Improving the quality of care for female rape survivors at Scottish Livingstone Hospital, Molepolole, Botswana: A quality improvement cycle.

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Declaration

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Abstract

Background

Although rape is prevalent in Botswana, there has not been any published research undertaken to improve the quality of care for female rape survivors in our clinical setting. Improving the quality of care for female survivors of rape is therefore of importance, not only because of the short and long term health related benefits, but also with regard to policy implementation, improvements of structural needs as well as upskilling of health care providers.

Aim

The aim of the study was to improve the quality of care for female rape survivors in Scottish Livingstone Hospital, Botswana.

Setting

The setting is Scottish Livingstone Hospital, Molepolole Botswana.

Methods

This study was a qualitative cycle, using the normal steps of performing an audit of clinical practice at baseline from December 2016 to May 2017. Planning and implementation of changes was conducted from August 2017 to December 2017 and a re-audit to detect improvements in the quality of care was performed from January to June 2018.

Results

One hundred and twenty four patient records were audited, comprising of sixty two patient records at baseline audit and re-audit. Although the mean age of the victims was 23 years, the age category with the highest incidence of rape ranged from 12 years to 20 years constituting 47% of total number of patients' records. During the baseline audit, only one out of ten structural standards was met. However, at re-audit, eight structural standards were fully compliant and one partially compliant to current structural standards out of a total of ten. Although none of the process standards were met during both the baseline audit and re-audit, statistically significant improvements in performance (p <0.05) was shown in six out of ten criteria.

Conclusion

The quality of care for female rape survivors is suboptimal in our setting. However, simple interventions to improve structure in place for patients and upskilling the entire practice team to align care to current international standards can improve the overall quality of healthcare provided to patients.

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List of abbreviations

Accident and Emergency	A& E
Acquired Immunodeficiency Syndrome	AIDS
Central Medical Stores	CMS
Highly Active Anti-Retroviral Therapy	HAART
Human Immunodeficiency Virus	HIV
General Out Patient Department	GOPD
International Training and Education Center for Health	I-TECH
Networking HIV/AIDS Community of South Africa	NACOSA
Post Exposure Prophylaxis	PEP
Quality Improvement Cycle	QIC
RHT	Rapid HIV Test
Sexually Transmitted Infection	STI
Standard Operating Procedures	SOP
Urine Pregnancy Test	UPT
World Health Organization	WHO

1. Introduction

Globally, one in every 14 women have been sexually assaulted by non-partners.[1] Thirty five percent of women have been assaulted sexually and or physically, by partners or non-partners.[2] Most of these assaults occur in Sub-Saharan Africa with an estimated 17.4% prevalence in Southern Africa.[1]In Botswana, it is estimated that one in every 10 women are sexually assaulted during their lifetime.[3,4] Recently it was shown that rape is a significant crime in Botswana, constituting 4.7% of judicial decisions during 2011.[5] It is clear that not only is this a serious violation of female rights, , but it also highlights the increased demand that the health needs of rape survivors put on existing health care facility and services. Violence against women, including rape is a health priority, necessitating the need for strengthening health systems to address this healthcare problem.[6,7,8,9] In order to implement changes, protocols and guidelines must be developed and implemented to capacitate health care workers and systems to identify and manage the health needs of female survivors of violence.[7,8,9,10]

Short term health needs of survivors in the acute phase, include prevention of pregnancy, HIV and other sexually transmitted infections, psychosocial support, and the management of physical injuries.[11,12,13] In the medium to long term, a dedicated follow-up clinic is required for early detection and management of the complications of rape based on individualized patient needs.[11,12,13] Currently, the prevalence of HIV in Botswana is 17.6%, of which the majority (14.3%) are females.[14,15] Rape victims, are predominantly adolescents who are vulnerable to HIV transmission, which could potentially result in further worsening the current disease burden among females. The need for prioritizing active HIV preventative interventions are therefore very important.[16]

Long term health needs include physical and psychological needs and complications. Long term physical complications include chronic pain, frequent headaches/migraines, gastrointestinal disorders, various gynecological complaints, hepatitis B infection and cervical cancer. Psychological complications include depression, anxiety, impaired libido, low self-esteem, and suicide. Social consequences, for instance strained relationships or isolation from friends, family, intimate partners, and a lower likelihood to marry are also serious complications.[11,12,13]

Rape survivors may also develop risky lifestyle behaviours, such as engaging in risky sexual behaviour like unprotected sex and promiscuity later on in life .[11,12,13] Other risky behaviours can include alcohol and substance abuse, unhealthy diet related behaviours, such as bulimia and anorexia nervosa, as well as delinquency and criminal behaviour.[11,12,13]

In order for the quality of health services provided to improve overall, not only the short and long term health needs should be addressed, but also policy guidelines should be in place at organizational level.

