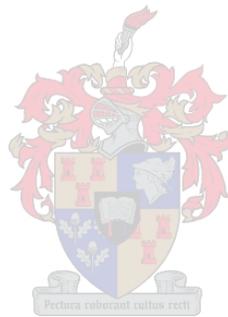


Perceptions of Doctors and Nurses of International Hospital Kampala (IHK) – Out Patient
Department and Emergency Unit (OPD&EU), regarding introduction and use of the South
African Triage Scale (SATS)

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RESEARCH REPORT

in partial completion of the requirements for the M Med (Family Medicine)



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Declaration and Copyright

I, Francis Mulindwa, declare that **Perception of Doctors and Nurses of International Hospital Kampala (IHK) - Emergency Unit (EU), regarding introduction and use of the South African Triage Scale (SATS)** is my original work and has not been presented to any other university for award of a similar or any other degree.

Signature

Date: 9th August, 2015

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Abstract

Introduction International Hospital Kampala has been having a challenge with how to standardize the triaging and sorting of patients. There was no triage tool to help prioritize which patients to attend to first. Very sick patients who needed urgent attention were often missed.

Methods This study using qualitative methods sought to introduce the SATS in the IHK OPD/EU and get the perceptions of doctors and nurses who used it for 3-6 months on its worthiness and sustainability. Specific questions were on challenges faced prior to its introduction, strengths and weaknesses, the impact it had on the practice of staff and their recommendations on the continued use of the tool. In-depth interviews were conducted with 4 doctors and 12 nurses.

Results and discussion The SATS tool was found to be necessary, applicable and recommended for use in the IHK setting. It improved the sorting of patients, nurse-patient and nurse-doctor communication. The IHK OPD/EU staff attained new skills with the nurses getting more involved in the care of patients. It is possibly useful in phone triaging and planning of hospital staffing.

Conclusion Adequate nurse staffing, computer application for automated coding of patients and regular training would foster consistent use and sustainability. Setting up a hospital committee to review the signs and symptoms would rubber stamp its sustainability. The SATS is valuable in the IHK setting because it has improved on the overall efficiency of triaging and care with significantly more strengths realized than weaknesses.

1. Introduction

The practice of triage dates back to the 18th Century and the World War 1 when military surgeons developed and implemented triage rules to promptly evaluate and categorize wounded soldiers. Triage, sorting of patients, aims at bringing the greatest benefit to the highest possible number of patients by prioritizing limited resources, in which case a patient with the greatest need is helped first.¹ Triage and emergency care has always been one of the weakest and least emphasized components of health care systems in Africa and yet, if organized, can lead to the saving of many lives and reduction of the ultimate costs of care.²

Many developing countries in the world have been grappling with the ever increasing emergency and trauma cases in the presence of limited and dwindling proportions of emergency care resources.^{3, 4, 5} Yet the cause of making sure that the emergency care systems of these countries are up to the expectations and demands has not been helped by the absence of plausible means of measuring and assessing the effectiveness of their emergency care systems.^{6,7} Many hospitals in low income countries, with Uganda and International Hospital Kampala (IHK) not being an exception, lack a formal system of triage and this has led to immensely dangerous delays in the management of critically ill patients.^{8,9,10}

There are many triage platforms in place around the world like the MTS, CTAS, ATS, and TRISS, ViEWS and EWS. The latter two have been used in studies in Uganda and Tanzania with similar findings of discrimination and effectiveness on patients admitted compared to those in developed countries but they were not ultimately adopted.^{11, 12,} There is therefore a need for a triage tool to help with emergency care and treatment of very sick patients.^{13,14} The South African Triage Scale (SATS), which comes to the fore, has been found to be user friendly and more suitable for use in developing countries following successful use in Southern Africa. Triage using the SATS involves asking for presenting complaint, looking for clinical signs and measuring vital signs which would be used in calculating the Triage Early Warning Score (TEWS).¹⁵

The Ugandan Health Care system has challenges of a dysfunctional referral system, poorly integrated services, attrition of public sector health workers, as well as inadequate financial and human resources.¹⁶ Uganda's emergency care system has not been an exception to these challenges with poor ambulance services which are overly fragmented and emergency room infrastructures which are insufficient. Many times when patients find their way into the emergency room of the hospitals very few hospitals have the emergency facilities to take care of their emergent ailment let alone a structured triage tool to sort them. If a basic component of healthcare like triaging is not performed correctly, there is no chance that the other primary, secondary and tertiary aspects of care would be appropriately followed.

