

Analysis of 1612 Patients Admitted to the Burn Unit in Salmaniya Medical Centre, Bahrain, from 1984 - 1991

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Burn management has improved over the years dramatically. This is mainly because of better understanding of the pathophysiology of burns and the establishment of burn centres.

In 1984, the Salmaniya Medical Centre (SMC) established a burn unit to upgrade the care of burn patients which is complex, expensive and tedious. Prior to that, cases of burn were often treated by general surgeons. This paper is a statistical analysis of the cases admitted to the burn unit since its inception in 1984 until 1991.

METHODS

The charts of the patients admitted from January 1984 until December 1991 were retrospectively reviewed. The cases were analysed for monthly distribution, sex, age, nationality and mortality.

RESULTS

Monthly and yearly admission to the unit is shown in Table 1. Total admission per year ranges from 183 to 220 with an average of 202 patients. There is a slight increase in the admissions in January, February, March and April. There were a total of 1068 males and 544 females in the 8 year period (Table 2).

Patients were divided into four age groups: 0-5 years, 6-12 years, 13-30 years and above 30 years of age. Distribution of the cases by age groups is presented for each year from 1984 until 1991 in Table 3. Surprisingly, the pattern of distribution was found to be very constant over the 8 years studied. These percentages were approximately as follows: 44%, 6%, 28% and 22%, respectively (Fig 1). It clearly demonstrates that children of 0-5 years of age had the highest percentage of admission. Moreover,

Table 1
Monthly patient distribution from 1984-1991

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1984	16	14	21	22	23	18	16	12	14	16	17	22	211
1985	15	17	15	11	17	31	16	19	23	15	15	15	209
1986	13	11	17	15	19	19	17	12	18	17	12	16	186
1987	17	17	15	18	13	18	17	15	12	15	14	12	183
1988	19	15	19	22	19	15	11	12	12	17	17	15	193
1989	25	19	14	9	16	20	9	21	17	15	22	15	202
1990	23	22	25	26	17	17	20	12	12	6	15	13	208
1991	23	19	25	26	14	20	14	14	16	21	14	14	220
Total	151	134	151	149	138	158	120	117	124	122	126	122	1612
Average	19	17	19	19	17	20	15	15	16	15	16	15	202

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Table 2
Distribution of Patients by sex

Year	Male	Female	Total
1984	173	38	211
1985	124	85	209
1986	128	58	186
1987	113	70	183
1988	122	71	193
1989	126	76	202
1990	147	61	208
1991	135	85	220
Total	1068	544	1612

Table 3
Distribution of patients by age group

Year	0-5 Yrs		6-12 Yrs		13-30 Yrs		>30 Yrs		Total
	No	%	No	%	No	%	No	%	
1984	93	44.54	13	6.16	59	27.96	46	21.80	211
1985	92	44.01	13	6.22	58	27.75	46	22.01	209
1986	81	43.55	11	5.91	53	28.49	41	22.04	186
1987	81	44.26	11	6.01	51	27.86	40	21.85	183
1988	85	44.04	12	6.22	54	27.97	42	21.76	193
1989	89	44.06	12	5.94	57	28.22	44	21.78	202
1990	92	44.23	12	5.77	58	27.88	46	22.12	208
1991	97	44.09	13	5.91	62	28.18	48	21.82	220
Total	710	44	97	6	452	28	353	21	1612

Table 4
Percentage of surface burn and mortality (1984 - 1991)

Year	Number	% Burn
1984	9	68
1985	9	68
1986	1	90
1987	3	73
1988	4	60
1989	8	75
1990	7	83
1991	8	83
Total	49	Average 75

children under 13 years of age constituted 50% of the burn admission. This finding is significant for development of the burn unit and for prevention strategies in the future. Bahraini patients constituted 84% of the total admissions (Fig 2). Mortality in the burn is analysed in Table 4 which shows that the average mortality in the years studied was 3.0%. The table also shows that the percentage of the total surface burn of the deaths ranged from 60-90% with an average of 75%.

DISCUSSION

This paper presents a statistical analysis of patients admitted to the burn unit at SMC in Bahrain from its date of establishment in 1984 until 1991.

