Burns Epidemic

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SUMMARY

The Red Cross War Memorial Children's Hospital admits increasing numbers of burned children every year. In 1973 over 600 children were admitted to the Burns Unit. The cost to the State for the treatment of this epidemic is in excess of R500 000 per annum at this hospital alone. In the Cape Peninsula over 1 100 patients sustain burns of sufficient severity to warrant admission to hospital. The figure for the whole country is unknown.

Several courses of action are suggested, but in the light of experience obtained elsewhere it is obvious that a national drive will have to be instituted to halt this terrible affliction. The first step suggested is that the Minister of Health appoint a commission to collect data and advise him as to the best course of action.

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In the mid-1950s several polio epidemics swept the country. The authorities concerned reacted with commendable alacrity, and all our health resources were mobilised to maximum advantage to prevent spread of the disease. Once vaccines became available to combat the virus, they were not only distributed by a well-organised health department, but the Government passed legislation making it a crime if parents failed to have their children immunised. The importance of this fact is emphasised by Crikelair,[1] 'The politician with a stroke of his legislative pen, may save more lives than scores of physicians who are treating injured victims'. A good example of this is the fall in road accident fatalities since the new speed limit legislation.

Surprising as it may seem, we are at present in the grip of an unrecognised epidemic which threatens to make the polio epidemics pale by comparison. The cause of this epidemic is accidental burn injuries. The outcome of this epidemic, as in poliomyelitis, is either death or deformity (Figs 1 and 2). The age group, alas, is similar too—it is mainly a misfortune of the young.

Like pollution, it is a complication of industrialisation without consideration of the consequences. To quote Goldman *et al.*:[2] 'Burns are occurring in epidemic proportions. The incidence of burn injuries in the USA exceeds that of every industrialised country, and deaths and crippling due to burns in this country are currently considerably greater than the mortality and morbidity due to poliomyelitis in the peak epidemic year of 1954'. Whether the incidence of burn injuries is higher in the USA than here in South Africa is open to question, since our statistics are incomplete and have never been published.

It is the purpose of this article to bring to light the magnitude of this horrible problem in South Africa and to suggest ways of combating it. However, like pollution control, this will cost money, but we hope to show that prevention would be less costly, not only by economic but by human standards, and certainly far better.

Fig. 1. A week-old infant weighing 2 kg, with a 40% body area fire burn.

Incidence of Burns

The Burns Unit in 1972 admitted no less than 533 patients under 3 years of age (Table I). Of these, 58 were secondary contractures and 476 acute burn injuries. A total

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Fig. 2. Same child as in Fig. 1 two months later. Note amputations and contracture of left foot.

of 2 163 patient attendances were seen at the weekly burns outpatient clinic alone, not including those patients who attended outpatient clinics at other times.

TABLE I. STATISTICS OF THE WEEKLY OUTPATIENTS CLINIC OF THE BURNS UNIT

	1960	1961	1962	1963	1970	1971	1972	1973
Total attendances					2 195	2 237	2 163	2 121
Admissions	156	209	279	294	464	480	533	600
Deaths	6	4	5	6	10	9	7	4
% mortality	3,8	1,9	1,8	2,0	2,1	1,8	1,3	0,6

Astronomical as these figures are, the most disturbing aspect is the steady increase noticed since the Burns Unit first became functional. The dramatic increase in admissions since 1960 is due to an increasing number of patients attending the hospital, and not to an increased provision of facilities. The fall in outpatient attendance, on the other hand, is due to the Day Care Hospitals, opened in 1971, taking some of the load off our hospital's outpatient facilities.

Since our hospital is not the only one admitting burned patients in Cape Town, we obtained figures from other centres in the region (Table II).

TABLE II. STATISTICS FROM OTHER CENTRES

Hospital	No. of patients admitted per annum
Red Cross War Memorial Children's Hospital	500
Karl Bremer Hospital	250
Groote Schuur Hospital	150
Victoria Hospital	100
New Somerset Hospital	75
Conradie Hospital	50

Thus over 1 100 patients sustain burns of sufficient severity to require hospitalisation in Cape Town every year. In other centres the figures are just as high. The Livingstone Hospital in Port Elizabeth admitted over 2 000 children between 1963 and 1970,[3] and the King Edward VIII Hospital in Durban admitted 571 burn cases in 1967 alone.[4] The cost of this burden will be discussed later.

Causes of Burns

The causes of burn injuries treated at the Red Cross Children's Hospital in 1971 and 1972 are shown in Figs 3 and 4.