IHK, one of Uganda's leading private healthcare providers, has a fully functional and fairly well equipped emergency unit with a staff fully committed to providing improved services to the community. The Hospital has for the past 3 years been using the MEWS for its in-patients but the overall effectiveness is wanting. There has not been any tool used in the Out Patients Department and Emergency Unit (OPD&EU) hence the need for a feasible triage tool.

A survey on the perceptions of doctors and nurses regarding the implementation of the SATS in South Africa found that about 90% of the respondents rated the tool highly.¹⁷ If SATS is to be used in Uganda, there is need to introduce and assess its applicability in the Ugandan setting. Introducing this validated tool successfully would not only open a way for its country wide use but also an avenue for future assessment of the effectiveness of the hospital's EU and PHC.^{18, 19, 20, 21} This study therefore set out to explore whether the introduction of SATS is seen as worthwhile and sustainable by the staff of IHK-OPD&EU.

2. Methods

2.1 Study design

The study was conducted using qualitative research method.

The IHK Clinical managers appreciated the importance of using a standardized triage tool in the emergency unit hence encouraged the introduction of the SATS.

2.2 Setting

IHK, one of the few fairly well resourced Ugandan hospitals, is a secondary hospital whose OPD/EU takes care of patients from all over the country. There are totally 10 medical officers and 25 Nurses working in the IHK OPD&EU. The dayshift has 2-4 nurses in the EU and 1 or 2 nurses in the OPD. The nightshift has 2-3 nurses in OPD&EU. One doctor is allocated in the EU at any one time with 3-4 during the OPD dayshift. Up to 40 patients are seen in the EU and 100 in OPD on a busy dayshift with 10 and 40 respectively during a light shift. The OPD&EU night shift can have between 5-20 patients. In the absence of a triage tool these doctors and nurses use their own clinical judgment to determine the order of which patients to attend.

2.3 Study Population

The study population consisted of full-time employed doctors and nurses working in the IHK OPD&EU.

2.4 Sample size

The study population was 35 members of staff; that is 10 doctors and 25 nurses. Data was collected by in-depth interviewing of 12 nurses and 4 doctors working at the IHK-OPD&EU who were randomly selected by choosing every second person in an alphabetized list of surnames.

2.5 Data collection

The researcher initially introduced the SATS to the Director of Clinical Services and Nurse in-charge of the IHK OPD&EU. It was agreed during these discussions that to adopt the use of the tool to the IHK triaging system, green, yellow, orange and red stickers be used to represent the different codes. On triaging and coding a patient, a respective color sticker would be put on the Personal Identifying Information (PII) printout and the triage time recorded on the sticker. Over a week, two initial one-hour training sessions were held for the nurses and doctors working in the IHK OPD/EU. This enabled those working on different days and shifts to attend. Thereafter the tool was made available. A separate one-hour training was also held for the doctors working in

the other departments (e.g. Internal medicine, women's health) during one of the doctors' Continuous Medical Education (CME) meetings. Individual information sessions were held with the heads and members of the different hospital departments like the reception, laboratory in-patient departments to raise awareness of the tool.

A clinical audit was done after 5 weeks of using the SATS to improve on the consistency of its use with structural, process and outcome criteria considered. The audit showed that the rate of consistent use of the tool by the nurses in the EU was low at about 10%. This was attributed to the minimal and inadequate support from the administrative staff and the implementation processes with many of the structural components not in place. Also notable was the need for more training. The results were discussed with the team and the recommended interventions implemented. The glucometer, SATS posters, manuals, triage register and white board were put in place. A follow-up one hour training session was done to ensure consistency.

After 5 months of continuous use of the SATS, data was collected for 2 weeks using the semi-structured in-depth interviewing of the Nurses and Doctors. Respondents were given anonymous identifiers i.e. D for doctors and N for nurses with numerical labels. The interviews were audio recorded on a tape recorder with handwritten notes also taken. The recordings were then transcribed.

