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ART PSYCHOTHERAPY WITH PAEDIATRIC BURN PATIENTS

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Burn patients suffer both physical and psychological trauma, and for most, this is ongoing while they are in-patients. For children this is often more complex. Added to this, differences in culture and language put the paediatric burn patient in South Africa at a distinct disadvantage. Traditional western psychotherapy is often an unknown and even alien to many, and can as a result be treated with suspicion/mistrust.

Art-making is closely aligned to play, which is a natural way of being for most children. Art-making itself, is something which has been seen throughout the ages as a way of communicating and expression. For these reasons, art psychotherapy is often a more appropriate way of working alongside traumatised children, where they are able to confront the trauma and their resultant fears of both their present reality, and the future, in manageable bits.

Traumatised children have increased anxiety levels, which will slow down healing and increase pain levels. This will make it difficult for children to be amenable to the many varying treatments they need in a burn unit. These children need a space where they can safely confront, explore and express their feelings (in manageable bits). They are able to revisit the circumstances of their injury, when they are ready and able to do so. They are encouraged to tell their story in a way which is appropriate to the specific individual, and with all necessary support. A service which offers this, helps children process and cope a lot better with the whole burn experience. An attentive and receptive art psychotherapist is an essential part of this often intense, non-verbal form of expression.

In this presentation we look at two examples of girls with extensive burns, both of whom were offered the intervention of art psychotherapy from early on in their treatment and management. The various ways of working with these two patients are explored, and illustrated with slides. Both are now being seen as out-patients.

Angela Rackstraw was a paediatric nursing sister before studying to be an art psychotherapist in the UK. After completing her studies, she went on to do her MA, exploring

work with traumatised South African communities, and looking at the efficacy of art therapy with marginalised and traumatised children. Angela has worked in the burn unit for 14 years.

PAEDIATRIC BURN INJURIES IN VERY POOR LIVING CONDITIONS: WHEN IS IT ABUSE, NEGLIGENCE OR POVERTY INDUCED?

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Despite the introduction of the Amended Children's Act of 2007, child abuse and neglect is still a daily occurrence in South Africa. National experts agree that poverty and the absence of one or both parents can negatively impact on already vulnerable children.

Abuse is also a recognized problem in burn care. Globally 10% of abuse cases are related to burn injuries. This figure could be significantly higher in South Africa, but unfortunately statistics related to paediatric burn abuse are not readily available. However negative socio-economic factors, lack of education and traditional beliefs are but a few factors associated with the increasing numbers in child abuse cases in South Africa.

This presentation will reflect on the role socio economic factors played in the child abuse cases treated at Red Cross Children's Hospital. More than 66 children treated at the Red Cross Children's Hospital's burn unit between the periods January 2016 – June 2017 were either abused or neglected. The ages of these children ranged from 6 months to 11 years. Focus will also be placed on the importance of a psychosocial team in the management and identification of abuse in a paediatric burn unit.

The current socio economic situation in South Africa will most probably lead to an increase in burn related child abuse cases. It was found that in a number of the abuse cases seen at Red Cross Children's Hospital, parents, especially immigrant parents were unaware that their actions would be, according to law, seen as abuse or negligence.

It might be necessary to include legal or other aspects associated with abuse and neglect in community burn prevention talks.

PAEDIATRIC BURN PREVENTION STRATEGIES

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BACKGROUND

Paediatric burns are among the top three killers of non-natural deaths in children in South Africa and represent a significant international public health problem. Developing and developed countries report similar challenges regarding paediatric burn prevention programs. Paediatric burns requiring healthcare often incur significant health and opportunity costs, death or long-term disability.

METHOD

Childsafe South Africa maintains an electronic database of all burns treated at the Red Cross Children's Hospital since 1991 and has used the information and analysis to develop childhood burn prevention strategies.

FINDINGS

Multi-pronged community-based interventions were most effective. Common elements comprised raising awareness of how burns occur, how burns can be prevented, the speed of sustaining significant injuries, and the short- and long-term effects of burns. Burn prevention strategies relevant to South Africa were provision of education in different formats at places frequented by children and parents and monitoring children more closely in hazardous areas and better planning of homes to reduce hazards.

CONCLUSION

Far more work is required to establish effective, sustainable community-wide paediatric burn prevention programs in developed and developing countries. Effective paediatric burn prevention programs for South Africa should be flexible and adaptive to the wide range of communities including informal settlements, and include the importance of legislated minimum safe housing standards. This will require ongoing involvement and significant commitment from Government, communities and individuals.

BURN PREVENTION PROGRAMME: LESSONS LEARNED

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We started a burn prevention outreach programme in 2016. The goal was to decrease the incidence of burns from local referral areas. Part of this campaign was to encourage a minimal safety standard of housing in the poor communities.

Monthly visits were made to outlying clinics. The feedback from staff in the areas was positive and a good communication network was established with the tertiary burn centre. Burn dressings protocols were and provincial guidelines were exchanged. The impact on the overall incidence of serious burns was difficult to assess for the period.

CONCLUSION

It is possible to do burn prevention outreaches and education with minimal resources.

PARAFFIN STOVE UNDERPERFORMANCE AND USER PERSISTENCE WITH DEFECTIVE APPLIANCES

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Burns and fires from fuel combustion stoves remain a challenge in low income urban settlements of South Africa. These exert a heavy toll on the affected communities in terms of health and socioeconomic burdens. The non-pressure paraffin stoves are commonly associated with fire disasters, yet many continue to be manufactured and distributed as SABS approved appliances. This study describes the technical characterisation of defective stoves and the reasons for user persistence with underperforming stoves. This study was conducted in conjunction with a safe paraffin stove intervention project implemented in a Johannesburg informal settlement. One-on-one recall interviews were conducted with 23 households that had reported stove failures, followed by laboratory-based technical assessments of the faulty stoves. The use and non-use of a faulty stove was associated with the period from point of issue to when key features of the stove (i.e. flame control, self-extinguishing mechanism and leak-proof tank) were assessed as damaged. Generally, stoves that took longer to fail were more likely to continue being used compared to those that failed sooner. The technical test results confirmed widespread structural failures, plus elevated temperatures on touchable-parts and unstable construction. All the assessed stoves were non-compliant to the current paraffin stove standard. Based on the findings we make the following recommendations for reduction of burn trauma: instituting community awareness campaigns that discourage the use of defective paraffin stoves; stricter enforcement of paraffin appliance standards; and the enactment of policies for transitioning poor households away from risky combustion technologies to safer energy.

DESCRIPTION OF THE RESIDENTIAL FIRE FATALITY PROBLEM IN SWEDEN: EPIDEMIOLOGY, RISK FACTORS, AND EVENT TYPOLOGIES

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OBJECTIVES

Residential fires represent the largest category of fatal fires in Sweden. This study aimed to describe the epidemiology of fatal residential fires in Sweden and to identify clusters of events.

METHODS

Data was collected from a database that combines information on fatal fires with data from forensic examinations and the Swedish Cause of Death-register. Mortality rates were calculated for different strata using population statistics and rescue service turnout reports. Cluster analysis was performed using multiple correspondence analysis with agglomerative hierarchical clustering.

RESULTS

Male sex, old age, smoking, and alcohol were identified as risk factors, and the most common primary diagnosis was exposure to toxic gases. Compared to non-fatal fires, fatal residential fires more often originated in the bedroom, were more often caused by smoking, and were more likely to occur at night. Six clusters were identified. Two clusters were smoking-related, but separated into (1) elderly people, usually females, whose clothes were ignited (17% of the sample), (2) elderly, (often) intoxicated men, where the fire usually originated in furniture (31%). Other clusters were related to (3) fires caused by technical fault, in electrical installations, in single houses (14%), (4) cooking appliances (7%), (5) deliberate fires (8%), and (6) events with unknown cause, room, and object of origin (23%).

DISCUSSION AND CONCLUSION

Fatal residential fires are unevenly distributed in the Swedish population. To reduce the incidence of fire mortality, specialized prevention efforts that focus on the different needs of each cluster are required.

Abstract presented also at the European Burns Association, Barcelona, 2017.

ADHERENCE TO REFERRAL CRITERIA AND PATIENT MANAGEMENT IN THE TWO SPECIALISED PROVINCIAL BURNS CENTRES OF THE WESTERN CAPE

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BACKGROUND

Referral guidelines for burn care are meant to assist in decision making as regards patient transfer and admissions to specialized units. The studies assessed how closely they were followed, and if they were linked to patient care at the two burn centres in the Western Cape.

METHODS

All patients admitted to the paediatric burns centre during winters 2011-2015 (n=1165); and those admitted to the adult centre during the years 2015-2016 (n=500) were included. The patient files were scrutinized to clarify whether the referral criteria in place were applied (7 in total) and to compile data on patient and injury characteristics. A case was defined as adherent to the criteria when at least one criterion was fulfilled and adherence was expressed overall, by year and by patient or injury characteristics. The association between adherence to any individual criterion and hospital care (surgery or longer length of stay) was measured using logistic regressions.