According to the WHO and Networking HIV/AIDS Community of South Africa (NACOSA) clinical and policy guidelines, quality care includes the health facility having a standard policy or guideline in place. Patients should ideally be attended to, within an hour from arrival.[17,18,19] HIV and pregnancy tests should be available within two hours of arrival so that patients are offered post-exposure HIV prophylaxis (PEP), emergency contraception, and or treatment for Sexually Transmitted Infections (STI). [17,18,19]

Relevant documentation of the event, and thorough examination to gather forensic evidence is mandatory. Referral for psychotherapy, social and legal support should be offered during the initial consultation with the patient. Follow-up is mandatory and must be tailored to the individual patient's health needs. Follow up consultation should be used to rule out, and manage pregnancy and or HIV/STIs.[17,18,19]

In terms of structural needs, consulting rooms should be available to offer patients the necessary privacy for initial reassurance and psychological support. Furthermore, there must be a waiting area for family and friends, because their presence may be necessary for reassuring the patient.

Upskilling of healthcare providers caring for survivors of rape is a vital component in improving the quality of care. Current guidelines suggest they undergo standardized evidenced-based professional training, to enable them to understand and manage the health needs of survivors, as well as to deliver quality care to these patients.[17,18,19] A literature review conducted by the researcher showed that there is little evidence on the prevalence of sexual assault in Botswana, and that there has not been any published research on improving the quality of care for female rape survivors in the clinical setting. Improving the quality of care for female survivors of rape is therefore of social and scientific importance, not only because of the short and long term health related needs, but also with regard to policy implementation, structural needs as well as upskilling of health care providers.

2. Aim and objectives

The aim of the study was to improve the quality of care for female rape survivors in Scottish Livingstone Hospital, Botswana. The specific objectives were:

- To create target standards for care specific for Scottish Livingstone Hospital, Molepolole, Botswana.
- To perform a baseline audit to assess the current quality of care for female rape survivors.
- To plan and implement changes based on standard guidelines in order to improve the quality of care.
- To re-assess the quality of care after changes have been implemented.

3. Methods

3.1 Study design

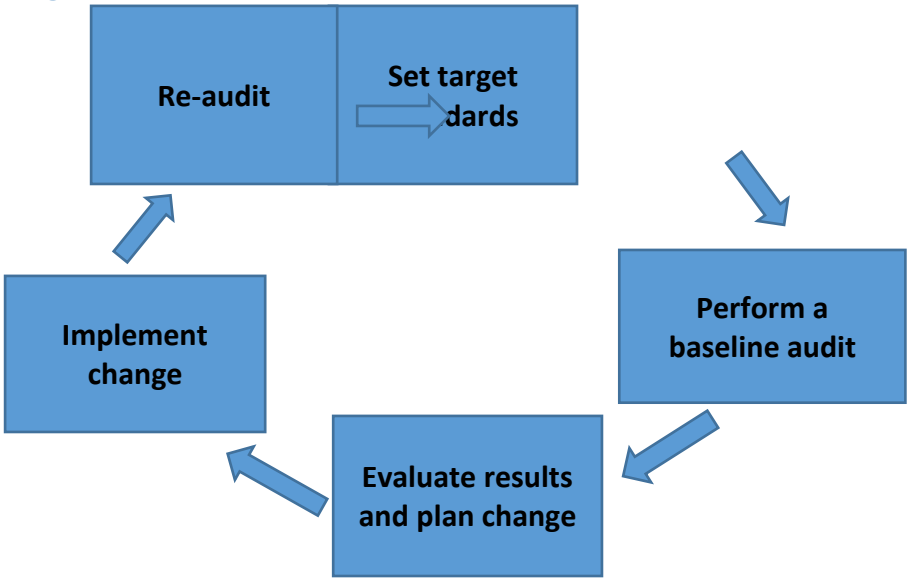

Figure 1: The Quality Improvement Cycle

The quality improvement cycle used the following steps:

- Creating the criteria and measurable target standards.
- Perform a base-line audit of the quality of care.
- Data analysis and evaluation of performance compared to target standards.
- Plan changes and implement changes.
- Re-evaluate the quality of care after the implemented changes.
- Make further recommendations on improving healthcare for female rape survivors

3.2 Setting

Scottish Livingstone Hospital is located in Molepolole, in the southern part of Botswana. The accident and emergency unit of the hospital is where female rape survivors are attended to. Currently an average of nineteen adult female rape victims attend the clinic monthly. It offers 24 hour emergency services and is supported by a 24 hour laboratory and pharmacy services. Currently, the clinical psychology and social services are available only on weekdays and on outpatient basis, and there is no dedicated emergency response to rape cases. Female rape survivors are seen at the Accident and Emergency (A&E) unit of the hospital together with other emergencies and usually have to wait for their turn in a queue. After patients are registered, they wait to be triaged by a nurse. Baseline laboratory investigations for pregnancy and HIV are collected. They then have to wait to be consulted by the doctor on call, usually when the pregnancy and HIV test results are ready, which

takes an averagely 4-6 hours and sometimes even longer. Doctors and nurses vary in their level of expertise in handling patients. None of the nurses or doctors currently working in the hospital has had any professional training in the care of victims of sexual assault. Some doctors who are not conversant with taking the forensic specimens may defer patient consultation and examination, until another colleague with some experience in this regard is available to offer assistance. There are a total of twenty-eight doctors (fifteen general practitioners and thirteen specialists) and two hundred and forty eight nurses working in the hospital. The A&E unit is staffed with eight doctors who work in shifts (one doctor per shift) and eighteen nurses (on average three nurses per shift). The clinical psychology department consists of one clinical psychologist, four interns and one health assistant while the social works department consists of four social workers.