2.6 Data analysis

Data was analyzed using content analysis. The data was checked, made familiar by reading the observation notes and listening to the tapes and processed with reflexivity considered. The recordings were transcribed, and mistakes were corrected. The data was then coded with the categories formed, aligned with aims and objectives, indexed, charted themes interpreted, confirmed and the results presented²². Computer program ATLAS.ti was used for coding and collating of data.

2.7 Ethical consideration

Permission to conduct the study was obtained from the IHK Director of Clinical Services with the study reviewed by the HREC of Stellenbosch University (Ethics Reference Number: S14/03/071).

3. RESULTS

3.1 Respondents

Table 1: Demographics of respondents who participated in the study

Designation	Sex		Shift		Unit	
	Female	Male	Day Shift	Night Shift	OPD	EU
Nurses	11	1	11	1	2	10
Doctors	1	3	3	1	1	3
Sub Total	12	4	14	2	3	13

3.2 Findings

3.2.1 Challenges encountered before the introduction of the SATS

Majority of the respondents acknowledged that they were not able to appropriately prioritize which sick patients to attend to first. Many times stable patients were seen first while the very sick patients were quietly withering away in the waiting queue. Many respondents mentioned that there wasn't a strong scientific reason for the health workers to use in explaining to patients extended waiting times and why some patients were seen earlier than the rest. In the previous triaging system, the superficial interactions of the health workers with patients led to the occasional misdiagnosis. There wasn't a structured way of alerting the other departments like the lab on how urgent certain samples or patients needed to be worked on. . An EU nurse pointed out;

'.....before the tool was introduced, we'd just triage... we didn't have anything like to rate how severe and un-severe the patient is.' (N9)

3.2.2 Identified strengths of the TEWS/SATS

The respondents said the SATS brings more clarity in the event of a medico-legal case or administrative issues following a patient filing a complaint. A number of the respondents outlined that the SATS is easy to use such that even the receptionists who don't have any medical knowledge could read the symptoms and direct patients to either the OPD or EU. There are respondents who reckoned the SATS to be comprehensive with clinical symptoms, quantifiable vital signs score and investigations which is a strength.

A doctor thought the SATS can be helpful in phone triaging during ambulance calls to determine whether an ambulance is sent or not. He said,

'...this can also help us with ambulance calls, even on a phone call you can actually try to grade where a patient falls.'(D1)

Majority of respondents said the SATS is applicable to the IHK and Ugandan setting which is a big strength. A nurse and doctor thought the provision to re-assess and re-score patients when not seen within the allotted time was a strength. There were respondents who thought that the SATS tool was helpful in planning of care and staffing levels in the EU and in-patients depending on the severity of patients' conditions. A nurse working in the EU said,

'....Someone looking at the board [in the EU or inpatients]before even they go to see the patient physically would know we shall need maybe five nurses to attend to this ward or maybe an extra doctor...' (N4)

3.2.3 Weaknesses/challenges faced during the use of the TEWS/SATS

Both nurses and doctors respondents highlighted the challenge of inconsistent use of the tool by triage nurses which was attributed to either disinterest or OPD&EU coverage by nurses from other departments. More than half of the respondents thought the tool was time consuming especially with few staff at peak hours since it required thoroughness with many steps involved like history taking, TEWS calculations and critical analysis. Additionally, the green coded patients didn't want to wait long and requested their codes to be changed to more urgent colors. At one time the hospital delayed in acquiring the stickers which led to occasional stock out of especially green stickers. One respondent mentioned that the similarity between the color

stickers red and orange was sometimes confusing hence the need for vigilance, otherwise patients would get wrong interventions.

'... the coloring [of stickers]between red and orange is almost the same. Unless very keen, someone may fail to distinguish the two colors.' (N1)

'....other people were not minding about what you mean by the [triage] code...' (D4)

A couple of respondents thought the TEWS score of zero for a systolic blood pressure (SBP) >170 was not representative of the nature of urgency it required. They continued treating these patients as emergency. Additional respondents thought that the low cadre nurses like the nursing assistants and auxiliary nurses found some difficulty in using the SATS tool. They did not understand and could not explain it.