RESULTS

The overall adherence at admission was high both in children (93.4%) and adults (98.8%) and it did not vary remarkably over time. The criterion "injury sustained at a specific anatomical site" was most often applied both in children (85.2%), and in adults (91.1%). The severity criterion was associated with a longer stay in both groups.

CONCLUSIONS

Adherence to the guidelines was high at both burn centres in the province. However, given the high prevalence of burns, it is unlikely that all patients in need of specialized treatment reach the centres.

THE PREVALENCE AND CLINICAL PROFILE OF ADULT BURNS DUE TO ASSAULT: A SOUTH AFRICAN ADULT BURN CENTRE REVIEW

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INTRODUCTION

In developing countries it has been shown that burn injuries are one of the most important public health problems and cause of morbidity, disability, mortality, psychosocial problems and decreased quality of life. Previous studies show the prevalence of assault by burns to be variable. Burns are preventable, but require epidemiological and aetiological data, which vary in each country, for planning and implementation of preventative strategies. Currently there is a paucity of data from South Africa.

AIM(S)

To determine the prevalence, the epidemiological factors and clinical profile of adults burns patients due to assault.

METHODS

A retrospective descriptive study, using hospital records at the Chris Hani Baragwanath Academic Hospital (CHBAH) in the Adult Burns Unit (ABU) on all consecutive acute admissions (elective readmissions were excluded), 18 years and older, from September 2005 to December 2014. The 1928 patients cohort divided into the assault and control group. The inclusion criteria were the requirements for CHBH ABU admission. Descriptive statistics were utilised, including the student t-test and Chi-squared test with $p < 0.01$ being statistically significant. Ethics approval was obtained from University of the Witwatersrand's Human Research and Ethics Committee.

RESULTS

The prevalence of burns via assault was 21.42% with the majority from scalding. The data showed there was a statistical significance correlation with mortality ($p < 0.010$), intensive care admission ($p < 0.009$) and total body surface area involved assessing severity ($p < 0.041$).

CONCLUSION AND RECOMMENDATIONS

Burns via assault are more severe and have a higher mortality. The prevalence in this study is significantly higher than in developed countries where preventative programs have been effective. These findings are critical to designing and implementing effective prevention strategies to decrease the burden of disease.

BURN DISASTERS - AFRICA CALLING

R Moore and R Barradas

Although it is well-recognized that the incidence of burn injuries is higher in low and low-middle income countries (LIC and LMIC), the number of mass casualty burns incidents reported from these countries is surprisingly small. The continent of Africa is made up of largely LIC and LMIC countries with only nine African countries being classified as upper middle income countries (UMIC) in the World Bank 2017 country classification. Given that every day multiple fuel tankers crisscross the continent, it is even more surprising that Africa does not have regular burns disasters. The only reported African mass casualty burns incident in the 20th and 21st centuries was that of a fuel tanker explosion in rural Kenya in January 2009.

In November 2016 a fuel tanker exploded in the Tete province of Mozambique. 173 people were injured with 68 people dying at the scene, most immediately. The rest were transported to the nearest hospital, Hospital Provincial de Tete. We describe and explore the response to this burns disaster, reflecting on obstacles and solutions to management of a major burns disaster in Africa.

THE DEMOGRAPHICS AND OUTCOMES OF BURN PATIENTS ADMITTED TO WORCESTER HOSPITAL

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INTRODUCTION

Worcester Hospital is a regional healthcare facility in the Western Cape, South Africa, without a dedicated burns unit. Currently there is limited data available of burns patient management outside of academic institutions in South Africa.

STUDY AIM

To describe the incidence, demographics and determine the outcomes of burns patients admitted to Worcester Hospital.

METHODOLOGY

A retrospective descriptive study of burns patients admitted to Worcester Hospital between 1 September 2016 and 30 April 2017 (Stellenbosch University HREC #N16/10/138).

RESULTS

Burns consisted of 29 patients (1,6%) of a total of 1839 surgical admissions for this time period. The mean age was 41 years (range 2 – 93 years) and predominantly male (59%). The mechanism of injury was mostly thermal (90%),

19 open flame and 7 hot fluids, with a mean TBSA of 22,1% (range 1 – 86%). Four patients (13,7%) required critical care unit admission. The burns median length of stay was 5 days (range 1 – 30 days) versus the overall admissions of 2 days. 17 patients (58%) required split skin grafts and the mean TBSA area grafted was 5% (range 1 – 12%). The median time from admission to first surgical procedure was 36 hours (range 2 – 156 hours). The in-hospital mortality rate was 27,5% with 10,3% transferred to a tertiary level burns unit.

CONCLUSION

Burn injuries treated at Worcester Hospital are often severe and require significant resources. This study supplies critical information regarding the burden of burn related injuries managed at a regional level.

A REVIEW OF OUR INITIAL EXPERIENCE USING ENZYMATIC DEBRIDEMENT IN THE TREATMENT OF FULL THICKNESS BURNS

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INTRODUCTION

Nexobrid is a bromelain based enzymatic agent of plant origin licensed for use in the treatment of deep partial and full thickness burns. Nexobrid is capable of selectively removing burn eschar within 4 hours without the need for a general anaesthetic thereby providing a minimally invasive alternative to burn debridement. Our aim was to review the clinical effects/benefits of using this modality of treatment in our burn unit.

METHOD

We carried out a retrospective analysis of the case notes of nine patients undergoing Nexobrid treatment. We recorded information including: demographics, total body surface area affected, type of burn, burn depth, time to Nexobrid application, pain scores before, during and after treatment, anaesthesia given, need for surgical debridement following Nexobrid treatment, length of hospital stay, cost of treatment, time to healing and wound microbiology.

RESULTS

In all our selected patients Nexobrid proved to an effective and safe treatment. In 8 of our patients it prevented further surgical debridement to the treated area. Additional benefits of Nexobrid included; a reduction in over debridement in anatomically challenging areas, minimal blood loss and potentially reduced hospital admissions.

CONCLUSION

We have found Nexobrid to be safe and effective in adequately debriding deep partial and full thickness burns. In our selected patients Nexobrid was found to reduce the need for surgical debridement under a general anaesthetic and its associated morbidities. Many have avoided skin grafting due to preservation of the dermis. The selected use of this product may significantly alter the acute management of full thickness burn injuries.

SKULL BURNS

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Up to 47% of burn injuries involve the head and neck region at the Red Cross War Memorial Children's Hospital in Cape Town.

In 2016, 81% of these injuries were due to scalds. In recent years, we have seen a substantial increase in flame burns, electrical burns and contact burns some of them involving the skull. Skull burns present with new challenges.

Initial objectives for the management of a complex skull burn involves soft tissue cover before any form of restorative surgery can be attempted. Alternate management strategies in different scenarios will be presented.

SCAR WARS - EPISODE 1: THE BIRTH OF THE LIGHT SABRE

K Pillay

BACKGROUND

The functional and aesthetic sequelae of scarring due to major wounds, arising from burns and various other aetiologies, have for many centuries plagued both patients and surgeons alike. The recent advent of laser and pulsed light technologies in the last century, however, offers new hope for patients with hypertrophic scars, chronic folliculitis, persistent hyperaemia, neuropathic pain and intense pruritus; all common complications associated with deep and partial thickness wounds. Laser therapy is arguably one of the fastest evolving areas of modern medical technology, and developments of laser modalities is an exciting example of how basic physics can influence clinical practice. Until the mid-1900, the study of light was limited to examining its behavior. It wasn't until Robert H. Dicke proposed the "optical bomb" using Einstein's quantum theory, that the US would generate an intense interest in using light energy for warfare, which obviously lead to significant investment into laser R&D. However, the use of lasers in clinical practice only gained widespread acceptance after Maiman developed the first laser, but more especially after Anderson and Parish introduced their theory of selective photothermolysis in 1980. The term laser is an acronym for "light amplification

by the stimulated emission of radiation". As we develop a more sophisticated understanding of the biophysics of laser-tissue interactions, the more efficient the utilisation of the present technology becomes, from a clinical perspective, whilst at the same time, this assists the physicist to add more and more highly specialised laser systems to the armamentarium of the laser-surgeon. So much so that optimal results can now be attained with minimal down time.

AIM

To provide the aspiring laser surgeon with an in-depth understanding of the terminologies used and physical properties of light based technologies available in clinical medicine, and to review current empiric and scientific evidence that supports the use of laser technology in the treatment of hypertrophic burn scars.

METHODS

A literature review of the available data was conducted on Pubmed, Medline, Embase, Cochrane, Worldcat and Google Scholar, using the search terms "laser", "burns", "photobiology", "laser physics", "hypertrophic scars", "selective photothermolysis" and "medical laser treatments". We also reviewed our own preliminary experience, and interim data from our on-going, prospective, before and after trial using the Lumenis Ultrapulse CO2 laser for the treatment of hypertrophic scars in dark skinned paediatric patients in South Africa. Inclusion criteria were as follows: population: patients undergoing treatment of hypertrophic burn scars; intervention: laser or light-based therapies; outcomes: change in burn scar height, vascularity, stiffness, appearance, pain, and pruritis; study design: prospective or retrospective trials; language: English.

