

A novel ED-based sexual assault centre in western Kenya: description of patients and analysis of treatment patterns

Megan L Ranney,¹ Elissa Rennert-May,² Rachel Spitzer,² Mary Anyona Chitai,³ Sarah Ellen Mamlin,^{3,4} Hillary Mabeya⁵

¹Injury Prevention Center, Department of Emergency Medicine, Alpert Medical School of Brown University, Providence, Rhode Island, USA

²Department of Obstetrics & Gynecology, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada

³Center for Assault Recovery-Eldoret, Accident & Emergency, Department of Surgery, Moi Teaching & Referral Hospital, Eldoret, Kenya

⁴Department of Medicine, Indiana University, Indianapolis, Indiana, USA

⁵Department of Obstetrics & Gynecology, Moi University, Eldoret, Kenya

Correspondence to

Megan L Ranney, Assistant Professor, Injury Prevention Center, Dept of Emergency Medicine, Alpert School of Medicine, Brown University, 55 Claverick St, 2nd Flr, Providence, RI 02903, USA; mranney@lifespan.org

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ABSTRACT

Background The aim of this study was to establish the feasibility of a Kenyan emergency department (ED)-based sexual assault centre; and to improve knowledge of the characteristics of sexual assault in the region.

Methods The Center for Assault Recovery-Eldoret (CAR-E) was established to provide timely, culturally sensitive treatment of Kenyan sexual assault survivors using a standardised evaluation/treatment protocol. A retrospective review of charts of all sexual assault survivors attending CAR-E from May 2007–May 2008 was performed. Simple descriptive statistics, t tests, and OR were calculated.

Results CAR-E treated 321 survivors over 13 months. Patients' mean age was 15.9 years; 50% were younger than 14 years old. Survivors were predominately female and single. Most knew their assailant. Younger age was associated with increased likelihood of genital trauma. Only 43% of assaults were reported to the police.

Sexually transmitted infection prophylaxis was given per protocol to 84% eligible; emergency contraception to 64%; and HIV prophylaxis to 63%. Only 44% received counselling. Survivors were more likely to get sexually transmitted infection and HIV prophylaxis, and emergency contraception if they had genital injury.

Conclusions Development of an ED-based sexual assault centre at a referral hospital in Kenya using a standardised history, physical, and treatment protocol was feasible, and high rates of prophylaxis were provided. Based on characteristics of people who have been assaulted, community prevention efforts should concentrate on decreasing the societal acceptability of rape. In conjunction with improvement of protocols at the centre under consideration, development of similar centres in sub-Saharan African ED should be encouraged.

INTRODUCTION

Sexual violence is widely prevalent in sub-Saharan Africa.¹ Sexual assault of children is particularly common.^{2–3} Although the importance of health sector treatment protocols for people who have been sexually assaulted in low-income countries is increasingly acknowledged,⁴ there is a dearth of literature describing implementation of such a protocol in sub-Saharan African health centres.^{5–7} Ideally, these programmes should be easily accessible by survivors; standardised, culturally appropriate and locally driven; able to provide timely HIV and sexually transmitted infection (STI)

prophylaxis, emergency contraception (EC) and counselling; link sexual assault survivors to the legal system to facilitate prosecution; and be easily achievable in resource-poor settings.^{5–8} An emergency department (ED)-based protocol, similar to what is available in most high-income countries, may be an effective strategy.

Kenya is a uniquely situated country in which to study the performance of sexual assault treatment protocols in the ED setting. It is one of only 13 countries in sub-Saharan Africa to have criminalised sexual assault,⁹ and has recently identified rape as a national priority.¹⁰ A demonstration project to address sexual assault at the level of district hospitals, linking the expertise of a locally based non-governmental organisation and government facilities, has recently been described, and appears to be successful.^{3–11}

Further research into effective development of regional sexual assault centres in sub-Saharan Africa is, however, needed. Local healthcare providers at Moi Teaching & Referral Hospital (MTRH), Eldoret, Kenya reported being uncomfortable treating sexual assault survivors prior to the development of the ED-based protocol; similar discomfort has been described at other African healthcare facilities.^{1–12} Moreover, the dissemination and implementation of treatment protocols outside of the NGO-affiliated projects has not, to the authors' knowledge, been described in Kenya.