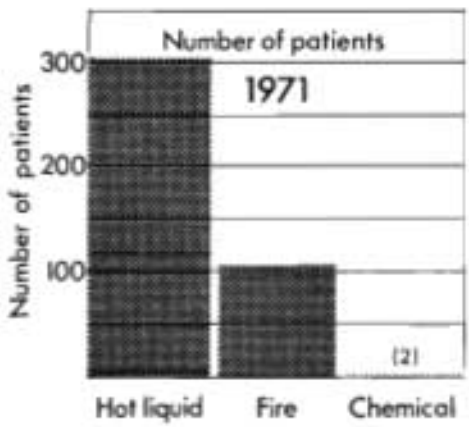

Fig. 3. Causes of burns—1971.

The figures for 1972 were similar to 1971, with hot liquids causing two-thirds of the injuries, and fires most of the rest, except a few Primus stove explosions, chemical burns and 1 electrical burn case.

Sex, Age and Race Distributions

Sex distribution (Fig. 5): Males comprised 54% of the burn cases.

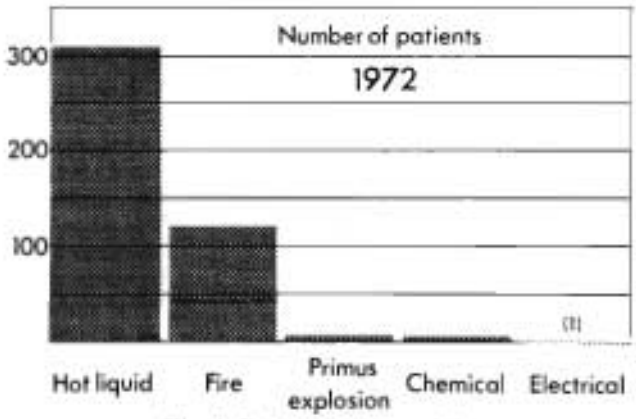

Fig. 4. Causes of burns—1972.

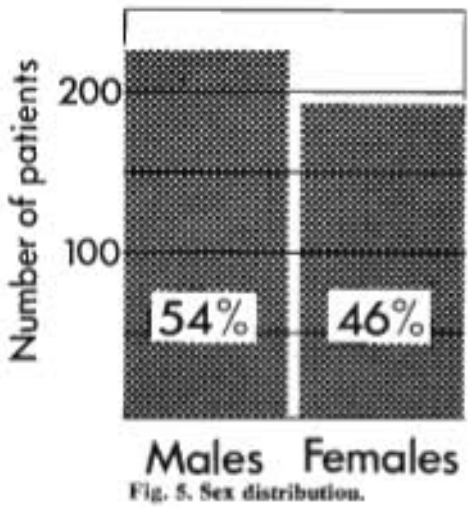

Fig. 5. Sex distribution.

Age distribution (Figs 6 and 7): An analysis of the numbers seen yearly per age-group shows an extremely high incidence (about one-third of all cases) during the first 2 years of life, with gradually decreasing numbers in the older groups. One cannot but wonder how a child under 1 year sustains a major burn—it is certainly highly suggestive of inadequate supervision. Whether it is the fact that many mothers work, or that there are too many children to take care of, is unknown, but it calls for further investigation if preventative measures are to be instituted.

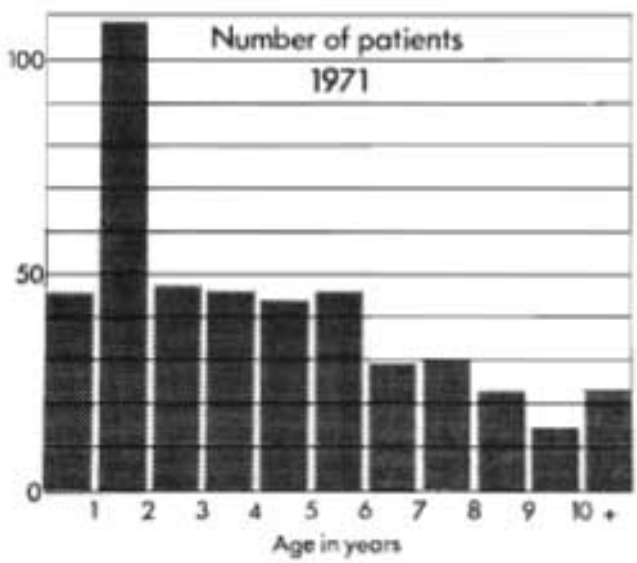

Fig. 6. Age distribution—1971.