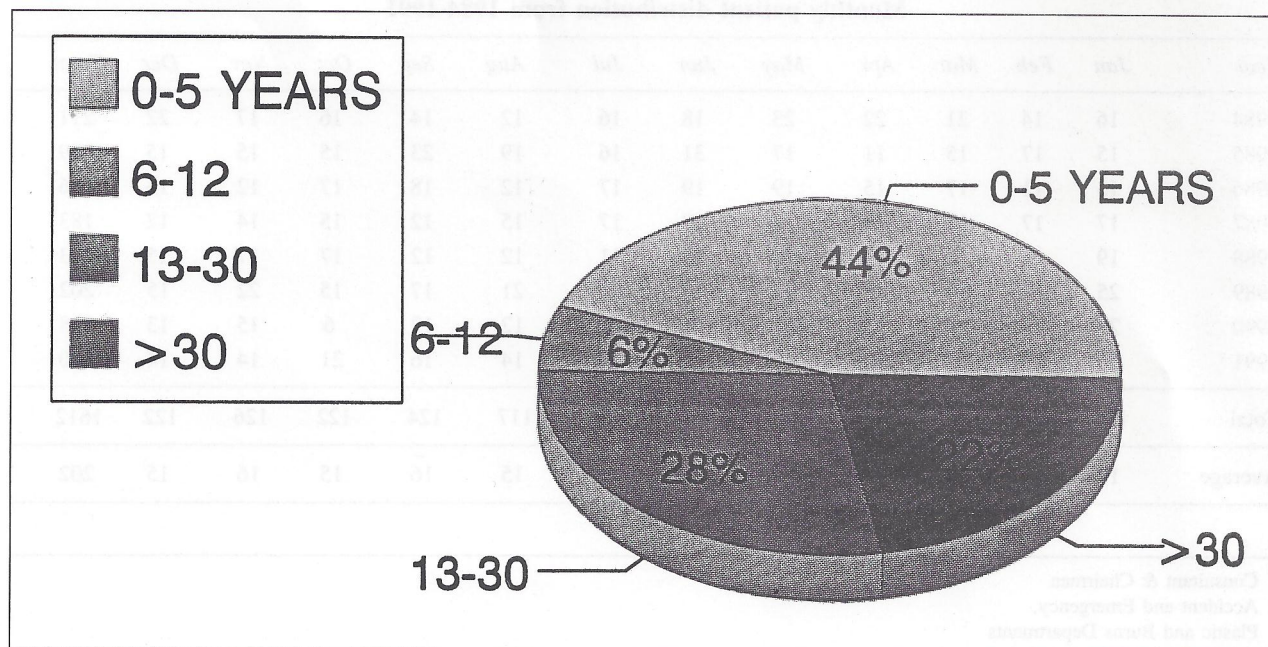


Figure 1: Distribution of patients by age group (%)