Additionally, existing literature on the characteristics of sexual assault in Kenya is limited and contradictory. For instance, although one study of rape survivors at a private hospital in Nairobi showed a high incidence of acquaintance assault,¹³ according to a larger study at another Nairobi hospital, most sexual assaults are committed by strangers.¹⁴ Trustworthy estimates of sexual assault incidence rates are lacking.¹⁵ In order to appropriately target prevention efforts, better documentation of risk factors for, and characteristics of, Kenyan sexual assault survivors is needed.

To this end, the present work describes the collaborative, community-based development of an ED-based sexual assault treatment centre at a referral hospital in western Kenya, and evaluates the patient population and the feasibility of its treatment protocol via retrospective chart review. The primary objective of this research was to assess the feasibility of implementation of the Center for Assault Recovery-Eldoret (CAR-E) standardised treatment protocol. It was hypothesised that the present programme would provide similar rates of

HIV prophylaxis, STI prophylaxis, and EC as programmes in high-income countries, but that counselling and legal referrals would remain difficult to achieve. A secondary goal of this review was to better characterise sexual assault patients presenting for treatment in this region of Kenya and their injuries. It was hypothesised that the majority of the patients would be female, aged less than 18, assaulted by an acquaintance and with significant injuries.

Development of the CAR-E

The CAR-E is based in the Accident & Emergency Department (A&E) of MTRH in Eldoret, Kenya, the fifth-largest city in Kenya. MTRH serves a catchment area of 12 million and serves as the primary referral hospital for western Kenya.

CAR-E was established at MTRH in March 2007 in response to an obvious perceived need. Its protocols were developed over a period of 10 months as a collaborative effort between the A&E; the Department of Reproductive Health (RH); the Academic Model for Prevention and Treatment of HIV/AIDS¹⁶; physicians from Brown University and Indiana University; and community representatives, including police, lawyers and social workers. Multiple iterations of the proposed evaluation and treatment protocol were created, and were edited based on feedback from A&E and RH staff over a 10-month period. The final proforma reflected an adaptation of WHO,⁴ USA¹⁷ and Kenyan^{10 18} guidelines for treatment of sexual assault survivors, as outlined below.

The collaboration decided, based on both literature reviews and community concerns, that CAR-E should have three primary goals. First, and most importantly, CAR-E aimed to provide a safe, kind and respectful location for evaluation and treatment of sexual assault survivors. To this end, the hospital provided a private room adjacent to A&E, as well as a nurse whose primary responsibility was management of CAR-E. It also committed to providing free care for survivors, a previously unaddressed governmental mandate. Second, CAR-E aimed to guide practitioners in timely provision of locally available disease prophylaxis. A standardised set of treatment guidelines were developed to reflect both international prophylaxis standards and local availability of medicines; these guidelines offered options depending on patient pregnancy status, time elapsed since assault and allergies. Finally, CAR-E hoped to facilitate prosecution of assault. With this goal in mind, physicians, police and medicolegal specialists worked together to develop a standardised encounter form and to improve reporting to the police force. (history and treatment proforma available on request from authors.) Although local resources preclude collection of forensic DNA samples, clothing and any other potential evidence is stored in sealed, labelled paper bags in a locked cabinet in the CAR-E office.

After development of the protocol, A&E and RH staff underwent four 1-hour lectures and in-service training on the approach to, and care of, the sexual assault survivor. The training concentrated on the elements of the newly developed standardised encounter form. The hospital also dedicated a part-time nurse to the management of the centre. She underwent extensive training and supervision, similar to sexual assault nurse examiner training in the USA, with two of the authors; her training included 3 weeks of supervised history and physicals, attendance of a 1-week Unicef course and a 1-week UNHCR course, participation in multiple 2-day workshops and ongoing quality review by one of the authors. Although, according to Kenyan medical standards, she is not allowed to perform forensic exams, she assists physicians with accurately

following the standardised history and treatment forms, and assists patients with accessing treatment and counselling resources. The treatment centre was launched in late April 2007.

METHODS

Study design

This study was a retrospective review of the records of sexual assault survivors presenting to the CAR-E between May 2007 and May 2008. Perpetrators or patients who were mis-triaged to CAR-E were excluded from the review. (CAR-E triage criteria are being either the person who is sexually assaulted or the perpetrator of the sexual assault. Perpetrators are included in the triage criteria primarily to test them for STI or HIV; under Kenyan law, it is illegal to knowingly infect others with these infections.)