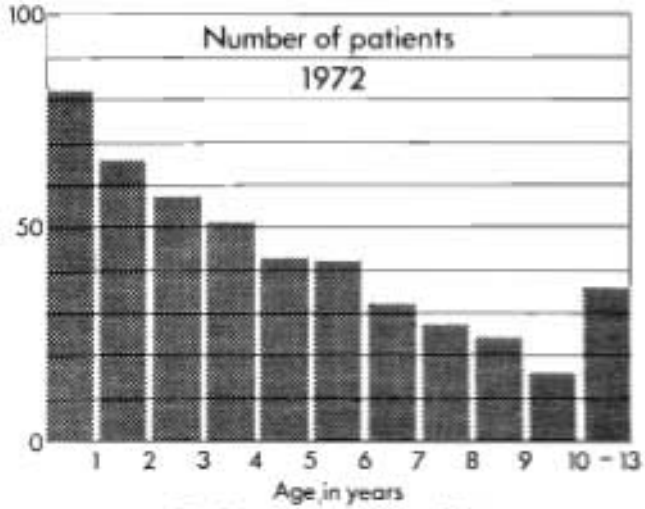

Fig. 7. Age distribution—1972.

Racial distribution (Figs 8 and 9): Our analysis showed a very much higher incidence for Cape Coloureds than for Black patients because of a small Black childhood population in the Cape Peninsula. Others[2,4] have reported very high figures among Black children. The nearly tenfold incidence among Coloureds compared with Whites is highly suggestive of overcrowded housing conditions, absent mothers, poor heating facilities in winter, etc.

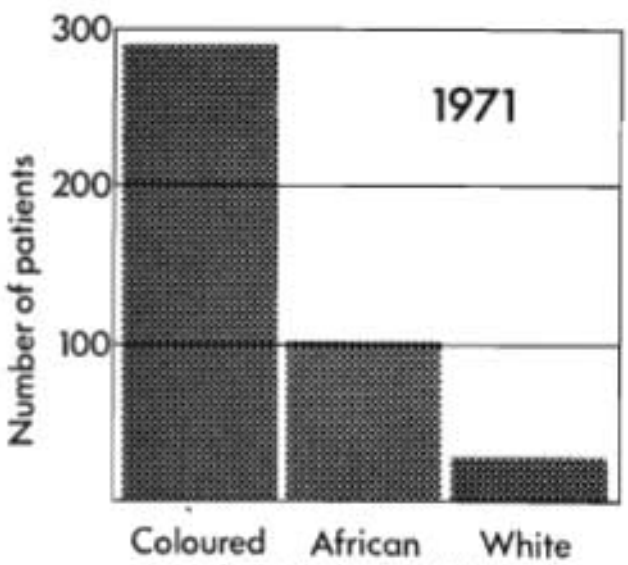

Fig. 8. Racial distribution—1971.

Seasonal Variation (Fig. 10)

The greatest number of, and most severe, burns occur during the winter months from May to September—

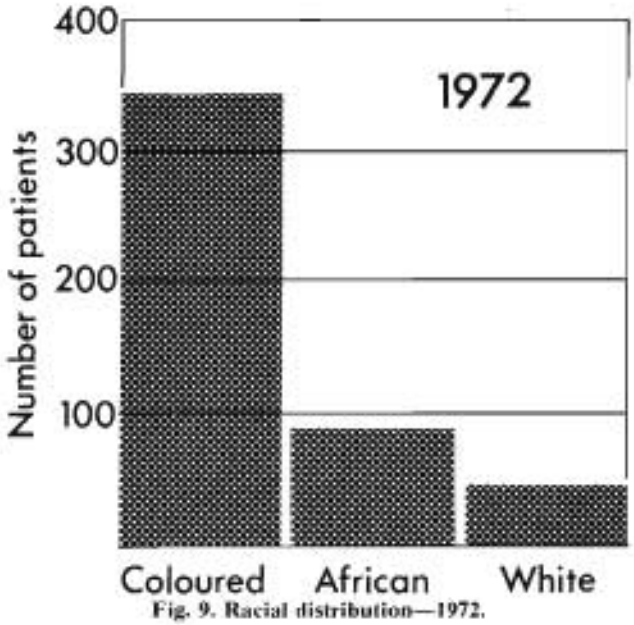

Fig. 9. Racial distribution—1972.