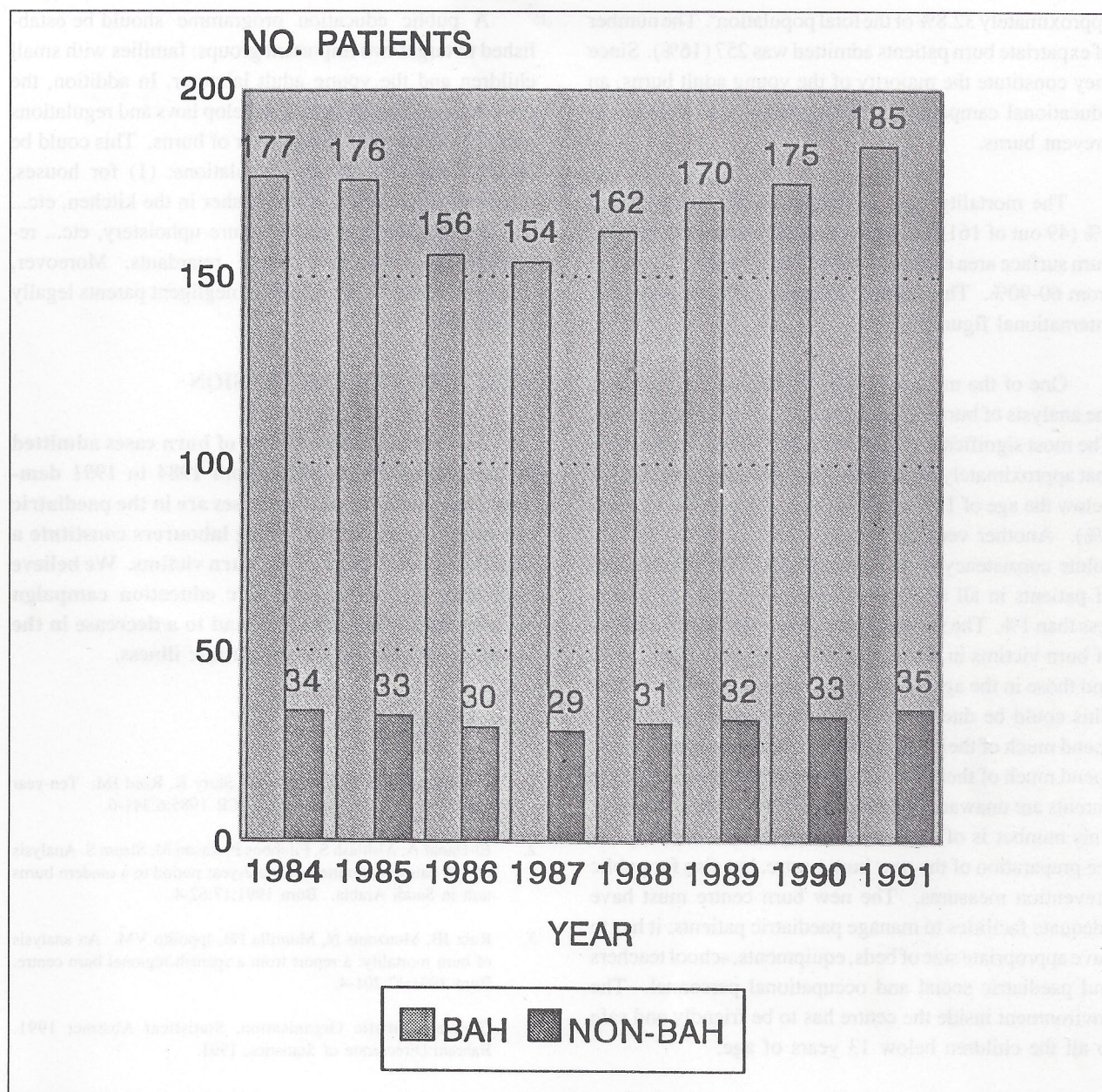


Figure 2: Distribution by nationality

The significance of these statistics is two-folded. Firstly, it is valuable for the ongoing preparation of the new burn centre. Secondly, the interpretation of these numbers can help to plan a campaign for burn prevention. Unlike many other medical problems, there is no vaccine against burns and there is no cure for burn scars. Thus optimal care in a modern centre should be the aim along with public education to minimise occurrence.

Between 1984 and 1991, the number of patients admitted was almost constant, with approximately 200 patients per year, and there had always been a higher ratio

of males to females. Out of the total number (1612), 1068 (66.25%) were males and 544 (33.75%) were females. This is consistent with international figures^{1,2,3}.

The statistical breakdown according to month shows no pattern as to what time of the year burns tended to occur. Seemingly, however the winter months in Bahrain (January - March) had a slightly higher percentage than the rest of the year. This difference is too small to warrant change in admission policy to the Burn Unit.

Bahrain depends largely on expatriate labour, and the majority of these are manual labourers, making up

approximately 32.8% of the total population⁴. The number of expatriate burn patients admitted was 257 (16%). Since they constitute the majority of the young adult burns, an educational campaign for this population is essential to prevent burns.

The mortality rates in the period studied averaged 3% (49 out of 1612). The average percentage of the total burn surface area of those fatally burned was 75% ranging from 60-90%. This mortality compares favourably with international figures³.

One of the most important aspects of this survey is the analysis of burn victims according to their age groups. The most significant figures are those which demonstrate that approximately 50% of the burn victims were children below the age of 13 years (0-5 years, 44% and 6-12 years 6%). Another very interesting aspect is almost the absolute consistency of the percentages. The percentages of patients in all age groups vary from year to year by less than 1%. The statistics also show that the percentages of burn victims in the age 0-5 years are very high (44%) and those in the age group 6-12 years are quite low (6%). This could be due to the fact that the younger children spend much of their time at home while the older children spend much of their time at the school suggesting that the parents are unaware of how to prevent accidents at home. This number is of considerable importance not only for the preparation of the new burn centre, but also for public prevention measures. The new burn centre must have adequate facilities to manage paediatric patients; it has to have appropriate size of beds, equipments, school teachers and paediatric social and occupational personnel. The environment inside the centre has to be friendly and safe to all the children below 13 years of age.

A public education programme should be established to target two important groups: families with small children and the young adult labourer. In addition, the government should actively develop laws and regulations aiming at decreasing the number of burns. This could be accomplished by having regulations: (1) for houses, requiring fire alarms, extinguisher in the kitchen, etc... (2) for fabrics, clothing, furniture upholstery, etc... requiring treatment with flame retardants. Moreover, there must also be laws holding negligent parents legally responsible.

SUMMARY AND CONCLUSION

This retrospective review of burn cases admitted to the Burn Unit at SMC from 1984 to 1991 demonstrated that 50% of these cases are in the paediatric age group, and that the young labourers constitute a significant proportion of the burn victims. We believe launching an effective public education campaign coupled with strict laws will lead to a decrease in the incidence of this very costly tragic illness.

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