Doctors and nurses handling female rape survivors have access to the 2007 Standard National Treatment Guidelines by the Ministry of Health of Botswana.[20] The structure and process of care for rape patients is captured briefly in this guideline. However, apart from not being detailed and current, there are some important components of the quality of care that has been omitted in the guideline. For instance, the guideline does not recommend the required basic structure needed in place for patient care. It also does not recommend the standard turnaround time for pregnancy and HIV test results nor a detailed coordinated follow-up care plan, involving clinical psychology, social and legal services for all patients. Again, it does not highlight standardized professional training for doctors and nurses seeing female rape patients as a key element in quality care for female rape survivors. There is access to the Botswana National HIV & AIDS Treatment Guidelines as well as a reference manual for health workers on management of sexually transmitted infections which meet the standards and recommendations for care in the current guidelines for female rape survivors.[21,22]

The study focused on the services provided by the accident and emergency unit in the acute setting, as well as the current follow up care for patients in the outpatient department, including social work and clinical psychology support.

3.3 Study population and sample size

The study population included all female survivors of rape aged 12 years and older. Male rape survivors were excluded from the study because of the disproportionally high prevalence of rape amongst females.[1,2,3,4,5] Another reason for the exclusion of males from the study was the absence of records for male rape survivors in our local register during the baseline audit except for a few male rape suspects. Exclusion criteria were therefore defined as female rape survivors less than 12 years and all male survivors.

The sample size for the study was calculated with assistance from the Centre for Statistical Consultation (University of Stellenbosch). The sample size was calculated based on a power calculation where the sample size of patients is compared before and after change in clinical practice. A sample size of 62 patients' records in both baseline audit and re-audit (a total of 124) is required to detect a 20% improvement in the quality of care for female rape survivors with a power of 80% and p-value of 0.05. The calculation was based on the current level of care which was considered to be very poor, with less than 10% of female rape survivors receiving standard care demonstrated by a prior review of ten patients' records. The review was carried out by the Principal Investigator on ten (10) patients' records attended in the A&E between September and October, 2016.

3.4 Involving the practice team

The audit team consisted of three doctors and three nurses who are currently working in the accident and emergency departments (including the medical and nursing heads of the department) and a representative from the hospital quality unit as well as the laboratory, pharmacy, clinical psychology and social works departments. The main researcher was the head of the audit team. Members of the team received training on the evidence based standard structure, process and outcome criteria for providing quality care for female survivors of rape.[18,19] The audit team met every month to review the progress of the project, to address new challenges and to discuss any other issues.

3.5 Setting of criteria and target standards

The audit team decided to use the (Networking HIV/AIDS Community of South Africa) NACOSA guidelines, which is the latest regional evidence-based guideline for providing quality care for female rape survivors in the acute stage of trauma based on internationally accepted evidence.[19] The guideline addresses the structure and process of care within the Southern African setting in detail, and defines the quality of care for female survivors of rape using the following criteria: structural, process and outcome criteria.

3.5.1 Structural criteria

The target standards for the structure were:

Availability of trained doctors and nurses competent in providing acute care, and also planning and coordinating follow-up care for rape survivors, based on current evidence based guidelines.

Readily available consulting room for victims.
Patients attended to within one hour of arrival.
Availability of comfort packs (underwear, sanitary pads, toiletries, facecloths and food-preferably a non-perishable snack pack).
Resource materials with details of possible pregnancy, safe abortion, HIV prophylaxis and STI treatment.
Availability of emergency contraceptive pills.
Availability of PEP.
Availability of STI medications.
Special register/records for all cases of rape.
Availability of files for patients' records.

After these criteria were discussed by the audit team, a structural criteria checklist was developed, and a score assigned to the current level of compliance for each item. (2 for full compliance (structure in place and satisfactorily meets criteria), 1 for partial compliance (structure in place but does not satisfactorily meet criteria and 0 for non-compliance).
The audit team evaluated the structural criteria by inspecting the facility and collectively scored the current level of compliance for each item.

3.5.2 Process criteria

The target standards for the process were:

100% of records with recorded evidence of provision of immediate empathic psychological support within an hour of arrival as documented in nursing triage notes/doctors plan.
100% of records with detailed history and physical examination.
100% of records documents rapid HIV test and pregnancy test results within an hour.
100% of records documents initial dose of post exposure HIV prophylaxis and emergency contraception administered within two hours of arrival (unless not indicated).
100% of records documents initial dose of STI treatment taken within two hours of arrival (unless not indicated).
100% of records documents collection of forensic samples.
100% of records documents referral to clinical psychology.

100% of records documents referral to social services.
100% of records documents appropriate follow-up plan for all patients according to psychosocial and other physical individual patient needs.

The documentation of each of the 10 items listed above in a patient's record was scored as 1. The percentage of files with a score of 1 was worked out for each item.

