).

Faced problem	Frequency	Percentage
Yes	42	84
No	8	16
Total	50	100

Discussion

Acid burn constitutes about 15% of total burn. As the mortality rate is not high but the morbidity rate is more in case of acid burn and most of the cases occur from acid violence, a cross sectional study was carried out to find out the reasons behind acid burn in DMCH and ASF.

Most of the new patients were in DMCH and old patients were in ASF.

Out of 112 respondents 65(58.4%) were female and 47(41.96%) were male. Female were more victims than male. Study conducted by Bari and Chowdhury found 72.78% were female and 27.22% were male. The difference in above studies was due to different areas and different reasons behind acid burn. The mean ages of the victims were 20.3 years. These findings were consistent to Bari and Chowdhury.¹⁰ The young adults below 20 years were the most affected in this study. Among the respondents, 22.3% was due to presence at the site because of grandfather or grandmother or parents accompanying the young adult. In this present study it was found that 93.75% of victims were Muslim and only 6.25% were from other religions.

55% of total victims were married, 43.2% were unmarried & rest were widow.¹¹ All most all of the victims, 96.3% came from low or middle class family. Only 3.7% victims were from upper middle class or upper

class family. 1/3rd of the victims had no education and only 1/10th of the victims crossed secondary level. As most of the victims were from poor social class family, so illiteracy naturally will prevailed among them. These findings were also relevant to study conducted by Shimul Z.¹¹

Housewives were the most victimized. It would be due to either conflict with husband or presence at the site or marriage proposal rejection. Students were in the second position, because love affair or personal enmity or marriage proposal rejection or presence at the site naturally common among them.

Most of the victims were from rural and semi-urban area. More than 90% of the victims were from low socio-economic conditions and about 90% of the victims did not cross the secondary level.

Out of 112 respondents 61% cases found old burn (F=28, M=37), and 24% were new burn 9 (F=19, M=28). There were no statistical differences for old and new burn could be identified. More than 2/3rd of the victims were affected in the front side of the torso. It was relevant to the findings of Alamgir HM.¹² Among the victims 50 (75.76%) developed permanent disfigurement of any part of the body and 42 (84%) of them faced various kinds of problems in their day to day life. These findings also relevant to other studies.¹⁰ Out of 112 respondents, 85.8% had less than 20% of Total body surface area (TBSA) burned and rest of victims had more than 20% of TBSA burn. Superficial burns constituted 65.2% of total victims, 31.2% were mixed type of burn and only 3.1% had deep burn. These findings were complementary to other finding.

Most (64.09%) of the acid throwing occurred at sleeping time. This findings were co-relate with othes.¹² All most 98% of the acid burn was from intentional attack. Only 2 patients were accidentally burnt. The most common (24.5%) cause of acid burn was the person presence at the side. It was relevant that age above 30 years suffered from 22.3% and housewives were 26.4% of total burn cases. They usually accompany the young children at home or outside and share common bed. This findings was not mentioned in anywhere of other studies. Personal enmity was next 14.5%. In case of female victims, marriage proposal rejection, love affair related and offensive proposal were in 2nd and 3rd position. Only 9.1% of cases of the victims could not identify the attackers. It was due to that most of the cases occurred at the middle of night and at the time of sleeping. So they could not identify the attackers or the main culprit was

not directly involved in acid throwing. These findings were consistent with the result of other findings in Bangladesh.¹²⁻²⁰

There were some limitations in this study, such as small sample size, few missing cases during analysis & inclusion of both new and old cases. Post burn contracture developed only old cases & attacker were not interviewed in this study.

As most of the acid burn patients come to DMCH for treatment from every corner of the country and only ASF rehabilitate the patients of acid burn, so the study depicts the national scenario of the characteristics and status of acid burn cases. The data of this study would be beneficial to the health planning authority to develop strategies to combat the problems of acid violence.

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