RESULTS

A total of 386 potential articles were identified, of these we found only 98 to be unique, and relevant to our literature review. We eliminated animal studies, letters, case reports, reviews, and trials with less than five burn patients. A total of 23 articles met our inclusion criteria in the end. Twelve of these articles were prospective randomized control trials. Many of these trials used internal controls, in which patients' burn scars were split into treatment versus no treatment zones. None of these publications used nontreated external controls. Nor did they compare the different types of laser therapies, or compare laser to non-laser treatments, such as intra-lesional injections, pressure garments or silicone sheeting. 11 articles demonstrated mild to moderate improvement in hypertrophic burn scars, whereas 1 article showed no sustained improvement over internal controls. The most frequent benefits were improvements in erythema, height, and pliability of the scars, although improvements in pain, pruritis, colour, and texture were also observed.

CONCLUSION

There are very few peer reviewed articles and resources available that discuss the physical properties and fundamental physics associated with lasers used to treat hypertrophic burn scars. A thorough grasp of these concepts are paramount to the understanding and rational use of light based technologies in the treatment of hypertrophic scars. Our preliminary study results and systematic review of current literature suggests that the use of laser- and light-based therapies are an effective and viable option for the treatment of hypertrophic burn scars. However, more robust clinical trials are needed to help determine best practices and guide clinicians regarding the timing and type of therapy.

SCAR WARS – EPISODE 2: THE LASER STRIKES BACK

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BACKGROUND

Hypertrophic and established burn scars are common in the paediatric population. When involving the face, it diminishes quality of life. Ablative fractional laser (AFL) therapy is becoming the preferred choice for established scars due to its greater potential depth for thermal injury 4mm, which leads to photothermolysis with subsequent neocollagenesis and collagen fibre realignment and remodelling. Combined with small Z-plasties and topical steroids, it has been proven to: flatten and decrease the volume of scars, increase pliability and decrease pruritus and erythema. The purpose of this case series was to determine the clinical significance of a single session of AFL therapy, combined with small Z-plasties and topical steroids on facial scars post burn injury.

METHODS

Four cases of paediatric facial scarring post burns were selected to undergo a single treatment of AFL therapy, accompanied by small Z-plasties and topical steroids. Modified Vancouver Scar Scores (MVSS) pre- and post-operatively at 3 and 6 months was evaluated.

RESULTS

Improvement of all components of the MVSS was achieved after 6 months, with major improvement in scar pliability and symptomatology. The Mean MVSS improved from 14 (range 12-16) pre-operatively to 5 and 5,5 respectively at 3 and 6 months post-operatively. Non-parametric analysis with Friedman Two-Way ANOVA by Rank showed a statistical significance between the pre- and post-operative MVSS ($p = 0.024$).

CONCLUSION

Ablative fractional laser therapy for established scarring after partial thickness burns is a promising and immensely

unused treatment option in South Africa. Improved Vancouver Scar Scores and symptomatology after only one treatment, should encourage the acquisition of these lasers as part of the scar management armamentarium.

TEGADERM, HYPOFIX, STAPLELESS TECHNIQUE FOR SKIN GRAFTING

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BACKGROUND

Burn wounds pose a great therapeutic challenge to burns surgeons and often require skin grafting. We would like to present a simple method for split thickness skin grafting by applying transparent film dressing Tegaderm to donor site prior to skin harvesting and then fixing the skin graft to the recipient wound with Hypofix and Steri strips without using a sutures and staples.

RESULTS

The skin graft was taken well and stable by day 7 post grafting. The Tegaderm transparent film dressing was easily peeled from the underlying graft.

ADVANTAGES

- Saves operative time, easy handling and fixing of the skin;
- Tagederm prevented skin from shrinking, no need for expansion;
 - No staples or sutures were required;
 - Skin graft is well protected from dehydration and external contamination with bacteria.

EXPERT CONSULTATION FOR A ROADMAP TO THE IMPLEMENTATION OF IMAGE-BASED MHEALTH DIAGNOSTIC SUPPORT

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BACKGROUND

The uptake of mHealth for diagnostic support among clinicians is slow despite promising opportunities, e.g. in the case of image-based solutions. The absence of a roadmap is an obstacle. This study presents a first roadmap to implement image-based support for clinicians, focusing on how to overcome potential barriers affecting front-line users, the health-care organization, and the technical system.

METHODS

A two-day meeting gathered a convenience sample of stakeholders from clinical, research, policymaking and business fields (n=50) and from different countries (n=15). A Delphi-like approach helped identify areas of consensus among those stakeholders. Four main thematic sessions were held, each starting with oral presentations, followed by small group discussions, and ending with group reports to the plenary. Assigned moderators synthesized the group reports in a number of specific strategies. All strategies were presented again later in the meeting, for the participants to determine their individual priority theme by theme.

RESULTS

For each session, 4 to 7 different strategies were identified. However, the strategies received different priority levels at the end of the meeting when reviewed the participants. As an example of the seven strategies related to the front-line users, three received greater priority: the need for any system to significantly add value to the users, the usability of mHealth apps, and the goodness-of-fit into the work flow. Further, three aspects cut across all themes: ease of integration of the mHealth applications, solid ICT infrastructure and support network, and interoperability.

CONCLUSIONS

Research and development in image-based diagnostic support pave the way to making health care more accessible and more equitable. The successful implementation of those solutions will necessitate a seamless introduction into routines, adequate technical support, and significant added value.

CAN BURNS IMAGES REPRESENTING PATIENTS COMMONLY SEEN AT EMERGENCY CENTRES IN THE WESTERN CAPE BE ACCURATELY ASSESSED ON HANDHELD DEVICES?

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BACKGROUND

Burns pose important challenges to emergency medicine. Remote image-based assessments by experts using mHealth applications can help point-of-care clinicians to receive timely diagnostic and management support as studies conducted on a computer screen reveal diagnostic accuracy of quality comparable to bedside. Whether this would apply even to handheld devices as used for mHealth solutions remains to be determined.

METHOD

We conducted a web-based questionnaire study, including 51 images representing burns cases commonly seen in emergency centres. Participants (n=26) from South Africa (emergency medicine and burns specialists) and Sweden (burns specialists) were asked to assess each burn's depth and TBSA when viewing the images on a smartphone or tablet. The accuracy of burn depth and TBSA was measured using intra-class correlation (ICC) all cases aggregated and for paediatric and adult burns.

RESULTS

The ICC for TBSA was 0.79 overall and 0.81 for paediatric and adult cases separately, which indicate good. By contrast, for burn depth ICC was 0.48, 0.57 and 0.41, which indicates poor to moderate. When stratifying by background of the participants, the ICC of TBSA remained good for all groups but slightly lower for South African Emergency Medicine specialists (0.80) than for burns specialists from either South African (0.87) or Sweden (0.87). The ICC for depth was closer across groups and remained poor to moderate (0.48, 0.50 and 0.51 respectively).

CONCLUSION

As is the case for bedside diagnosis, burn depth assessment more than burn size is challenging using smartphones or tablets.

BURNS AND PREGNANCY

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Burns victims number continue to increase and pregnant women are not spared. They can be severely burned. They have been few reports of such thermal injuries described in the literature. Pregnant women have unique medical problems. The mother and foetus are at high risk of morbidity and mortality due to fluid shift, hypoxaemia and sepsis. Many therapeutic agents and procedures can have an impact on foetal viability and malformation. During pregnancy mother fluid can increase up to 40% and there is in equilibrium between body and amniotic fluids. Major burn can result in capillary permeability with rapid shift in fluid, electrolytes and albumin which can cause intravascular collapse. Inhalation injury can induce itself acute maternal respiratory insufficiency. Overwhelming sepsis may result in hypotension. All these mechanisms can result in foetal hypoxaemia, acidosis and spontaneous activity like premature labour and foetal mortality. What is beneficial for the mother may be harmful for the child. Some difficult therapeutic courses have been found to cause serious malformations like hyperinsulinaemia with foetal macrosomia. Most burns scars during pregnancy undergo softening and stretching but sometimes it can be painful during subsequently pregnancy and need

superficial decompression, split and autograft. Sometimes distortion of breast nipple may cause problem with child feeding especially if bilateral.

Emergency management of pregnant burned women is exactly the same as for non-pregnant. Fluid resuscitation should not be delayed and a modified Parklane formula using 2 to 3 ml per/kg/TBSA. Albumin must be considered in the second twenty four hours to keep fluid in the intravascular bed. To keep the MAP above 65 mmhg and urine output at 0.5 ml per hour.

Management of inhalation injury should be the same. Oxygen delivery is very important to prevent foetal hypoxia.

An obstetrician must be contacted immediately to discuss the burn victim. These factors will determine the management.