3.5.3 Outcomes criteria

The target standards for outcome for patient's records were to have at least 80% of the following (as determined by the audit team because a 100% outcome for each criteria for an initial QIC was considered too high and unrealistic):

80% records with immediate psychological support.
80% records with detailed history and physical examination.
80% of records with HIV/UPT within 1 hour of arrival.
80% records with PEP administered within 2 hours of arrival.
80% records with emergency contraception administered within 2 hours of arrival.
80% of records with appropriate follow up plan.

3.6 Data collection

For the baseline audit, records of sixty-two female survivors of rape consulted from December 2016 to May 2017 at the hospital were retrospectively randomly selected from the most recent month retrospectively. The A&E patients register was used and patients' records retrieved in batches of ten by the principal investigator with the assistance of nurses in the audit team. Retrospective data was collected based on the set standards from each patient's record in order to measure the defined criteria by the audit team. All rape cases attended to during the study period were identified and assigned a study number. These study numbers were then captured electronically and 62 of them randomly selected by selecting every third study number. Data was captured by the principal investigator using Microsoft Excel spreadsheet with study numbers only after patients' records were collectively reviewed and audited by the audit team. The structural criteria were evaluated by inspection of the facility by the audit team.

After the implemented changes, another sixty-two patient's records were randomly selected, using the same sampling method from January to June 2018 and re-audited using the same audit criteria as in the baseline audit. During the re-audit, a new set of records from rape survivors were audited after the changes had been implemented. These records were then compared to the initial set. The groups were therefore unpaired.

3.7 Data analysis

Data was analyzed with the assistance of the Center for Statistical Consultation at the University of Stellenbosch. Frequencies and percentages were generated at 95% confidence intervals for comparison for significant change between baseline and re-audit. Binary categorical data was summarised in frequency tables and chi-square test was used to detect the significant differences ($p< 0.05$).

3.7.1 Evaluating the information and planning change

The findings of the initial audit was presented by the principal investigator to and discussed with the audit team. The team compared the findings to the current evidence based standard criteria in order to determine the gaps in our clinical practice. The findings of the audit were also presented by the principal investigator to the entire practice team and management. The gaps in our practice compared to current evidence based standard criteria were further discussed. Thereafter, the audit team met monthly to review and discuss the realistic implementation of the changes to the current clinical practice agreed upon by the audit team. Plans for change were drawn up over the next 3 months and presented to the entire practice team weekly for a month. The existent standard operating procedure for adult rape survivors was revised to encapsulate our target standards. An algorithm was developed as well and displayed at vantage points within the A&E and outpatient departments as a reminder and quick reference tool for nurses, doctors and other auxiliary staff (Appendix 1).

3.7.2 Implementing change

The agreed changes in clinical practice were implemented by the audit team from August to December 2017 with the help of the management and staff involved with care for rape patients in the Accident and Emergency and Outpatient Departments. The change consisted of improving the structure by availing space to allow for patient care and education by the practice team so as to align care provided

with current international guidelines and recommendations. The standard operative procedure for managing rape was updated and a sexual assault algorithm developed (see addendum).

3.7.3 Re-audit

Data collection, data analysis and interpretation were repeated from January to June 2018 in another group of sixty-two female survivors of rape after the changes had been implemented. The results from the re-audit was compared to that of the baseline audit to determine if there were statistically significant improvements ($p<0.05$) for each criteria, as well as to determine how many of the target standards were met, after the implementation of changes.

Apart from the changes implemented that resulted in some measurable improvements, the re-auditing allowed for further recommendations to be formulated in order to continue improving the quality of care.

4. Ethical considerations

Ethical approval for the study was obtained from the Health Research Ethical Committee at Stellenbosch University, reference number S16/09/170 and the Ministry of Health, Botswana, HPDME 13/18/1 X1 (75). Local permission was also obtained from the Ethics Committee of Scottish Livingstone Hospital, SLH/PF15.

5. Results

5.1 Patient characteristics

One hundred and twenty four patient records were reviewed. Sixty-two patient records were reviewed and analysed in each of the audits, at baseline and re-audit. The median age of the patients was 21 years, and the most affected age category was between 12 and 20 years old constituting 47% of the total sample. See Figure 2.