Study setting and population

To evaluate the demographics, assault characteristics and treatment characteristics of the survivors presenting to CAR-E during its first year of operation, the study population was defined as all sexual assault survivors presenting to CAR-E between May 2007 and May 2008.

A total of 385 patients were seen at CAR-E during that period. Fifteen were perpetrators, nine were erroneously triaged to CAR-E (eg not involved with a sexual assault case, and 40 charts could not be found. Therefore, 321 charts of sexual assault survivors were reviewed.

Study protocol

All chart reviews were performed by a single reviewer using a standardised chart review protocol. The reviewer was trained by the principal investigator and by a senior consultant in Kenya, in the review protocol and in the structure of the charts. At the beginning of the study; she reviewed 15 charts in conjunction with a senior consultant, to assure accuracy; she then completed 10 more charts in parallel with a senior consultant after the 100th review. The charts were abstracted onto a standardised review form, and then entered into a password-protected database. Waiver of consent and expedited review were granted from the institutional review board of Lifespan Hospital (Brown University); the institutional review and ethics committee of MTRH/Moi University; and the research ethics board of the University of Toronto.

Measurements

Abstracted information from the standardised history and treatment encounter forms (described above) included: basic demographic information; details about the relationship with the assailant and characteristics of the assault; and a summary of tests performed, test results and treatments given.

Data analysis

Data was analysed using Stata SE 10.0. Simple descriptive statistics were calculated to describe the demographics of the survivors and the testing characteristics. Estimates of association were determined using Student t test, χ^2 tests and Fischer's exact tests, as appropriate.

RESULTS

Three-hundred and twenty-one survivors were treated between May 2007 and May 2008. One-hundred and fifty-four patients (61%) were treated between 08:00 and 16:00, when a trained CAR-E nurse was present. There was no significant difference in

amount of missing information on the structured encounter forms between patients seen within and outside of these hours. Ninety-four per cent of patients were female. The mean age was 15.9 years. Table 1 presents additional demographic information.

Most assaults (259, 81%) were committed by a single assailant. The majority (65%) of assailants were known to the survivor; 10% of survivors reported assault by a family member. Very few charts recorded information about alcohol or drug use by the survivor or the assailant. One-hundred and sixty survivors (50%) had genital trauma; 98 (31%) had hymenal trauma. Twenty-five (7.8%) were admitted to the hospital.

Younger age was significantly associated with increased likelihood of genital trauma (mean age of those with genital injury=14.6 years (13.1–16.1), mean age of those without genital injury=17.2 years (14.7–19.6), $t(285)=0.03$) and with decreased likelihood of other injuries (mean age of those with non-genital injury=20.7 years (17.2–24.2), mean age of those without non-genital injury=15.5 years (14.0–16.9); $t(287)=0.04$).

Table 2 contains further details about the assault and injury characteristics.

According to CAR-E protocol, all survivors were to be tested for HIV, syphilis and hepatitis B. Survivors could be administered a urinalysis, pregnancy test, high vaginal/oral/rectal swab, complete blood count, liver function test and chemistry panel, depending on the clinical circumstances. The hospital and police did not have capabilities for more extensive forensic testing. Of the 321 patients under review, 285 (89%) were tested for HIV; of these, seven were positive, of whom five were not previously known to be positive. Two-hundred and fifty-seven (80%) were tested for syphilis, of whom two were found to be positive. Two-hundred and three (63%) were tested for hepatitis B, of whom four were positive. One-hundred and sixty-four had a pregnancy test, representing 73% of survivors for whom the test would be applicable (eg female, aged between 10 and 54 years old). Of these, 13 had positive pregnancy tests, of which eight were not previously known to be pregnant.

Survivors presenting within 72 h of assault, with suspected body fluid exposure, and with negative screening tests were eligible for STI prophylaxis. STI prophylaxis (including for

Table 2 Assault and injury characteristics of 321 sexual assault survivors treated at CAR-E, May 2007–May 2008