1. TBSA
2. Foetal viability
3. Gestational period

There is clear correlation between extent of burns and overall foetal and mother mortality

1. Less than 20% TBSA may not have an effect on foetal outcome if well managed but the risk of preterm labour is still there.
2. 20% to 40% TBSA there is significant increase in risk of preterm labour
3. More than 40% very high risk of preterm labour and foetal mortality
4. More than 50% with inhalation injury high risk of mother and foetal mortality

With gestational period

- Before 24 weeks foetus will not survive
- 24 to 32 weeks it is difficult to predict but with improved modern ICU management some will survive
- More than 32 weeks with current neonatal intensive care many will survive

Therefore I advocate the following guidelines:

1. More than 50% TBSA and pregnancy at more than 32 weeks I recommend an urgent caesarian section as mother death is almost certain and foetal survival may not improve by waiting. Most of these patients have worse prognosis compared to non-pregnant women.
2. In less than 40% TBSA a continuation of pregnancy has no effect on mother prognosis. Every attempt must be made to protect pregnancy by tocolytic agents if the foetus is immature to survive. Otherwise induction and acceleration of labour is recommended if the foetus is viable.
3. In less than 20% TBSA the risk of maternal complications is very small, patient should be treated as non-pregnant woman.

Modern dressing must be used to improve pain, comfort and reduce operating procedures. We advocate to treat partial thickness burns preferably with temporally skin substitutes. We believe in early excision and cover for full thickness wound but in high risk pregnant women anaesthesia and surgical stress is sometimes delayed by using alternative conservative treatment.

In conclusion pregnant women with burns must be treated at centres with experience in managing thermal injuries. It is important for the surgeon to involve an obstetrician as soon as possible after admission.

A FOUR-YEAR REVIEW OF AEROSOLIZED EPOPROSTENOL COMPARED TO INHALED NITRIC OXIDE USE IN PATIENTS WITH INHALATION INJURY AND REFRACTORY HYPOXEMIA

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INTRODUCTION

Inhalation injury is a significant source of morbidity and mortality. There have been few advances in the treatment of inhalation injury associated refractory hypoxaemia. Inhaled nitric oxide (iNO), a pulmonary artery vasodilator, has been shown in small case series to improve ventilation/perfusion mismatch. Aerosolized epoprostenol also promotes pulmonary vasodilation. This study reviewed our experience with both vasodilators in treating refractory hypoxaemia in patients with inhalation injury.

METHODS

This retrospective chart review included adult patients admitted to our urban burn ICU between 1/1/2012-6/1/2016 with documented inhalation injury who underwent treatment with inhaled nitric oxide or aerosolized epoprostenol. A total of 36 charts were reviewed. Statistical analysis was performed including Kaplan-Meier survival curves. The primary endpoint was changes in PaO₂:FiO₂; secondary endpoints were mortality, duration of mechanical ventilation, ICU length of stay, and cost-analysis.

RESULTS

The patient population in the inhaled nitric oxide and aerosolized epoprostenol groups was similar at baseline except for larger percent TBSA involved in the inhaled nitric oxide group. Baseline PaO₂/FiO₂ ratios indicated moderate hypoxaemia in both treatment groups (119 ± 54 in the epoprostenol group; 143 ± 73 in the nitric oxide group). PaO₂/FiO₂ ratios increased after agent initiation in both groups, with the largest, statistically significant increase seen at the 48 hrs post initiation. There was a 55.6% mortality in the epoprostenol group vs. 72.2%

mortality in nitric oxide (p=0.80). Mean ICU length of stay was 33 ± 24.7 days for the aerosolized epoprostenol group and 45 ± 42.3 days for the inhaled nitric oxide group. Mean duration of therapy was 11.5 days ± 9.9 in the aerosolized epoprostenol group and 6.3 ± 3.5 days in the inhaled nitric oxide group.

CONCLUSIONS

Epoprostenol improved PaO₂:FiO₂ ratios similarly to nitric oxide effects. There was no statistically significant difference in mortality noted. There was an overall cost savings of 16,000 dollars per patient when using aerosolized epoprostenol as first line therapy for refractory hypoxaemia.

EFFECT OF AEROBIC EXERCISES ON LIVER ENZYMES POST BURN

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PURPOSE

The current study was conducted to examine the effect of aerobic exercise (treadmill exercise) on liver enzymes post burn.

SUBJECTS AND METHODS

Thirty burned patients with burned surface area about 30% to 40% participated in this study. Their ages ranged from 25-40 years. They were selected from Orabi Hospital and were divided randomly into two equal groups. Group (A) composed of 15 patients who received aerobic exercise in form of treadmill exercise for 45 minutes at 60-75% of maximum heart rate, 3 times/week for 8 weeks beginning after their release from intensive care unit in addition to their physical therapy program (splinting, stretching ex., strengthening ex. and ROM ex.) and medical treatment (cataflam, alphintern, zinetac and hemacaps, wound dressings). Group (B) composed of 15 patients who received only their physical therapy program (splinting, stretching ex., strengthening ex. and ROM ex.) and medical treatment (cataflam, alphintern, zinetac and hemacaps, wound dressings). Method of evaluation was measurements of ALT and AST liver enzymes by spectrophotometer device.

RESULTS

There was a significant decrease in ALT and AST plasma liver enzymes levels in aerobic exercise group when compared with the control group.

CONCLUSION

Aerobic exercise can be considered as an effective method in decreasing ALT and AST plasma liver enzymes levels post burn.

NUTRITIONAL SUPPORT FOR MAJOR BURNS IN CHILDREN

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Nutrition support is considered one of the significant aspects of care in children with major burns. Lack of sufficient nutrition can result in poor wound healing, muscle wasting, growth retardation and increased risk of infection. Enteral nutrition should occur within 24 hours of hospitalisation to reduce the hyper catabolic effects of thermal injury and in turn improving caloric intake, promote protein retention and ultimately shortening the length of hospital stay. Enteral nutrition given preferably via nasal jejunal tube with a suitable enteral nutritional product is given to meet the nutritional requirements of the child. The estimated energy and protein requirements are provided based on weight and percentage burn surface area. Underfeeding and overfeeding needs to be monitored during enteral nutrition, as well as any calorie deficits accumulated with feed interruptions. Feed intolerance related to gastrointestinal disturbance would require adjustments to enteral nutrition if proven malabsorption is present. Adequate micronutrients supplementations are included as part of the nutritional care in management of major burns.

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MAGNESIUM DEFICIENCY IN BURNS PATIENTS

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Magnesium is essential for many reactions in the body including carbohydrate metabolism, and protein synthesis, it is also involved in muscle relaxation and the regulation of parathyroid hormone. All of which are very important for the survival and rehabilitation of burns patients. Serum levels reflect a small proportion of total body magnesium. These are regulated by intestinal absorption and renal excretion. A serum level below 0.7 mmol/l reflects deficiency and a 24-hour urine excretion of more than 6.5 mmol/24 hours indicates high renal losses. Deficiency presents as neuromuscular irritability and an altered psychological state which are easily masked in this group of patients. It is thought that

hypomagnesaemia in burns patients is due to wound losses, intestinal secretion and increased uptake due to increased needs in hypermetabolism. Increased renal losses due to certain drugs and various endocrine causes could also be responsible for deficiency. Research that has been done in this area, and the factors which could have contributed to magnesium deficiency in burns patients at Edendale hospital will be discussed.

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EMPIRIC PULMONARY TUBERCULOSIS TREATMENT FOR SEVERELY BURNED VICTIMS ON VENTILATORS

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From the current literature evidence the mortality of patients with HIV who have severe burns and underlying disease is 100%.^{1,2}

We have recently had several patients who survived a severe burn despite having HIV and were on a ventilator for severe burn injuries.

We started them on empiric tuberculosis (TB) treatment based on the clinical evidence of reactivation of pulmonary tuberculosis (PTB) despite no laboratory evidence (gene-expert test negative, negative sputum and tracheal aspirate cultures).

They had a common pattern of ventilation seen in other patients also, where we started them on empiric TB treatment with rapid effective results.

This common pattern was patients with severe burns who had an inhalation component who were difficult to wean off ventilators, or who had failed extubation, or required re-intubation, or just prolonged ventilation.

RE-FEEDING SYNDROME IN BURNS

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Refeeding syndrome in burn patients consist of metabolic disturbances that occur as a result of reinstatement of nutrition to patients who are starved, initially left to be palliated and then decisions are changed or metabolically stressed due to burn injury in the face of inadequate nutrition. Electrolyte disorders, especially hypophosphataemia,

hypomagnesaemia and hypokalaemia, are seen in paediatric burn patients.

During fasting the body switches its main fuel source from carbohydrates to fatty acids or amino acids as the main energy source. Many intracellular minerals become severely depleted during this period, although serum levels remain normal. Insulin secretion is suppressed in the fasted state and glucagon secretion is increased.

During refeeding, insulin secretion resumes in response to increased blood sugar, resulting in increased glycogen, fat and protein synthesis. This process requires phosphates, magnesium and potassium which are already depleted and the stores rapidly become used up. Intracellular movement of electrolytes follows, along with a fall in the serum electrolytes, including phosphorus and magnesium. Uncorrected, death follows as a result of mainly cardiac arrhythmias.

Two cases of paediatric refeeding syndrome and aspects of management thereof will be discussed.