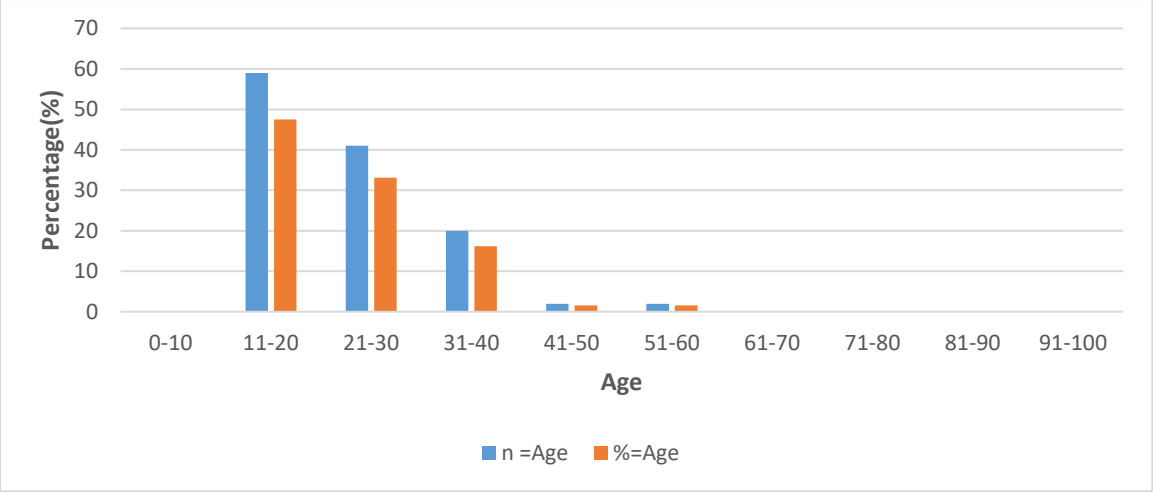

Figure 2: Age distributions of female rape survivors

5.2 Comparing actual performance to target standards

5.2.1 Results of the audit on structural criteria

The results of the audit at baseline and re-audit for structural criteria is compared in Table 1 below. Only one of ten structural standard was achieved during the baseline audit. However, during the re-audit eight structural standards were deemed to have been fully compliant to structural standards. The availability of trained doctors and nurses although haven improved compared to the baseline audit was still suboptimal considering the current process and outcome performance. Overall, there was statistically significant improvement in our structural standards as indicated in the table below with a *p*-value <0.05.

Table 1: Results for structural target criteria

Structure standards	**Baseline audit**		**Re-audit**	
	Score	Standard achieved	Score	Standard achieved
Availability of trained doctors/nurses	0	No	1	Yes
Available consulting room for victims	0	No	2	Yes
Triaging of patients within 1 hour of arrival	0	No	2	Yes
Availability of comfort packs	0	No	0	No
Availability of resource material on rape	0	No	2	Yes
Availability of start dose of emergency contraceptive pills	0	No	2	Yes
Availability of start dose of PEP	0	No	2	Yes
Availability of STI prophylaxis	2	Yes	2	Yes
Availability of a rape register	0	No	2	Yes
Availability of files for patients' records.	0	No	2	Yes

5.2.2 Results of the audit on process criteria

The results of the audit at baseline and re-audit for process criteria is compared in Table 2 below. None of the process standards were achieved at baseline except for completion of forensic kit. However, there was a statistically significant improvement made in all the criteria in the re-audit except for detailed history and physical examination, as well as patients' referral to social works and clinical psychology for review.

Table 2: Results of the process criteria

	Baseline audit		Re-audit		
Process standards	**Percentage**	**Standard achieved**	**Percentage**	**Standard achieved**	**p-value**
100% of records with immediate psychological support	8%	No	50%	No	<0.001
100% of records with detailed history and physical examination	37%	No	48%	No	0,138
100% of records with HIV/UPT within 1hour of arrival	13%	No	68%	No	<0.001
100% of records with PEP given within 2hours of arrival	0%	No	68%	No	<0.001
100% of records with emergency contraception given within 2hours of arrival	0%	No	73%	No	<0.001
100% of records with STI prophylaxis given within 2hours of arrival	5%	No	87%	Yes	<0.001
100% of records with appropriate referral to clinical psychology	53%	No	68%	No	0,098
100% of records with appropriate referral to social work	53%	No	65%	No	0,137
100% of records with forensic kits completed	87%	Yes	67%	No	0,009

5.2.3 Results on the audit of outcome criteria

Table 3 shows a statistically significant improvement in the quality of care provided to female rape survivors although the target standard of 80% was not achieved.. Although our target outcome of 80% was not met in the re- audit as expected, the study showed statistically significant improvement in the provision of immediate non-judgmental empathic psychological support, early administration of post exposure HAART prophylaxis and emergency contraception as well as appropriate follow-up plan. There was however, no improvements in documentation of detailed history and physical examination of patients.

Table 3: Results of outcome criteria

Outcome standards	**Baseline audit**		**Re-audit**		
	Percentage	**Standard achieved**	**Percentage**	**Standard achieved**	**p-value**
80% records with immediate psychological support	8%	No	50%	No	<0.001
80% records with detailed history and physical examination	37%	No	48%	No	0.138
80% of records with HIV/UPT within 1hour of arrival	13%	No	68%	No	<0.001

80% records with PEP administered within 2 hours of arrival	0%	No	68%	No	<0.001
80% records with emergency contraception administered within 2 hours of arrival	19%	No	73%	No	<0.001
80% of records with appropriate follow up plan	19%	No	56%	No	<0.001