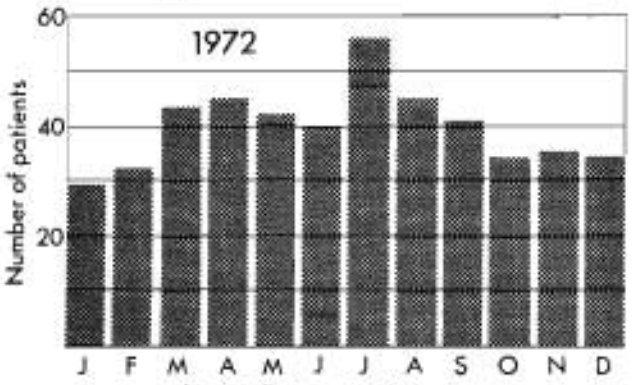

Fig. 10. Seasonal variation.

during the summer months there may even be vacant beds, and so minor burns and contractures can be admitted. The cause of this increased incidence in the winter is inadequate heating facilities in homes and shacks in slum areas, and even open fires on the floor as in traditional rural huts.

DISCUSSION

Patients with burn injuries requiring admission to hospital are rarely treated in private nursing homes. The reason for this is that it is extremely expensive to adequately equip and staff such a unit. The results obtained by treating patients in a well-equipped and adequately staffed unit speak for themselves (Table I)—the mortality figures are equal to those of some of the finest paediatric centres in the world, and therefore a tribute to the medical and nursing staff, but also to the Cape Provincial Administration which bears the cost of the treatment of these non-paying patients. It is obvious that the medical profession has to a large extent conquered the disease, if death is used as the sole criterion. With the knowledge and medical drugs presently available, no patient with a burn under 50% of total skin area should die. However, the pain and suffering during the acute phase, and the later disability (Figs 11 and 12) can never be conquered by conventional medical techniques.

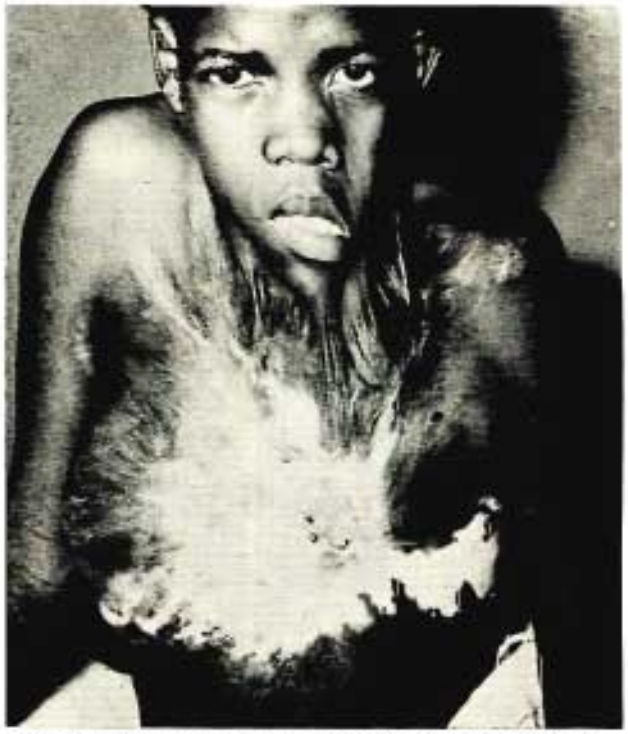

Fig. 11. Severe contracture which is liable to undergo malignant degeneration.

We are once again in total agreement with Crikelair[1] when he states, 'It is no longer sufficient for doctors to work harder or to build better hospitals or facilities to treat the injured; they must be reapprised that in medicine, prevention is a better answer than treatment'.

The cost of saving a patient with a 50% total area burn was estimated by Goldman *et al.*[2] to be at least $36 000. Despite this high cost, about half of their patients still die, and the rest are often physical or mental wrecks and a burden to their society. It is not surprising that the junior medical staff often ask, 'Is it worth saving this patient?'. The answer is 'Yes, but prevention would have been far **better**'.

It has been shown[3,4] that 90% of burns in children occur in the home, and out of 168 cases not one occurred at school or at organised play. If one considers these facts with our statistics on the racial distribution, which show an almost tenfold increase in the lower socio-economic groups where large families, overcrowding, working mothers and lack of supervision are the rule, a few solutions immediately come to mind.