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EFFECTIVENESS OF AUTOMATED UVC-LIGHT FOR DECONTAMINATION OF TEXTILES INOCULATED WITH ENTEROCOCCUS FAECIUM

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INTRODUCTION

Healthcare textiles are increasingly recognized as potential vehicles for inter-patient transmission of hospital pathogens. Especially in burn patients hospital acquired infections may have deleterious consequences. UVC-light has proven effective for the eradication of pathogens residing on hard surfaces, with \log_{10} reductions by more than 4.0. The aim of this study was to evaluate the efficacy of automated UVC-light for decontamination of healthcare textiles in a clinical setting.

MATERIALS AND METHODS

Sterile polycotton (50% cotton, 50% polyester) swatches were contaminated with 1 ml of *Enterococcus faecium* broth containing approximately 10^8 CFU/ml. Five contaminated swatches were distributed to defined spots across an unoccupied burn ward room. The Tru-D® automated room decontamination unit was centred in the room and decontamination was carried out until a reflective UVC-light dose of 22 000 $\mu\text{Ws}/\text{cm}^2$ had been registered by the device. Two swatches served as control and did not receive any treatment. After decontamination, viable counts were done to determine the degree of decontamination. The experiment was carried out 10 times. Statistical analysis was done with Wilcoxon's signed rank test.

RESULTS

The mean time required for decontamination was 111 minutes. UVC decontamination resulted in an average reduction of viable bacteria by 1.37 \log_{10} units compared to controls ($p=0.005$).

DISCUSSION

A consistent reduction of bacteria residing in textiles could be achieved. Previous studies reported a greater reduction of bacteria inoculated onto hard surfaces though. However, automated UVC-decontamination may be a feasible method to preserve the cleanliness of healthcare textiles in place.

Abstract has previously been presented at the European Burns Association meeting, Barcelona, 2017.

IDENTIFICATION OF BLOOD-BASED PROGNOSTIC MICRORNA BIOMARKER SIGNATURES FOR THE PREDICTION OF INHALATION INJURY IN BURNS PATIENTS

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Inhalation injuries are generally caused by direct thermal or chemical injury to the airway and alveoli from exposure to toxic combustion products like superheated gases, steam, vapors, aerosols and coated particles (Hendon et al, 1986).

Attempts to identify reliable prognostic factors for progressive respiratory failure in patients with inhalation injury have so far proved to be unsuccessful. The often-delayed clinical presentation make it difficult to predict which patients are vulnerable to resuscitation complications, increased pulmonary dysfunction, respiratory failure and mortality. Therefore, there is a need to improve the accuracy of diagnosis, predict prognosis and to monitor disease progression and response to therapy.

The proposed study aimed to identify and validate non-invasive biomarkers which can be used to improve the accuracy of diagnosis, predict prognosis and to monitor disease progression and response to therapy.

MicroRNA is small non-coding RNAs that is on average 22 nucleotides in length that play a key role in gene expression by either suppressing translation or cause mRNA destabilization and modulates the activity of specific mRNA targets.

The alterations in miRNA expression and the clear link to their functionality in recipient cells have also been demonstrated in clinical respiratory models.

The preliminary results of our study will be presented.

PALLIATIVE CARE FOR THE BURN PATIENT

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Although the prognosis for patients with massive burns has dramatically improved in high income countries, in resource limited settings often the resources are lacking to manage these patients, and a shift to palliative care becomes necessary. However, the burns literature is as good as silent on this topic. However, there is in the literature a lively discussion on palliative care for other conditions, (sparked, amongst other issues by the criticism and subsequent abandonment of the Liverpool Care Pathway), from which many recommendations can be extrapolated to the 'terminal' burn patient. This talk seeks to provide a 'how to' guide for palliative care for the burn patient, and will discuss, (1) what is palliative care and who should qualify, (2) palliative pain management and sedation, (3) withholding and withdrawal of treatment, (4) nutrition in the terminal stage, (5) terminal weaning and (6) care of the burn wound.

FACTORS INFLUENCING THE INTENTION TO USE A SMARTPHONE APP FOR BURN INJURY DIAGNOSIS AMONG HEALTH WORKERS IN A LOW-INCOME COUNTRY

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INTRODUCTION

While burn injuries are still common in low- and middle-income countries, access to burn care is often poor or non-existent. mHealth has been proposed as one way

to improve burn care by connecting first line providers with burns experts. The aim of this study was to identify factors influencing health care providers' acceptance of mHealth for emergency care of burn patients at district hospitals in Tanzania.

METHODS

A questionnaire was distributed to health professionals at four hospitals in Dar Es Salaam. The questionnaire was based on several well validated instruments that measure technology acceptance, and have previously been adopted for the sub-Saharan context. It measured several constructs including behavioural intention to use, attitude toward use, perceived usefulness, and perceived ease of use.

RESULTS

Fifty-nine health workers answered the questionnaire. Most of them had a smartphone (56/59) and many used it for work purposes. In general, health workers in this study were positive towards using mHealth in burn care. There were no significant differences in responses between females and males, or nurses and doctors. However, referring hospitals scored lower on some of the constructs related to acceptance.

CONCLUSION

The participants were positive towards using mHealth in emergency burn care. There were no differences between different professions or gender, however, referring hospitals were slightly less positive compared to the university hospital.

TOTAL BODY AND HAND SURFACE AREA: MEASUREMENTS, CALCULATIONS, AND COMPARISONS IN ETHNICALLY DIVERSE CHILDREN IN SOUTH AFRICA

Sharon Cox, Keely Kriho, Storm De Klerk, Monique van Dijk, Heinz Rode

AIM

The aim was to investigate hand surface as a percentage of body surface area from infancy to 13 years of age using physical measurement and digital planimetry and establish the influence of age, gender, BMI for age and ethnicity, specifically in the South African population. A secondary aim included the development of a template for burn size measurement.

METHODOLOGY

This was a cross-sectional observational study. Demographic information was obtained from each participant. Body mass index (BMI) and body surface area (BSA) were determined using several established formulas. The hand area was measured using a standard physical measurement method and a digital planimetry method.

All data was presented in an Excel and SPSS spreadsheet and the calculations performed with SPSS 24.0.

RESULTS

Three-hundred and sixty-eight burn patients and 150 children from a nearby primary school were enrolled. The age ranged from 1 month to 13 years. The hospital patient group was significantly younger, included more boys and had a lower BMI by age. Most patients (98.7%) were African or mixed race compared to the school children who were primarily Caucasian ($p < 0.001$). The seven formulas to determine the BSA were highly comparable with intraclass correlation coefficient (ICC) of 0.997 (95% CI 0.996-0.998). Actual hand surface area measured ranged from 22.44 cm² to 164.9 cm². The mean measured and digital percentage HSA of TBSA for all participants was 0.929% with a SD of 0.088. Male children, had a larger HSA as a proportion of TBSA by 0.036%. Generally, as the child gets older from toddler to late childhood, the hand becomes relatively smaller by a factor of approximately 0.08%. As the BMI increased, the hand got relatively smaller.

CONCLUSION

The potential value of the physical measurement method is that it lends itself to direct measurement during examination of the burnt child. The study showed that there are minor differences between racial groups, gender, BMI and age variations. The clinical relevance of these variations is negligible.

THE PENETRATION OF NANOCRYSTALLINE SILVER THROUGH VARIOUS WOUND DRESSING MEDIA

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INTRODUCTION

The Nanocrystalline silver (NCS) dressing Acticoat is a commonly used product in clinical practice for the treatment of burns and other open wounds as a topical antibiotic. The dressing, however, often dries out, resulting in traumatic dressing changes; hence the variety of contact layer dressings commonly used in conjunction with Acticoat. Whether the NCS penetrates through these various dressings is uncertain. Macroscopic wound staining is often cited as proof of penetration but may not translate into a significant anti-microbial effect. Given our resource limited setting and the high cost of modern wound care dressings, ineffective dressing combinations should be abandoned. Similarly, in the setting of life threatening burn sepsis, it is clearly essential that we do not block the penetration of NCS through a contact layer dressing. Also, some substances have been shown to have a synergistic effect with NCS. It is therefore important that we re-evaluate our dressing combinations.

MATERIAL AND METHODS

The study was conducted in the National Health Laboratory System Microbiology laboratory on the Prinshof campus of the University of Pretoria. Various common wound pathogens were subjected to a variety of wound dressing combinations, with a contact layer underlying the NCS dressings.

RESULTS

The zone of inhibition obtained was measured and compared to a control of Acticoat alone. The results were analysed with the help of a biostatistician and presented in graphic format.

CONCLUSION

Many commonly used dressings combinations can potentially be encouraged or discouraged based on the antimicrobial effect exerted by NCS through them.