5.3 Changes to clinical practice

Table 4: Recommendations and actual changes for structural standards

Structure standards	Recommendation of audit team	Action taken
Availability of trained doctors and nurses	The knowledge and practices of all nurses and doctors attending female rape survivors must be updated to current evidence-based guidelines.	Continuous in-service training facilitated by main researcher as well as nurse in-charge on the management of female rape survivors based on current evidence-based guidelines was held for all nurses and doctors in the hospital attending to victims of rape. A sexual assault algorithm was developed and displayed at vantage points in the hospital where rape victims are attended to.
Available consulting room for victims	Nurse in-charge to ensure that a room which was safe and private was dedicated to rape victims at all times.	The cleaners and orderlies in the department were assigned to the cleaning and re-arranging one of the rooms agreed upon by the audit committee which is used as a counselling room.
Triaging of patients within 1 hour of arrival	Nurses to ensure that the rape victims are given as much priority as possible and triaged immediately.	Audit meetings were held monthly on the first Thursday and nurse in-charge assigned to remind all nurses to highly prioritize the care of rape victims. Triage forms were also reviewed weekly to ensure that nurses were adhering to guidelines in this regard.
Availability of comfort packs	To be ordered by the nurse in charge.	Audit meetings were held monthly on the first Thursday of the month, and the nurse in-charge assigned to follow-up on procurement of comfort packs.
Availability of resource material on rape	Principal investigator to ensure there was a comprehensive leaflet (titled “Rising from the ground”) on the complications of rape and the clinical interventions available in the hospital.	The audit ensured the availability of the “Rising from the ground” leaflets at all times in the accident & emergency department.
Availability of start doses of post-exposure prophylaxis/ emergency contraception and STI prophylaxis for administration within 2 hours of patients’ arrival	Principal investigator to develop a new standard operating procedure (SOP) on sexual assault that will be endorsed by audit team which will specify the administration of post-exposure HIV prophylaxis/ emergency contraception and STI prophylaxis within 2 hours of arrival of rape victims to the hospital.	The new SOP on sexual assault was and forwarded to the pharmacy department. A special order and stocking of post-exposure HIV prophylaxis, emergency contraception and STI prophylaxis was made available for purposes of use only for rape victims in the A&E.
Availability of a rape register	Nurse in-charge should order a new register for all cases of sexual assault.	The nurse in-charge obtained a separate register for all female rape survivors. This was reviewed and verified by audit team during meetings which were held monthly on the first Thursday of the month.
Availability of proper filing of rape records	Also duplicate copies of triage forms should be properly filed by the nurse in-charge.	The nurse in-charge assigned an auxiliary staff to collate all medical records of rape victims (mainly duplicates of triage forms) and

		appropriately file them. This was reviewed and verified by audit team during meetings which were held monthly on the first Thursday of the month.

Table 5: Recommendations and actual changes for process standards

Process Standards	Recommendations of audit team	Action taken
100% of patients' records with HIV/UPT results within 1hour of arrival	Nurse in-charge should order sufficient urine pregnancy test (UPT) kits. A copy of the monthly duty roster with contact details of ITECH personnel to be distributed to A&E for urgent RHT testing.	Each triage nurse should do UPT immediately after checking patients' vitals and thereafter ensure that HIV test of victim is resulted within 1hour by ITECH personnel. Both HIV/UPT is now a standard part of triaging for rape victims. This was constantly reviewed and reemphasized by the audit team during meetings held monthly on the first Thursday of the month.
100% of patients' records with immediate psychological support	Each nurse on call should be able to empathically reassure and promptly triage victims of rape.	In-service training with simulations and peer reviews were held for all nursing staff in the A&E. Retraining was done quarterly. This was also constantly reviewed and re-emphasized by audit team during meetings which were held monthly on the first Thursday of the month.
100% of patients' records with PEP given within 2hours of arrival	Nurse in-charge to ensure sufficient stocking of start doses of PEP (truvada/dolutegravir) at all times in A&E.	Start dose of PEP should be administered by triage nurse to rape victims with negative HIV test result unless otherwise contraindicated within 2hrs of arrival. This was reviewed and reemphasized by audit team during meetings monthly which were held on the first Thursday of the month.
100% of patients' records with emergency contraception given within 2hours of arrival	Nurse in-charge to ensure sufficient stocking of emergency contraception (nordette/norethisterone) at all times in A&E.	Start dose of emergency contraception should be administered by triage nurse to rape victims with negative urine pregnancy test result unless otherwise contraindicated within 2hrs of arrival. Again, this was reviewed and shortfalls addressed by audit team during meetings which were held monthly on the first Thursday of the month.
100% of patients' records with STI prophylaxis given within 2hours of arrival	Nurse in-charge to ensure sufficient stocking of STI prophylaxis (Ceftriaxone/Azithromycin & Metronidazole) at all times in A&E.	Start dose of STI prophylaxis should be administered by triage nurse to all rape victims within 2hrs of arrival. This was reviewed and shortfalls discussed and addressed by audit team during meetings which were held monthly on the first Thursday of the month.
100% of patients' records with appropriate referral to clinical psychology	Doctor on call must routinely refer all rape victims for review by clinical psychologist.	Discharging nurse should verify that doctor-on-call's discharge plan includes referral to clinical a psychologist and legal services when indicated before discharging any rape victim. This was reviewed and shortfalls addressed by audit team during meetings which were held monthly on the first Thursday of the month.

