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A comparison of the epidemiology of paediatric burns in Scotland and South Africa

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ABSTRACT

In South Africa burns affect 3.2% of the population annually and are particularly common among children. In Scotland paediatric burns are generally much less common and less severe. This study aimed to explore the epidemiological differences in the emergency presentation of paediatric burns in the Royal Aberdeen Children's Hospital (RACH) in Scotland and the Red Cross War Memorial Children's Hospital (RXH) in Cape Town.

Data was retrieved retrospectively for all paediatric burns presenting in 2009 from RACH patient records and the RXH trauma database. Data was recorded in Microsoft Excel for subsequent statistical analysis. During 2009 RACH received 192 children with burns (1% total emergencies) and RXH received 994 (11% total emergencies). Children ≤2 years old were the most commonly injured age group in both centres. At RXH most children came from informal settlements and were of low socioeconomic status, while RACH patients were evenly distributed among all socioeconomic groups.

Burn injuries were significantly more likely to present in the evening at both centres ($p < 0.05$), and during Cape Town's winter ($p < 0.05$), but no significant monthly variation occurred in Aberdeen. At RACH most burns involved the hands and were single site (79%) while at RXH most were multiple site (76%) and involved the face. At RACH the commonest modes of injury were scald (45%) and contact burn (43%), while at RXH scalds accounted for the majority (77%). At RACH 89% children were discharged immediately, whereas 49% of RXH patients were admitted to the burn unit.

Paediatric burns are more common and generally more severe in Cape Town than in Aberdeen. All children have the right to a safe environment and protection from harm; to reduce the high burns incidence in Cape Town preventative strategies should be targeted at creating safer homes.

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1. Background and aims

In South Africa burns affect 3.2% of the population annually. They are particularly common in children and young adults, resulting in significant physical and psychological morbidity [1]. In Scotland, paediatric burns are generally much less common and usually of a reduced severity. The centre with highest incidence of burn injury in South Africa is Cape Town which has consequently become a centre of excellence for paediatric burns care [1].

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This study aimed to explore the epidemiological differences in the emergency presentation of paediatric burns in two centres: the Royal Aberdeen Children's Hospital (RACH) in Aberdeen, Scotland and the Red Cross War Memorial Children's Hospital (RXH) in Cape Town, South Africa.

2. Methods

The RACH is the tertiary referral centre for children (<14 years) in the Northeast of Scotland that sees around 18,000 children in total per annum. The RXH is the only facility dedicated entirely to children <13 years in Southern Africa with around 250,000 patient visits annually of which 9400 present directly as trauma cases to the ED.

Patient data for the year 2009 was retrieved retrospectively for all patients who had presented to either centre with a burn injury and relevant demographics extracted. Where data was incomplete this has been indicated in the results as 'unknown'.

At RACH the ED database was searched under the terms 'burn' or 'scald' to identify patients for inclusion. ED notes were scrutinised in all cases and, if admitted, hospital notes were also examined. Details of patient age; gender; home postal code; cause of burn; body part involved; location at time of injury and treatment received were recorded.

Childsafe South Africa maintains an electronic database compiled from a standardised trauma registration form completed for all paediatric patients attending the ED as a result of injury [2]. This database was searched for patients from RXH coded under the pathological term 'burns'. The aforementioned set of demographics was extracted directly from the generated patient record, although the field of postal code was replaced with home suburb.

The socioeconomic status of RACH patients was assessed using their home postal code to derive their Scottish Index of Multiple Deprivation (SIMD) score from the 2009 SIMD database [3]. For RXH patients the suburb of residence was correlated with the Cape Town governmental Socioeconomic Score (SES) from 2001 [4]. Data was recorded in Microsoft Excel and subsequent analysis of the column statistics was performed using GraphPad.

3. Results

During 2009, RACH received 192 children (1.1% of total ED attendances) with burn injury and RXH 994 (10.6%). Children ≤2 years old were the most commonly injured age group in both centres and the mean patient age was 4 years 2 months at RACH (range 1 month to 13 years 11 months) and 3 years 4 months at RXH (range 0 month to 13 years 2 months) (Fig. 1). Males more commonly suffered burn injury; 51% at RACH and 59% at RXH but this was not statistically significant ($p = 0.09$).

Patients presenting to RXH with burn injury were more likely to come from informal settlements ($p < 0.05$) and therefore likely to be of low socioeconomic status, while no such variation was demonstrated among RACH patients. Burn injuries were significantly more likely to present in the evening at both centres ($p < 0.05$). In Cape Town burns were more likely to occur in the winter ($p < 0.05$), but no significant monthly variation occurred in Aberdeen.

Injuries predominantly occurred in the domestic environment at both centres. At RACH the majority of burns were single site (79%) and involved the hands, while at RXH most were multiple site (76%) and involved the head or neck (Fig. 2). Scalds accounted for the vast majority (77%) of burns at RXH while at RACH, though scald was also the most frequent cause of burn injury (48%), direct contact burns were also common (43%) (Fig. 3).

In Aberdeen, scalds were most often due to children pulling over a cup of hot liquid from a height and the heat sources most often implicated in contact burns were cookers (44%), hair-straighteners (18%), irons (16%) and heaters (6%). Detailed aetiological information was not available for patients injured in Cape Town. Patients were much more likely to be admitted to hospital from the ED at RXH (49%) compared with RACH (11%).

4. Discussion

Paediatric burns are a much greater burden to the emergency services at RXH (10.6% total cases) compared to RACH (1.1% total cases). At both centres burns occurred most frequently in

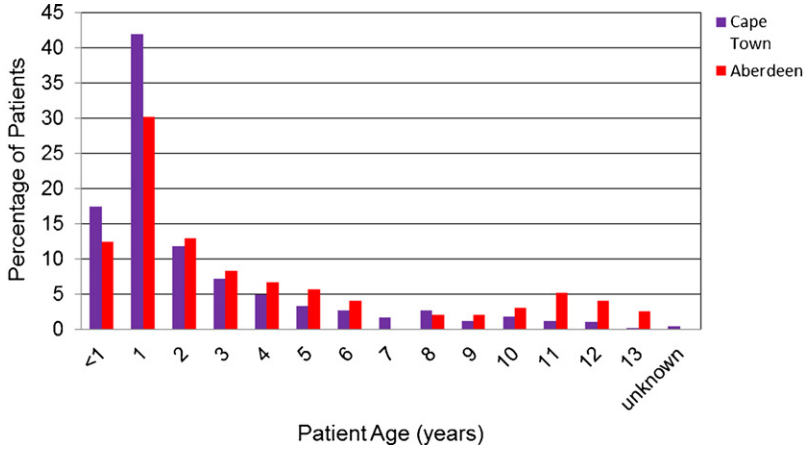

Fig. 1 – Percentage distribution of paediatric burns by patient age.

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