Assailant	
Spouse	2 (0.6%)
Other family	29 (9%)
Neighbour	62 (19%)
Employer	3 (1%)
Other acquaintance	105 (33%)
New acquaintance	12 (4%)
Stranger	85 (27%)
Other	2 (0.6%)
Missing information	21 (7%)
Number of assailants	
1	259 (81%)
>1	44 (14%)
Missing	18 (6%)
Alcohol	
None	2 (0.6%)
Survivor	3 (0.9%)
Assailant	3 (0.9%)
Missing	313 (98%)
Marijuana	
Survivor	1 (0.3%)
Unknown	320 (99.7%)
Reported to police	
Yes	139 (43%)
No	144 (45%)
Missing	38 (12%)
Genital trauma	
Yes	160 (50%)
No	124 (39%)
Missing	37 (12%)
Most common genital trauma:	
Vaginal	68 (21%)
Hymenal	98 (31%)
Non-genital trauma	
Yes	46 (14%)
No	247 (77%)
Missing	28 (9%)
Most common non-genital trauma	
Bruises	26 (8%)

Table 1 Demographic characteristics of 321 sexual assault survivors treated at CAR-E, May 2007–May 2008

Characteristic	Value
Age (median, SD, range)	15.9 (\pm 11.4, 8 months–100 years)
Sex (N, %)	
Female	300 (94%)
Male	20 (6%)
Unknown	1 (<1%)
Marital status (N, %)	
Married	28 (9%)
Single	259 (81%)
Widowed	5 (1.5%)
Divorced	5 (1.5%)
Education (N, %)	
Primary school or less	148 (52%)
Secondary school	48 (15%)
Beyond secondary school	30 (9%)
Brought to clinic by... (N, %)	
Self	45 (14%)
Parent	137 (43%)
Other relative	64 (21%)
Acquaintance	19 (6%)

syphilis) was provided per protocol for 261 of 311 (84%) survivors for whom prophylaxis would be appropriate. EC was provided for 128 survivors (70% of those eligible). Post-exposure prophylaxis for HIV was provided for 195 of 309 eligible survivors (63%). The standardised encounter form did not include information about whether those who did not receive prophylaxis declined it, or were not offered it in the first place. Although all survivors were supposed to receive counselling, only 142 (44%) were documented to have received it. Of note, A&E had only one counsellor (who was not dedicated to CAR-E) during the period of the study, and she was available only during standard business hours.

Survivors were significantly more likely to receive STI prophylaxis (OR 2.55, 95% CI 1.29 to 5.04), EC (OR 2.35, 95% CI 1.26 to 4.41) and HIV post-exposure prophylaxis (OR 1.93, 95% CI 1.17 to 3.19) if they had sustained genital injury. Approximately half (139, 43%) of the sexual assaults were reported to the police. There was no difference in likelihood of reporting to police according to age ($t(281)=0.52$) or genital injury (OR 1.15, 95% CI 0.70 to 1.98). No cases had proceeded to prosecution by the time of chart review.

What is already known on this subject

- ▶ Sexual assault is a major, but underaddressed, problem in sub-Saharan Africa.
- ▶ There are conflicting data about the demographics and characteristics of sexual assault in Kenya.
- ▶ There have been few published studies demonstrating the feasibility of standardised sexual assault treatment protocols in sub-Saharan Africa.

What this study adds

- ▶ An emergency department-based sexual assault treatment centre is feasible, and results in good documentation and high rates of provision of appropriate medical treatments.
- ▶ Sexual assault survivors presenting to the treatment centre are predominately young, female, single and assaulted by someone they know.

DISCUSSION

This analysis offers a unique perspective on the feasibility of a sexual assault treatment protocol in the ED of a sub-Saharan African hospital. It provides an assessment of sexual assault patient demographics and assault characteristics, a little-documented but crucial element of sexual assault prevention efforts. It also proves that comprehensive treatment can be provided in an ED-based, sexual assault centre in East Africa, thereby offering assistance to other health institutions wishing to establish similar centres.

In accordance with studies in other sub-Saharan African countries, the majority of CAR-E's patients were single women under the age of 16. The cause of this demographic pattern is unclear. It may reflect certain societal customs about sex with young girls^{2 19}; in this case, greater public education campaigns may be needed. Equally likely, the predominance of minors among the patient population may be due to an unwillingness or inability of older women to identify their sexual assaults as worthy of treatment.^{12 19} This would imply that adult, and particularly married, women need to be better educated as to the definition of rape and the appropriateness of treatment throughout their life-cycle. Corresponding to the theory that minors presented for care because their rape is less acceptable than that of adults, is the fact that very few patients presented to the ED of their own volition; most were accompanied by their parents. Further substantiating the idea that only obvious rape cases presented for treatment, a higher rate of genital and a lower rate of non-genital injuries was seen as compared to injury rates reported in the literature from high-income countries.²⁰ Finally, the fact that marital rape is not illegal in Kenya may influence older women's willingness to present for treatment.