100% of patients' records with appropriate referral to social work	Doctor on call must routinely refer all rape victims for review by social worker.	Discharging nurse should verify that doctor-on-call's discharge plan includes referral to a social worker before discharging any rape victim. This was reviewed and shortfalls addressed by audit team during meetings which were held monthly on the first Thursday of the month.
100% of patients' records with appropriate follow up plan	Doctor on call must routinely have a thorough follow-up plan tailored to individual patients' need including managing pregnancy and abortion services.	Discharging nurse should verify that doctor-on-call's discharge plan includes a follow-up review date with a doctor. Shortfalls were reviewed and addressed by audit team during meetings which were held monthly on the first Thursday of the month.
100% of patients' records with appropriate referral to legal services	Doctor on call must routinely refer all rape victims for legal services which includes taking forensic specimen and appropriately completing all relevant forms.	Discharging nurse should verify that doctor-on-call's discharge plan includes documentations of completing forensic kit and appropriately completing all medico-legal forms. This was reviewed and shortfalls addressed by audit team during meetings which were held monthly on the first Thursday of the month.

6. Discussion

6.1 Summary of key findings

The baseline audit confirmed the poor quality of care offered to rape victims as hypothesized. None of the target standards for both structure and process were met during the baseline audit except for the availability of STI prophylaxis. During the re-audit, all the structural target standards improved statistically (*p*-value <0.005) except for the availability of comfort packs. Ideally, there should be comfort packs available for patients. However, comfort packs were not available because it is not stocked in the Central Medical Stores (CMS). The hospital financial reserve was strictly for procuring essential drugs and equipment with comfort packs not qualifying for allocation of such funds for now.

None of the target process standards were met in both baseline audit and re-audit, however, statistically significant improvement was shown in all process criteria except for urine pregnancy test and HIV test results being ready within 1 hour of arrival of patients in the hospital. Improving the turnaround time for getting urine pregnancy test and HIV test results to one hour was limited mainly by the lack of test kits. The test kits were usually out of stock during nights and weekends or holidays shifts. During such times we relied mainly on the hospital laboratory which is manned by only one staff during these times. Ironically, those were the times rape cases presented thereby

hampering achieving process standards. However, significant improvements to UPT/HIV test results within 1 hour were made.

Although none of the outcome standards were achieved, overall statistically significant improvements were achieved in all outcome criteria. The very poor performance outcomes of the 10 folder pilot study, as well as the lack of published local studies contributed to the target aim of 80% being chosen by the audit team for process and outcome criteria. Also, the poor documentation of care given could have contributed to some loss off data which could have resulted in the unmet outcome. Nonetheless, our study showed that improving the quality of the structure and processes in place for female rape survivors can result in improved quality of care provided female rape survivors as supported by a number of other studies.[17,18,19]

6.2 Discussion of the findings in relation to literature and policy

According to the 2013 guidelines published by WHO and the 67th World Health Assembly resolution, there is an urgent need to strengthen the role health systems play in addressing violence against women and girls including rape. This study demonstrated that improvements were made in the standard of care offered to female rape survivors in the acute stage of presentation as a result of the quality improvement cycle. A new standard operative procedure, training of the practice team as well as an algorithm for managing rape was developed, to improve the quality of comprehensive care offered to female rape victims.[6,7,8,9] Performing rapid HIV/ urine pregnancy tests within the first hour of arrival, early administration of PEP for HIV, providing emergency contraception within two hours of arrival , as well as appropriate referrals and follow up plans based on specific patient needs were significantly improved.[17,18,19]

7. Limitations

Poor record keeping and the lack of proper filing delayed the baseline audit as patients' records had to be retrieved from the general pool of patient' records. Test kits for urine pregnancy and HIV were usually out of stock during most periods of our study. Although it was discussed during our monthly audit meetings, the quality improvement procedures by the hospital quality department and accreditation team recommended that we used only stocks strictly procured by the pharmacy preferably from the Central Medical Stores of the Ministry of Health, Botswana.

There was also poor documentation and often poor legibility of what was documented. And since this study was mainly a documentation audit, it meant that activities not recorded and legible did not meet audit criteria thereby possibly resulting in missing data. Besides, there was generally poor

adherence of staff to some of the recommendations proposed by audit team amongst both nurses and doctors despite the repeated reminders often given.

8. Recommendations and implications

Significant improvements in our current performance can only be achieved and maintained through an on-going quality improvement cycle. The entire hospital staff and management must be motivated by and committed to the provision of an improved quality of care to patients.

The structural procedure needs requires further training of all nurses and doctors. The audit team will be meeting the Superintendent of Botswana Police Services with regards to informing patients of the need for comfort packs and allowing them to arrange for their own comfort packs for now.

The process criteria require access to pregnancy and HIV test kits always. When out of stock, provisions must be in place that it could be procured from an accredited supplier as often they are very affordable.

The audit team recommends that this audit is extended to other facilities within the district and if possible the entire nation so that more rape victims could benefit from an improved quality care. This study can also become the basis upon which the current Botswana Standard Treatment Guidelines for Rape can be updated.