MICROBIOLOGICAL FINDINGS AND ANTIBACTERIAL THERAPY IN STEVENS-JOHNSON SYNDROME/TOXIC EPIDERMAL NECROLYSIS PATIENTS

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INTRODUCTION

What triggers the Stevens-Johnson Syndrome/Toxic Epidermal Necrolysis (SJS/TEN) condition is often unknown. Superimposed and/or subsequent infections/sepsis are major causes of morbidity/mortality. Empirical antibiotic treatment might be indicated given the common occurrence of infections and their consequences. However, it is difficult balancing between avoiding new pharmaceuticals and (prophylactically) treating infection. This study investigated sepsis and microbials involved in subsequent infections in SJS/TEN patients.

METHODS

For patients admitted to our Burn Center with SJS/TEN from 1 January 2010 through 1 January 2016 data was collected.

RESULTS

Twenty-four patients (9 males, mean age 47) were included. Mean BSA% detached was 45.9. Fifteen patients (62.5%) developed sepsis (skin colonization most common (77.8%)) and 5 developed shock. There were 303 bacterial cultures taken whereof 113 (37.3%) were positive. Positive cultures were frequently found in wound fluid (52), blood (25), urine (14), and catheters (12). The most frequent species were *S. aureus* (27.7%), *P. aeruginosa* (10.9%), Enterococcus spp. (10.4%), and CNS (8.7%). Eleven patients had ≥ 3 positive cultures while 13 patients grew

≥3 different species. Patients with frequent positive cultures had significantly higher sepsis rate ($P = .03$). Patients with higher species-numbers had significantly higher BSA% involved (60.1 vs. 33.8%, $P = .01$) and were significantly less likely to have received antimicrobial therapy ($P < .001$). Overall mortality was 3 (12.5%).

CONCLUSIONS

Sepsis was common in our patients. Thus, infection prevention should be the cornerstone in the management. Despite the risk of resistance/further immunological provocation, early empirical antibiotic treatment might have a place in clinical management.

This study has been accepted to J Cutan Pathol. 2017 Jan 11. doi: 10.1111/cup.12894. [Epub ahead of print]

ULTRA-STRUCTURE OF THE DERMIS AND IT'S ROLE IN BURN CONVERSION – A REVIEW OF THE LITERATURE AND SUMMARY OF DERMAL ANATOMY/PHYSIOLOGY

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INTRODUCTION

Burn conversion is a clinical phenomenon that has a significant mortality and morbidity to the burn patient. It can be attributed to multiple factors. The anatomy and microvasculature of the dermis has a key role in understanding this occurrence.

AIM

To understand the dermis with regard to ultra-structure and micro-vascular function and its role in burn conversion.

METHODS

A literature review (PubMed) was conducted of burn conversion and dermal microvasculature/ultrastructure. The articles were divided into clinical trials and laboratory/animal trials and then graded by level of evidence.

49 articles related to burn conversion and progression. 31/49 articles were clinical studies related to burn conversion. 16/49 articles were experimental models of burn conversion. There were 3/49 review articles.

1001 and 2002 articles were related to dermis and microvasculature respectively. These covered a range of subjects and disciplines. Only 35 articles were of relevance to the burn patient and only 1 related to burn conversion.

CONCLUSION

There are limited reports on the ultrastructure and micro-vascular changes in the burn patient in burn conversion. Dermal anatomy is based on studies done in 1970-90 and there is limited current understanding of this process in the burn patient. The dermis is clearly more complex than thought.

SCALP AS A DONOR SITE IN CHILDREN: RED CROSS EXPERIENCE

G van Niekerk

INTRODUCTION

Humans have several different types of hair, classified into eight different groups, of which types VII and VIII predominate in South Africa. The scalp with its abundance of hair is often used as a preferential donor site for small burns. Major reasons cited are that the donor site is hidden from view (covered by hair), rapidly epithelializes with minimal scarring and provides a relatively large surface area.

We postulate that the type of hair will have an influence on the healing of scalp donor sites, complications and aesthetic outcome. Contrary to international consensus, the Red Cross War Memorial Children's Hospital (RCWMCH) experience indicated that the use of the scalp as donor area is not ideal due to the frequent complications seen amongst paediatric patients e.g. visible scars, recurrent folliculitis, patchy alopecia, hypertrophic scarring and areas of de- and hyperpigmentation.

OBJECTIVE

This study reviewed the complications encountered with the use of the scalp as primary donor area in children of mostly black African origin (type VI-VIII hair).

METHODOLOGY

A retrospective folder review of patients admitted to RCWMCH between 2003 and 2015 with major burns (>30% total body surface area) was conducted. The cohort included 25 patients. The various hair types were identified based on ethnicity and classified into eight types. Long- and short term complications were recorded.

RESULTS

Patient demographics: black African 60% descent (hair types VI-VIII), 32% mixed race (hair types III-V) and 4% Caucasian (hair types II-III). In the group with hair types VI-VIII 60% had short-term and 46.7% long-term complications, whereas in hair types III-V 37.5% had short-term and 25% long-term complications. No complications were encountered in the group with hair types II-III.

DISCUSSION

Hair type has an influence on outcome and donor sites should be carefully selected. Hair types VI-VIII have a higher propensity for complications and these usually follow the first procurement procedure. Complications did not increase with multiple procurements. Significant complications with long-term sequelae are not uncommon when the scalp is used as donor site and these complications are difficult to treat. Although the sample size is small, it does reflect a significant complication rate.

CONCLUSION

Contrary to international consensus, the use of the scalp as donor site in South African children with hair types VI-VIII with large burns should not be the preferential site and should only be used as a last resort.

NATIONAL BURNS WEEK IN SOUTH AFRICA: A CALL FOR BURNS AWARENESS IN THE COUNTRY

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BACKGROUND

Since 2012 the Department of Health has included May as the Burns Awareness Month in their annual Health Awareness Days Calendar. The first full week of May is considered the Burns Awareness Week, and during this time activities around burns prevention and first aid should be promoted in the country. Since the inclusion in the calendar, activities have been dependent on the efforts of few units in the country and their individuals.

AIM

To propose a framework for a National Burns Awareness Campaign with the aim of concentrating the efforts in all provinces and raise awareness of burns. The framework will include activities which may educate the population and decrease the incidence of burns in the country.

AMERICAN COLLEGE OF SURGEONS OPERATION GIVING BACK: A BURN SURGEON'S EXPERIENCE IN MÎLOT, HAITI

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INTRODUCTION

The American College of Surgeons has developed the operation giving back program. This program is a volunteerism initiative serving as a resource for surgeons who want to participate in local and international missions. In this presentation I describe the work of the CRUDEM foundation in Mîlot, Haiti, the status of healthcare in the country, and burn wound care and resources at Hôpital Sacré Coeur.

METHODS

This is a review of the ACS Operation Giving Back program and a descriptive presentation of first-hand experience providing burn care in Mîlot, Haiti at Hôpital Sacré Coeur.

RESULTS

- Current healthcare environs: As of 2015 the estimated population is 10,110,019 people in Haiti with a median age of 22.5 years. The death rate is 7.83/1,000

population. There are two major cities in Haiti, Port-au-Prince (Capital), Pop: 2,400,000 and Cap-Haïtien, Pop: 190,289 (2013 est.). After the earthquake on January 12, 2010 approximately 10 percent of Haiti's medical staff were either killed or subsequently left the country. There was an estimated 60% decline in resources such as medications, funding, guaranteed maintenance, and medical materials after the earthquake in an environment already strained for resources. Currently, there is a fee for service system with patients paying out of pocket for all healthcare expenses including medications, dressing supplies, flat rates for operative procedures, and food.

- Description of the ACS Operation Giving Back Program and CRUDEM: The American College of Surgeons Operation giving back program was established to increase volunteerism. CRUDEM is a partnering foundation whose mission is to "operate a Catholic hospital Hôpital Sacré Coeur, providing quality healthcare to the sick and the poor of northern Haiti, and to be a medical and public health educational center of excellence for all of Haiti." The hospital in Mîlot has 125 inpatient beds, four operating rooms, services 65,425 outpatients a year.
- Clinical and Operative Experience in Mîlot, Haiti – There is one general surgeon, Dr Bernard, on staff with Haitian residents who live at the hospital. Sub-specialty surgeons work on a volunteer bases at the hospital and rotate in teams through the ACS Operation Giving Back program. There are approximately 200-300 patients seen yearly with burn injuries in Mîlot. The majority of patients seen had treated their burns at home and presented with contractures, hypertrophic scars, and keloids. There is a great need for burn surgeons in this area. I will review cases seen in the outpatient clinic, the inpatient ward, and two operative cases to serve as examples of the work that was performed in Mîlot with regards care of patients with burn injuries.

CONCLUSIONS

There is a great need for burn surgeon participation in the ACS Operation Giving Back program. In addition to personnel, in Mîlot, Haiti, there is a need for resources related to scar treatment, skin grafting, contracture releases, and wound care.

A RETROSPECTIVE AUDIT AND OUTCOME OF BURNT CHILDREN DISCHARGED FROM THE TRAUMA UNIT AT RED CROSS WAR MEMORIAL CHILDREN'S HOSPITAL

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This study was part of a broader review process investigating the follow up patterns and eventual outcome

of patients discharged from the trauma unit at Red Cross War Memorial Children's Hospital after having sustained burn wounds that did not require hospital admission.