In terms of assault characteristics, it was found that most of the assailants were known to the patient. This contradicts a recent Kenyan paper,¹⁴ but agrees with a previous study of injury prevalence in a neighbouring community.²¹ This finding is also in accordance with international literature, which states that most sexual assault is conducted by perpetrators known to the person who is sexually assaulted.²² Community prevention

efforts should, therefore, be concentrated on decreasing the societal acceptability of rape (eg with increased education about the illegality of sexual assault), rather than increasing safety behaviours of women in dangerous circumstances.

It was found that the protocol-based history and physical form resulted in thorough chart documentation. The only category of the chart with significant amounts of missing data was the drug and alcohol history; this is likely to reflect reluctance on the parts of patients and providers to address issues of substance use in the healthcare setting.^{23 24} The completeness of documentation suggests that the designed charting form could meet Kenyan legal standards.⁸ Unfortunately, no cases are known that progressed to prosecution over the year of study, so the legal usefulness of the chart could not be tested in reality. However, a rate of reporting to the police similar to that reported in high-income countries²⁵ was achieved; to the authors' knowledge, the rate of police reporting has not been previously been documented in Africa.⁸ Increased work must, however, be done to increase translation from police reporting to prosecution.

One significant deviation from the treatment protocol occurred. Only 44% of patients were documented as receiving counselling. This low rate is most likely due to the fact that the entire A&E department had one counsellor, who was present only 40 h per week. It is possible that survivors who received medical treatment outside of the counsellor's working hours, or when the counsellor was working with other patients, were unwilling to return at a later date for further treatment. It is also possible that patients were not adequately advised of the availability of counselling. Of note, since completion of the chart review, the hospital has hired a second counsellor for A&E.

Most importantly, the chart review shows a high rate of appropriate testing and treatment of survivors. Although documented rates of provision of post-exposure HIV prophylaxis, STI prophylaxis and EC are lower than those of some 24-h sexual assault response teams,²⁵ they far surpass most reported statistics in the USA.²⁶ This shows not only that it is feasible to institute a de novo sexual assault centre in the ED of a regional hospital in sub-Saharan Africa, but also that a protocol-based centre can achieve high rates of compliance with ideal care guidelines in this resource-poor setting.

Limitations

There are a number of important limitations to the present study. Most significantly, the chart review was performed by a single reviewer. Although every effort was made to ensure proper training of the reviewer, no formal assessment of inter-rater reliability was calculated. Second, 40 charts were unable to be located, particularly from the period from January–March 2008 (a time of significant political instability in Kenya). This could bias the measured success of the treatment protocol either towards or away from the null. It also may result in a significant underestimation of the number of patients seen. Third, charting was better on the more seriously injured patients; this would most likely bias the protocol adherence rate towards the null, but the true effect is unknown. Finally, this study was conducted at a single hospital in western Kenya, so the results may not be generalisable to other areas.

CONCLUSIONS

Sexual assault is a common presentation to the ED in western Kenya. Based on the characteristics of sexual assault survivors treated by at the centre under consideration, prevention efforts should concentrate on averting rapes of young women by

assailants known to them. Increased education of adult women as to the applicability of treatment protocols to them should also occur. Further study is needed, however, to further delineate the best means of preventing sexual assault among this population.

In addition, the present study shows that the development of an ED-based sexual assault centre at a referral hospital in western Kenya using a standardised history, physical and treatment protocol is feasible. Using only the resources already present at the hospital, good documentation and high rates of provision of STI and HIV prophylaxis, and EC were achieved. Continued areas of challenge include improving counselling, police referral rates and prosecution of perpetrators. The development of similar centres at other hospitals in sub-Saharan Africa would be of great benefit to the population.

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Competing interests None.

Ethics approval This study was conducted with the approval of the Lifespan/Brown University; University of Toronto; Moi University.

Contributors MLR conceived of and designed the study, analysed and interpreted data, drafted the article, and gave final approval. ERM acquired and interpreted data, drafted and revised critically, and gave final approval. RS interpreted data, drafted and revised, and gave final approval. MAC assisted in study design, data interpretation, critical revisions and gave final approval. SEM assisted with conception of the study, interpretation of data, critical revisions and gave final approval. HM assisted with acquisition of data, interpretation of data, critical revisions and gave final approval.

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