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RESEARCH ARTICLE

PAIN MANAGEMENT PRACTICES DURING WOUND CARE IN PATIENTS WITH MODERATE TO MAJOR BURN INJURIES, KENYATTA NATIONAL HOSPITAL, KENYA

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ABSTRACT

Background: Burn wound care procedures lead to trauma and excruciating pain and this is associated with longer bed occupancy and poor outcomes. Burn cause a lot of pain in most circumstances and has not been sufficiently controlled leading to psychological consequences and poor wound healing. The study therefore sought to determine pain management practices during wound care procedures in patients with moderate to major burn injuries in Burns Unit and ward in Kenya's biggest referral hospital, in view of finding out current practices in pain management in severe burn patients for better patient care.

Methodology: The study employed a qualitative cross sectional design in which eighty (80) patients selected through purposive sampling method and who met inclusion criteria were recruited into the study. Data was collected using structured questionnaire consisting of two parts: Patient data (demographic and pain scales) and clinician pain management practices. The analysis was done using Statistical Package for Social Scientists (SPSS) version 18 and presented using charts and tables.

Results: Patients reported significant increase of pain during wound care procedures with mean pain score 8.5 SD 1.4, P=0.001 in both numerical and behavioral pain scales. Patients who were only on paracetamol analgesic reported more pain during wound care procedures (mean change 5.66) compared to morphine (mean change 4.37, P=0.033). Patients who received non pharmacological pain management practices in addition to pharmacological pain management reported less pain than those who did not benefit from them, P=0.004.

Conclusion: Clinicians pain management practices during wound care procedures involved pharmacological as well as non pharmacological pain management; however their pain dissipation was inadequate. Innovative pain management practices combining both pharmacological and non pharmacological therapies need to be implemented and / or researched on.

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INTRODUCTION

Burn injuries are classified as one of the most devastating of all injuries and a major global public health crisis and approximately 90% of burns occur in low to middle income countries, regions that generally lack the necessary infrastructure to reduce incidence and severity of burns (Peck *et al*., 2008). Advances over the years including analgesics, sedatives and topical wound therapies have resulted in more patients surviving burn injuries. Yet despite these developments, there is great variability in pain management (Stoddard *et al*., 2002). Providing adequate analgesia to a burn patient is a challenge to clinicians. Because of different component and ever changing pattern overtime, it has become difficult to control. Burn invokes a lot of pain in most circumstances and has not been adequately controlled leading to psychological sequel and poor wound healing (Chamblis and Anand, 1997). Procedural burn pain control needs to be under constant revision and improvement using creative ideas and approaches (Hyeong *et al*., 2012). Pain management during wound care procedures is a critical part of treatment in acute burn injuries. There are limited studies conducted on burn pain in this region and this study will add value in existing burn pain management protocols in our hospitals and sub-saharan Africa as a whole.

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MATERIALS AND METHODS

Study design

The study was a cross sectional study carried out at Kenyatta National Hospital in which eighty (80) patients who met inclusion criteria were recruited into the study over a three weeks period between June and July 2013. Kenyatta National Hospital admits patient referred from forty seven (47) Kenyan

county hospitals countrywide and those referred from private hospital without burns units and also during fire disasters around Nairobi County.

Sample size and sampling technique

The study was a purposive sampling technique and focused on in- patient adults and children in Burns Unit and ward 4D including new admissions within three weeks available to the investigator until the desired sample size of 79 was attained. Sample size was determined using Fischer's formula (Mugenda and Mugenda, 2003) with unknown Prevalence, P of 50%.

Study tool

Structured questionnaires were administered to study participants comprising of numerical pain assessment scale between 0-10 for patients who are able to provide self report on pain and behavioral pain assessment scale for children and adults who are unable to provide self report on pain was used to collect data. Numerical pain assessment scale was deployed for patients before and during burn wound care procedures while behavioral pain assessment scale was used by clinicians during wound care procedures. The questionnaire was tested by investigator in Burns unit Kenyatta National Hospital to ascertain its reliability. Written consent was sought randomly from three patients and three clinicians working in the unit.

Data presentation and analysis

Data collected was entered and analyzed using SPSS version 18.T-test and P values was used to calculate statistical significance of the findings and statistical significance was set at $P<0.05$.Mann-Whitney-Wilcoxon (MWW) test was used to test statistical difference in pain intensity between age distribution of burn patients, burn severity, self rated pain, heart rate, pharmacological and non pharmacological pain management practices. Data was presented using charts, graphs and tables.

Ethical considerations

Approval to carry out research was obtained from Kenyatta National Hospital/University of Nairobi Ethics and Review Committee (KNH/UoN RRC)**.** The aim of the study was explained to the respondents in a language they understood most (English or Kiswahili). The participants were be allowed to take part in the study voluntarily and were free to withdraw any time they wish without intimidation. There was an informed consent form which the respondent was expected to verbally agree and sign after being explained to the purpose of the study. For children, their parents or guardian was requested to consent. Confidentiality and anonymity was maintained throughout the study and no names were used. The only part where names appeared was the consent form and not the questionnaire. The study instrument had a serial number and access to data was limited to the investigator. There was no coercion through monetary or any other payment for participation. There was no invasive procedure to the participants or any other risks involved in the study.