INTRODUCTION

Burns leave in their destruction despair and a sense of powerlessness, especially in those who are already victims of poor socio-economic status and its effect is felt for months to years after that. Burns compose a large proportion of paediatric injuries, disproportionately so, in low and middle-income countries (LMICs). Mortality is more pronounced where over 90% of burn-related paediatric deaths occur.¹

AIMS

This study wishes to explore factors affecting the follow-up patterns of patients and their caregivers, having been seen and treated for burn wounds at the Red Cross War Memorial Children's Hospital.

MATERIAL AND METHODS

A retrospective review was conducted looking at two seasonal periods, January-May (summer) and June-October (winter) 2016. Patients' medical records were used to identify the characteristics of each patient, their home circumstance and their respective burn wounds and the management received. Of those patients who were found to have defaulted their follow-up, telephonic communication was made and their reasons were identified in a questionnaire. A second part of the study is in the form of a survey, assessing the doctors' knowledge of the burn unit's protocol manual's admission criteria.

RESULTS

A total of 289 cases met the inclusion criteria of the study for both seasonal periods. Similarly, in both seasonal periods, more than half the patients were less than 2 years of age. The average TBSA was 3% in both the summer and winter periods, with males sustaining more burns in the summer period (59%) compared to the winter where females were affected equally (51%). The most frequently used dressing upon discharge were silver based (Acticoat, Silverlon, Aquacell) in both summer and winter periods. This study identified one hundred and forty-eight (51%) patients that either defaulted their follow-up appointment at the burns clinic entirely or made a few clinic appointments subsequent to defaulting the clinic. Of these patients, sixty-six (45%) were contactable telephonically. Just under half (44%) of the patients who defaulted the clinic had wounds which remained unhealed. Financial and transport difficulties were noted in three (14%) patients in the summer months while this number was relatively higher in the winter months of 2016 with eleven (25%) patients having this problem. Two (5%) patients in the winter period used alternative medicine for wound healing, and

in both cases, parents obtained medication over the counter from a pharmacy. Seven (32%) patients in the summer period and sixteen (36%) patients in the winter period required their wounds to be managed at a local clinic or day hospital, taking on average 1 to 4 weeks until the wound was completely healed. One patient in the winter months was found to have a wound that took approximately three months to heal with dressings at a local clinic. This patient was never referred back to RCWMCH for review of this non-healing wound. Two (5%) patients in the winter months had wounds which required split-skin grafting at RCWMCH several weeks after their initial injury. In a small group of patients (5) whose wounds were found to be healed, parents/caregivers noted that they were informed verbally by a doctor or a nurse at the burns clinic to remove the dressings at home prior to their next appointment and if the wounds had healed, they were instructed that they need not return to the clinic for their follow-up visit and they should apply ointments/cream given to them for scar management. On average, patients seen in the summer months lived further away (22.5 km vs 16.99 km) and had a lower average monthly income (R3050 vs R3390) with a higher proportion of single parents (65% vs 60%) compared to those in the winter months. In the anonymous survey conducted amongst the doctors, participants, on average, were able 9.46 (min 5; max 13) out of a possible 16 criteria as listed in the burn's unit protocol manual.

CONCLUSIONS

Basic, safe and effective burn wound knowledge, its management and follow-up is essential in a resource constrained setting. This retrospective audit shows that smaller burns will heal in a relatively short space of time, complicate less often than bigger burns and thus may be treated at local clinics or day hospitals. This will relieve the burden placed on busy tertiary care centres but more importantly, this is more convenient and less costly for patients and caregivers who may already be victims of poor socio-economic status.

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PSYCHOSOCIAL ISSUES IN BURNS AND SCHOOL REINTEGRATION

Rene Albertyn

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Burn injuries are recognized not only for the pain associated with the injury and treatment but also for the many long term implications it will have on the young patient and his or her family. The outcome of burn treatment is not only measured in terms of mortality or morbidity. Post burn

psychosocial adjustment can contribute to a successful outcome and social reintegration.

The Red Cross Children's Hospital's Burn Unit has adopted a psychosocial and reintegration program that is predominantly aimed at parental support. All parents admitted to the burn unit are seen and psychosocially assessed. During the past 18 months (January 2016 – June 2017) an estimated 1442 in-patient families were included on this program. Aspects such as parental guilt, anger, anxiety and interpersonal problems are assessed and managed. Emotional support is provided where needed and parents are offered psycho education related to the injury and the future impact it might have on the paediatric patient. In addition we also have a sibling program where the siblings of burn survivors are prepared and counselled around the altered body appearances of the burned patient. To date a total of 94 siblings and other family members were counselled on the program.

Education and returning back to school is hugely important for the burned child as school plays a vital role in the child's socialization and development. It is no secret that burn survivors often struggle to return to school and to face their peers when they are disfigured. To overcome this, we have adopted a school reintegration program, developed to facilitate a smooth transition between being at hospital and returning to back to school. To date we have successfully reintegrated 28 disfigured paediatric burn survivors into the school system.

This presentation will discuss the psychosocial support provided to the families of burn survivors as well as the school reintegration program followed.

CAREGIVER SUPPORT GROUPS

Nadia Domingo

Occupational Therapist, Red Cross War Memorial Children's Hospital

Physical and emotional effects of even a minor burn can be immense and the affected individuals and their families are at risk of developing many psychosocial problems. The individual who suffered a burn and his or her caregivers may develop post-traumatic-stress disorder, depression, anxiety or sleep disturbances. The risk to families on a whole is also myriad as separation and divorce, loss of employment and other financial burdens are common.

The occupational therapist in the Burns Unit at Red Cross War Memorial Children's Hospital felt it necessary to start a caregiver support group in 2016 to address these needs. The group is based on the Occupational Therapy Interactive Group model which states that group members can influence one another. Aims of the caregiver support group include, group cohesion as a curative factor, universality as feelings of guilt and anger are common, and to instil a sense of hope. Caregivers are also equipped with knowledge on the occupational therapist's role in the Burns Unit and positive coping skills. The caregiver support

group is held on a weekly basis in the Burns Unit. The group is an open, client-centred group which is facilitated by the occupational therapist and cofacilitated by the psychologist. This paper will share some of the experiences the caregivers had while partaking in this group.

THE IMPORTANCE OF CULTURAL COUNSELLING IN A SOUTH AFRICAN TERTIARY BURNS UNIT

N Nama

Holistic burn care in a multi-cultural society relies on understanding of the physical aspects of burn care as well as the understanding and beliefs of the burn patient and parent. The African tradition is rich with beliefs and patients understand their injuries and accidents through these. A cultural consultant that understands these important issues, can address concerns and can assist towards holistic healing of psyche and body. This talk will explain what is offered and the impact thereof.

MAJOR BURNS: THE PHYSIO AND OCCUPATIONAL THERAPY TEAM EFFORT

Leigh Botha and Mereille Pursad

Red Cross War Memorial Children's Hospital is the leading paediatric hospital for burns management with in sub Saharan Africa. With advances in medical field large burns mortality decreases. A multi-disciplinary team approach to rehabilitation following the burn is an essential step towards regaining return to function and independence in activities of daily living. The physio- and occupational therapy team engages in therapy from admission implementing individualized programs for these patients to regain optimum functional outcomes. The overlap in roles and support between these two professions are displayed in order to achieve the desirable outcomes needed for these patients. Treatment extends beyond the management of physical impairments and the multi-disciplinary team approach focuses on the physical, emotional and psychological impact on the survivor as well as the community they return to.

By using case studies this presentation strives to position and confirm the collaboration between the professions, from the acute tertiary institution, through the different stages of recovery, as essential part of the occupational well-being of the developing child within the current and future context.

THE USE OF XBOX KINECT™ IN THE PAEDIATRIC BURNS UNIT AT CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL

Eleonora Lozano and Joanne Potterton

University of the Witwatersrand

BACKGROUND

The popularity of the video game use in burns rehabilitation has grown because, in addition to facilitating range of

motion (ROM) in an effort to prevent joint contracture formation, the virtual imaging characteristics of these games provides additional benefit of distraction from pain.

AIM

To investigate the effect of using the Xbox Kinect™ on discharge outcomes of children in the PBU at CHBAH.

METHODS

This quasi-experimental time series study consisted of two groups. The control group all received standard physiotherapy rehabilitation and the experimental group received additional Xbox Kinect™. Outcome measures were ROM, ASK® participation and a modified Wong-Baker FACES® enjoyment rating scale.

RESULTS

Seventy children were recruited into the study of which the data for 66 were analysed. The majority burns were as a result of hot water attributing to more than 50% of admissions, followed by flame burns (30%) and electrical burns (12%).

The Xbox Kinect™ was shown to be significant in achieving higher active ROM at discharge ($p < 0.01$) and at follow up ($p < 0.01$). We found that TBSA% was a predictor of ASK® scores ($p < 0.01$). Fun and enjoyment ($p < 0.01$) was found to be significant in this study.

CONCLUSION

The use of the Xbox Kinect™ as seen in this study has proven to be beneficial and a useful adjunct to burns rehabilitation within in the paediatric burns population.