Firstly, improved housing conditions. This is of course very expensive and time-consuming. However, the benefits are widespread and worth while, not only with regard to burn injuries, but the spread of infectious disease, crime, etc. The Government, fortunately, is doing

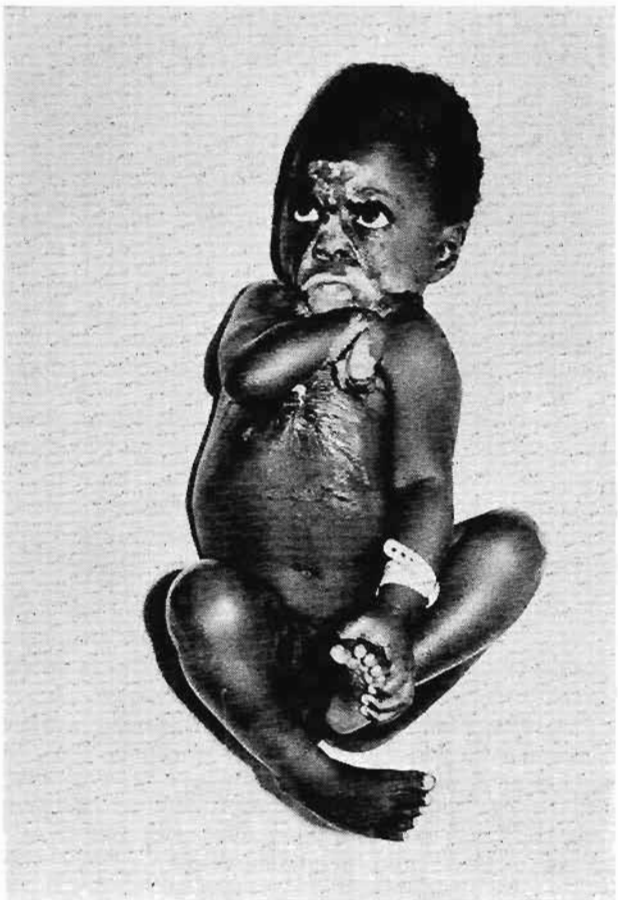

Fig. 12. One-year-old patient with arm and chin fused to the chest.

its utmost in this regard, but with the continued 'population explosion' it seems unlikely that they will ever catch up.

Overcrowding breeds diseases of all kinds, from traumatic and homicidal to nutritional and infectious. Birth control legislation could work wonders, not only by educating people to recognise the dangers of overpopulation, but by making birth control facilities freely available, and finally by limiting the size of the family. The latter point is always a controversial one, but is there anyone who would not think that 15 children are more than a responsible parent can handle? We treat children from such large families not infrequently. If we had our way, we would limit families to 5 or less. Recently, in this *Journal*,[7] several aspects of this problem were discussed, and also in the monograph by the Club of Rome[8] on the predicament of mankind.

The fact that no burns occurred in school or during organised play is further supported by Dobrkovsky.[9] He has shown that the number of burns in Yugoslavia in pre-school children *decreased* from 150 in 1950 to 34 in 1961, which coincided with the opening of kindergartens throughout the country. Creches for the children of working mothers in our country could be staffed by part-time, married nurses at minimal cost. This system would prevent not only burns but many other traumatic injuries, it would improve the diet in many cases and allow for the early detection of disease.

Many other factors can be brought into play. For example, much work has been done to decrease the flammability of children's clothing and the best material for children's wear is reputedly a closely woven denim.[10] All other types, including tightly woven cottons are extremely inflammable, with high-pile rayons being almost explosively so. Nightgowns are especially dangerous near heating appliances. Swartz[11] coined the term 'commercial inhibitation' when discussing the flammable clothing issue. He states the cost of legislating against flammable material makes the laws very lax, although the eventual cost to the government of *not* legislating is even higher. Classic papers on flammable fabrics[12,13] have shown that not only is clothing involved in 50% of cases, but that the mortality and morbidity rating is much higher for this type of burn, in fact, double that of the next type of burn. They also classify the various types of material as well as drawing attention to the fact that carpets, curtains, toys, etc. are usually made of highly flammable material. However, manufacturers rarely use flame-retardant materials, since they are more expensive and the profit margin would decrease.

Heaters and other electrical appliances must be carefully constructed so that clothing will not ignite when children stand too close. Their construction must allow for stability so that they do not fall over easily. Paraffin (Primus) stove explosions accounted for 10 cases of burns in 1972—all major burns. The incidence of burns in which Primus stoves are involved is, in fact, much higher than recorded. A Primus is very easily knocked over when a potful of boiling water is placed upon it. In Seery and Youngleson's series[4] 5,6% were due primarily to Primus stove explosions, excluding the unrecorded cases where the instability of the apparatus was a major aetiological factor.

The fact that so many hot liquid burns occur is significant, and suggests that electric kettles and coffee pots are also far too unstable and should be redesigned.

The best, and probably the only really successful way of combating the problem, would be for the Minister of Health to appoint a 2- or 3-man commission to gather data and advise as to the best course of action. The long-term benefits of such a study are quite obvious, since burns cost the nation several million rands per year. If the incidence of burns can be reduced in Yugoslavia then there can be no reason why we tolerate this progressive worsening in our statistics.

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