RESULTS

Majority 58.8% (n=47) of patients were admitted with more than 21 % burns, Mean TBSA 24.5% (range 5-60%).Wound dressings, physiotherapy and debridement were the main procedures performed on patients with moderate to severe burn injuries. Dressings were frequently performed 85% (n=68) followed by physiotherapy 11.3% (n=9) and debridement 7.5% (n=6). Majority of patients reported significant increase in pain during procedures. The mean score before procedure was 3.4 (SD 1.9) and significantly ($p<0.001$) painful during procedure 8.5 (SD 1.4). Patients with major burn injury felt more pain than those with moderate burn injury during wound care procedures but not significant. Children below 12 years of age had a mean change in heart rate of 12.1 and. while patients above 12 years had a mean change of 14.7 during wound care procedures. Patients who were on paracetamol monotherapy reported greater increase in pain during wound care procedure (mean change = 5.7) compared to those on morphine (mean change = 4.4), p value = 0.033. Patients on paracetamol alone also reported more pain than those on paracetamol plus morphine (mean = 4.00), although the difference between the groups did not attain statistical significance, p=0.46. Patients who received non pharmacological pain management reported less pain than those not receiving non pharmacological management, P= 0.04. There was no significant difference between patients who received both pharmacological and non pharmacological pain management and those patients who received either of the two pain management modalities, P=0.13.

Table I. Procedural pain management

	N	Self rated pain		P value
		Mean change	SD	
Pharmacological management				
Paracetamol alone	40	5.7	2.3	NA
Morphine alone	30	4.4	2.6	0.03
Paracetamol and morphine	5	4.0	4.5	0.46
Non pharmacological management				
Yes	56	4.8	2.1	0.04
No	24	5.5	3.5	
Pharmacological and non pharmacological				
Yes	53	4.8	2.2	0.13
No	27	5.3	3.3	

Pharmacological and pharmacological pain management and pain scores during procedure.

Patient's pain rating before and after wound care procedure

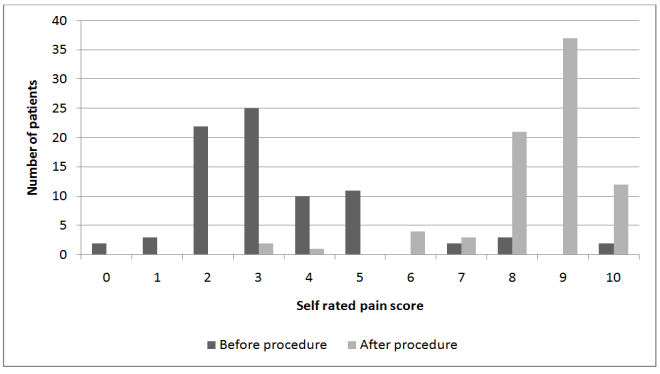

Figure 1. Patient self rating on pain

DISCUSSION

The study found that mean burn total body surface area was 24.5% in Kenyatta National Hospital which is consistent with

other studies elsewhere for example in a study in KomfoAnokye Hospital in Ghana, where mean TBSA was 24.79%., (Agneborku *et al*., 2011). Moreover, majority of patients reported significant increase in pain during procedure. This may be attributed to inadequate pain control before wound care procedures. This is consistent to Akram *et al*. (2010) in which mean of procedural pain intensity was 8.5 SD 1.8 In Tabriz hospital Iraq. Patients who were only on paracetamol felt more pain compared to those on morphine. Patients on paracetamol alone also reported more pain than those on paracetamol plus morphine. Patients who received non pharmacological pain management reported less pain than those with none. There was no significant difference between patients who received both pharmacological and non pharmacological pain management and those patients who benefited only on either of the two. A weak analgesic in combination with opioid has a synergistic effect. Bennet and Yuan, (2008) recommends escalating opioid dose until the patient is pain free or at maximum possible relieve without intolerable side effects or a combination between a weak analgesic and an opioid. Use of non pharmacological pain management measures has proven to be effective in the management of burn pain. In this study, clinicians employed mainly distraction technique for children, counseling and reassurance. De Jong *et al*. (2008), in their study in selected hospitals in Netherlands, supported numerous non pharmacological techniques effective in controlling procedural pain.

Conclusion

Clinicians pain management practices during wound care procedures were a combination of pharmacological (mostly morphine, and paracetamol syrup) and non pharmacological (mainly reassurance, counseling and distraction) and pain management during burn wound care procedures were inadequate.

Competing interests

Authors report no conflict of interests.

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