SCAR MANAGEMENT

Mereille Pursad

Occupational Therapist

Burns injuries in South Africa are a common occurrence especially affecting lower-socioeconomic communities and children.

Treating burn victims is a challenge but a priority at Red Cross War Memorial Children's Hospital, the only dedicated paediatric burns unit in sub-Saharan Africa. The unit treats approximately 1400 in-patients per year and another 4500 out-patients contact per year. 600-1000 of these children require surgical intervention. Burn cases are often devastating and the expanse of burns treated has significant physical and emotional debilitating consequences on the individual and family irrespective of the size of the initial injury. This is further impacted by the great advances with in the medical field where burns-related deaths has decreased substantially but the true morbidity and impact on long term adjustment and quality of life is significant.

This presentation strives to position and confirm the role of occupational therapist with in conservative management of the scaring process as consequence of a burn injury.

MANAGEMENT AND INTERVENTION PLAN OF CHILD AFFECTED BY MENINGOCOCCAL SEPSIS: A SINGLE CASE STUDY

Eleonora Lozano and Prof Joanne Potterton

University of the Witwatersrand

PURPOSE

This case study presents a unique case of rehabilitation intervention and management of a child following a meningococcal viral infection admitted to a tertiary academic hospital in Johannesburg South Africa.

CASE PRESENTATION

An eight year old boy presented to hospital and was diagnosed with meningococcal septicaemia and was in septic shock with DIC. During his ICU stay he underwent bilateral upper limb fasciotomies and debridement. He then developed gangrene of both hands and both feet requiring bilateral below elbow amputations and bilateral knee amputations.

INTERVENTION

Using the ICF framework and a multidisciplinary rehabilitation approach, an intervention overview and future goals for the patient have been discussed.

CONCLUSION

ICU consultants and family are often faced with the difficult decision of continuing intensive care and management of a child with meningococcal septicaemia where multiple amputations are common, but provided they receive long-term multidisciplinary/interdisciplinary rehabilitation they may be able to function and have a good quality of life, participating in their everyday tasks and environments.

OCCUPATIONAL THERAPISTS MANAGEMENT OF THE BURNED HAND

Leandi Richter

B.Occ Therapy (Pret) Dip Hand Therapy (Pret), Richter Therapy Inc.

Inadequate hand function equates to 95% impairment rating of the involved extremity. Burns to the hand often result in a debilitating outcome. The aim is to inform the surgeon, therapist and nurse how to prevent deformities commonly associated with burns to the hand. Data gathered is a review of current practice of the management of burns in the emergent, acute and rehabilitation phase. The presentation will include practical tips and tricks for the surgeon and therapist on how to splint the hand based on the anatomy of

the hand and physiological principles of tissue healing. Other treatment modalities that will be reviewed include: positioning, pressure garments, exercise programs, work hardening and facilitation to return to work.

OVERCOMING BURN UNIT NURSING CHALLENGES IN A RESOURCE RESTRICTED COUNTRY

Revona Goosen

Red Cross War Memorial Children's Hospital, Cape Town, South Africa

BACKGROUND

Burns is a disease of poverty-stricken countries. Sadly resources are most limited in these areas where burns are abundant. This talk will show ways of getting back to basics with wound care and the results of early wound washing on infection rates. Practical cost-effective innovations for infection control will also be demonstrated.

MATERIALS AND METHODS

Three hundred and twenty one children with hot water burns were evaluated. The washing table is covered with industrial plastic sheets to minimise patient-to-patient contamination. Pain medication is administered 30 minutes prior to wound washing. The dressing room is pre-heated to 38°C. The wound washing process consisted of a dilute soapy wash and removal of all loose skin. Hair is shaved if the burn extends into the hairline. The entire child is washed from head to toes. This is followed by the topical application of sodium hypochlorite soak (0,006% strength) for 20 minutes. Routine wound dressing followed using the same topical dressing. Children were divided into two groups. Those who were washed after 12-24 hours with Burnshield to soothe the wounds and those who were washed within 12 hours after sustaining the burn. Late wound washing was done in 246 (typically 12-24 hours post burn) and early washing, within 12 hours post burn in 75 children. Sepsis was defined according to the American Burn Association sepsis and Sirs criteria.

RESULTS

Late washing patients had infection rates of 31% and the early washing group had infection rates of 13%. No children who were washed within 8 hours became infected. Staphylococcal toxic shock was absent in the early washed group. No adverse effects were noted in relation to the washing process.

CONCLUSIONS

Sensible, cost-effective interventions can reduce infection and the incidence of Staphylococcal toxic shock syndrome in a burns unit.

BURN RECOVERY IN CHILDREN AND ADOLESCENTS: WHAT IS THE EVIDENCE FOR PSYCHOSOCIAL INTERVENTION APPROACHES?

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BACKGROUND

Evidence supporting the efficacy of psychosocial interventions after paediatric burns is inconclusive. Establishing a methodological synthesis of the evidence for psychosocial support interventions is, therefore, very important in a resource-constrained setting such as South Africa.

AIM

To conduct a systematic review of the effectiveness of psychosocial interventions for child and adolescent burn victims.

METHODOLOGY

A search was conducted in the databases Medline, Psychinfo, Embase, Cinahl, Web of Science and Cochrane using appropriate search terms. Studies published up to February 2017 were included. By means of the PRISMA checklist, titles, abstracts and full-text articles were screened based on inclusion/exclusion criteria. Screening was done independently by two researchers. Studies were evaluated using the Cochrane risk of bias tool at study level by two reviewers in an independent and un-blinded manner.

RESULTS

Records initially identified through the database searches were n = 3397. After removal of duplicates, the number of records were n = 2039. The review for screening and full text assessment were conducted by two independent reviewers. After title and abstract screening, the number of articles included for full review was n = 274. A total of 49 full texts were reviewed for relevance and eligibility.

CONCLUSION

The evidence base for interventions providing psychosocial recovery support for burns in children is inconclusive. Conceptualisation and measurement of paediatric psychosocial recovery vary across studies and further rigorous research using appropriate outcome measures to evaluate the effectiveness of interventions is required.

PSYCHOSOCIAL RECOVERY OF PAEDIATRIC BURN SURVIVORS IN THE FIRST TWO YEARS POST BURN: KEY PSYCHOLOGICAL AND INTEGRATION OUTCOMES

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Burns have been described as one of the most painful and traumatic injuries where survivors suffer severe consequences physically, psychologically as well as socially. Burns amongst children may be devastating and result in delays in their growth and development, as well as post-traumatic stress, depression, and anxiety-related disorders. Psychosocial recovery in paediatric burns is expected to have characteristics that are both universal and context-specific. Early intervention is crucial to circumvent traumatic and prolonged consequences and a range of psychosocial interventions exist that can play a supportive role in the recovery of young burn survivors, if targeted specifically, and timeously. This review aims to provide an overview of the current state of knowledge on the psychosocial outcomes of severe, unintentional paediatric burn injury in the first 2 years post-burn, for the purposes of guiding targeted intervention strategies aimed at early psychosocial rehabilitation. A search across 6 databases (i.e. Medline, Psycinfo, Embase, Cinahl, Web of Science and Cochrane) has identified 17228 articles, of which 9560 remained for consideration after duplicates were removed. Two reviewers are independently screening the titles and abstracts to identify relevant full texts for review. The presentation will provide a preliminary analysis of the expected psychosocial sequelae of a paediatric burn, across time (including hospitalisation and post discharge) and contexts (high, middle and low income) and anticipated psychological outcome domains, such as stress, anxiety and depression, and social integration domains, such as academic performance and

peer relationships. The findings are expected to guide mental health practitioners in targeted rehabilitation and support efforts.

THE COMMUNITY REINTEGRATION OF PATIENTS WITH BURN INJURIES POST-DISCHARGE IN THE NORTH WEST PROVINCE, SOUTH AFRICA

Anneri Myburgh

Occupational Therapist (Masters Dissertation)

In a developing country like South Africa, challenges' regarding community reintegration post burn injuries has not been adequately investigated. In this study of 55 adult participants admitted to Tshepong Hospital Burns Unit in the North West Province were assessed on discharge, at one month and six months post discharge using the Activities Health Assessment and Roles Checklist. Quality of life, community integration and access to occupational therapy were also assessed at six months.

The 28 participants retained in the study returned to their previous roles and occupational performance levels but there was a decrease in the variety, comfort, satisfaction and social appropriateness for sleep, leisure and social participation activities. The time spent on worker and home maintainer roles decreased significantly at one month but returned to pre-morbid levels at six months.

In terms of community integration only the social integration was affected with female participants achieving higher home, productivity and total integration scores. Half of the participants reported pain/discomfort and anxiety/depression while both QoL and community reintegration was moderately associated with the depth and extent of the burn injuries.

The distance of the patients' homes from health services and lack of finances prevented them from accessing occupational therapy which was associated with poor QoL. It is suggested that these services be made available in the community and that a support group model be investigated to help meet the reintegration challenges faced by patients with burn injuries.