9. Conclusions

The quality of care provided for female rape survivors was suboptimal in our setting as indicated by the baseline audit. Simple interventions were designed and implemented which resulted in statistically significant improvements in the quality of care provided to female rape survivors despite the fact that none of the outcome targets were achieved in the re-audit. It is therefore recommended that, the quality of improvement process is continued in order to ensure that improved outcome targets are achieved and the improvements also achieved are maintained.

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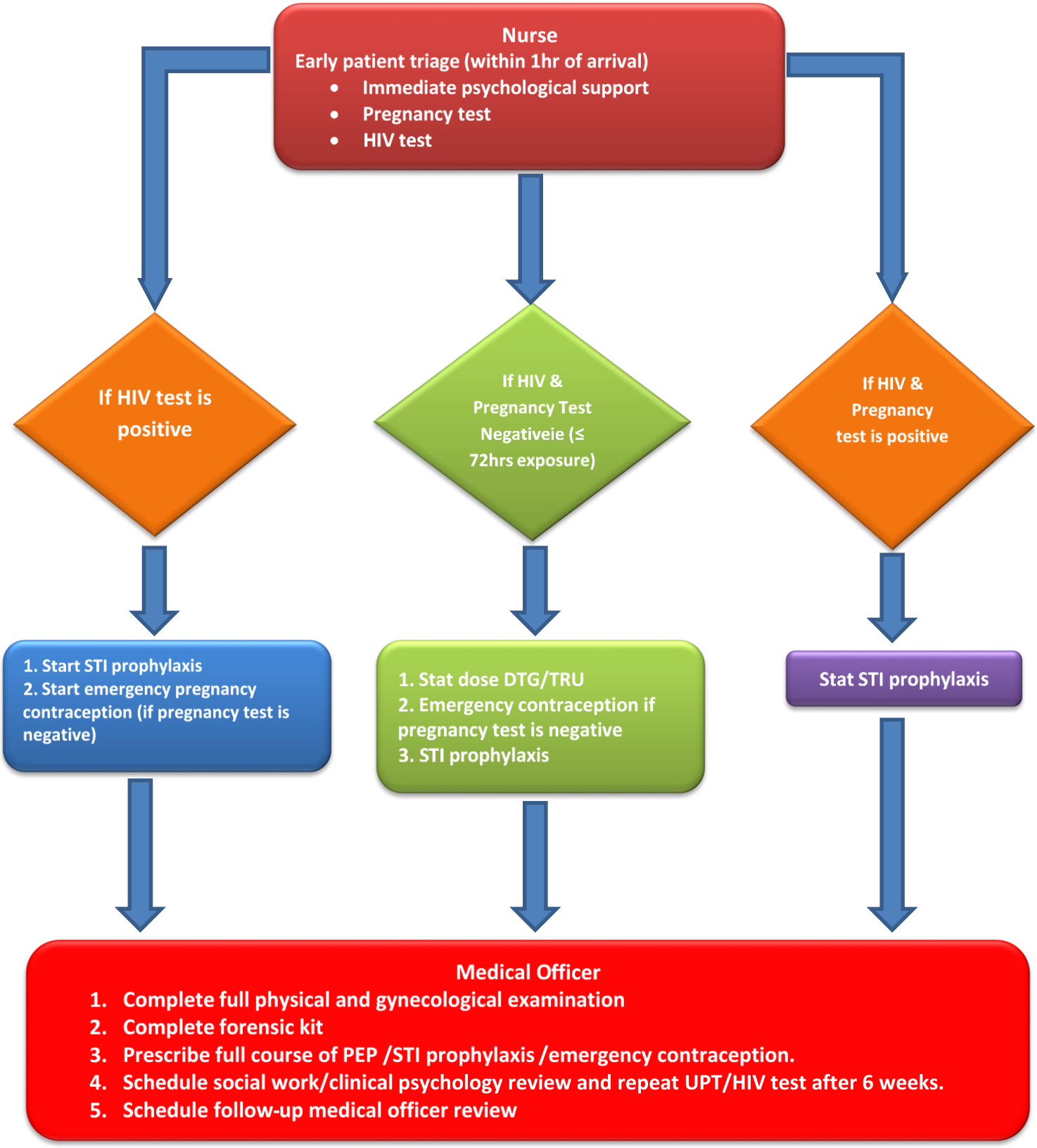
12. Appendix

1. Sexual Assault Algorithm

2. Checklist for structural standards

SCOTTISH LIVINGSTONE ADULT SEXUAL ASSAULT ALGORITHM



STRUCTURAL CRITERIA	SCORE
1. Availability of trained doctors and nurses competent in providing acute care, and also planning and coordinating follow-up care for rape survivors, based on current evidence based guidelines.	
2. Readily available consulting room for victims.	
3. Patients attended to within one hour of arrival.	
4. Availability of comfort packs (underwear, sanitary pads, toiletries, facecloths and food-preferably a non-perishable snack pack).	
5. Resource materials with details of possible pregnancy, safe abortion, HIV prophylaxis and STI treatment.	
6. Availability of emergency contraceptive pills.	
7. Availability of PEP.	
8. Availability of STI medications.	
9. Special register/records for all cases of rape.	
10. Availability of proper filing of all patients records so that they are easily retrieved.	