'...the low cadre nurses (enrolled and the auxiliary) use it at times with difficulty.' (N2)

3.2.4 How doctors/nurses perceive the SATS and its impact on their practice

Majority of respondents were appreciative of how the SATS has improved on their pace and level of response to emergencies with shortened time of stay of very sick patients in the EU. This enabled patients to get timely interventions hence reduced complications. Most of the respondents said the tool improved communication between the health workers. The resultant better patient handover, coordination and continuity of care led to the overall improvement of patient care. All the respondents maintained that the SATS improved the communication between the patients and the health workers with rapport created and explanations of steps given hence reduced the complaints that patients had compared to the previous system. An EU nurse said

'...it has helped the nurses to interact more with patients, to dig out, to know other issues. So it creates a better nurse-patient relationship.' (N4)

Some respondents reiterated that the SATS always gave the health workers the sense of responsibility and accountability. The nurses became more involved in patient care and shared the collective responsibility of patient care with doctors. Consequently many respondents said

with reduced waiting times of very sick patients who needed urgent care led to their complaints reducing. Due to this doctors have felt they are able to prioritize their patients more effectively whilst acquiring a new skills set. A doctor attested to this saying,

'Skill wise it has brought and made me learn many things' (D4)

'...waiting time has really improved and giving us less complaints from our clients.' (N1)

3.2.5 Recommendations of doctors and nurses on the use of SATS

The respondents reiterated the need for continuous training on the use of SATS to the nurses and doctors working in the OPD&EU especially the orientation of new staff recruits in the OPD&EU. They also thought that other hospital staff like the laboratory, receptionists, radiology, in-patients be trained on the use of the SATS since they worked a lot with the OPD&EU staff. One respondent recommended an awareness program for patients on SATS be put in place. A number of respondents were appreciative of the tool and recommended it is introduced in other Ugandan hospitals. One EU nurse said,

'It's a very, very good and useful tool if we get the right training [on] how to use it.'
(N5)

Respondents suggested the creation of a computer application to automate patient coding since the hospital had an electronic medical records system which would make triaging easy. One EU nurse said;

'... things that are automatic... where you enter those vitals in the computer, the TEWS should be just coming automatically.' (N11)

A nurse respondent recommended for an OPD&EU designated ECG machine instead of sharing one with cardiology. An OPD doctor mentioned that some investigations like glucometer and dipstick should be in the OPD triage station in addition to being in the EU. Another recommendation was for adequate staffing to ensure consistent use of the tool.

Some respondents recommended that a committee be set to discuss the logic around the system of scoring and classification of signs and symptoms with possible review if necessary. A nurse respondent said,

'...some of the signs we take as emergency yet according to the SATS they are urgent, e.g. bleeding, fracture of the arm, difficulty in breathing. Can they be changed?' (N6)

3.2.6 Does the staff see SATS as worthwhile and sustainable?

Staff said that the tool, which is a requirement for the COSASA accreditation the hospital is undergoing, is good and not only needed in IHK but also the other health facilities in Uganda. An OPD doctor said,

'...it is very good, we need it here and I would love for this system to continue...' (D1)

Figure 1: SWOT Analysis of findings from the interviews with regards to possible implementation of SATS in IHK

	Beneficial	Harmful
Internal	<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Easy to use and applicable to the IHK/Ugandan setting • Comprehensive with quantifiable scores complimented with physical signs and investigations • Ability to reassess and rescore patients • Reduces waiting times of very sick patients • Enhances better diagnosis making and health workers' patient care skills • Enhances good health worker-patient communication and between health workers themselves • Encourages nurses involvement in patient care hence sense of responsibility and accountability • Increases efficiency and pace of response to emergencies hence reducing complications • Useful in resolving medico-legal/administrative concerns, workload-staffing planning and possibly phone triaging. • Guides other hospital departments provide timely services to the patients 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Time consuming • Confusing similar color codes red and orange • Low TEWS score for SBP-170 which could have been given a higher score • Controlled hemorrhage, closed fracture, difficulty in breathing coded yellow instead of perceived orange or red • Difficult to use by low cadre nurses like auxiliary nurses, nursing assistants

External	Opportunities	Threats
	<ul style="list-style-type: none"> • There's need for the tool in IHK and other health facilities in Uganda-it should be adopted • It's one of the requirements for the COSASA accreditation that the hospital is in the process of acquiring hence sustainable • Regular training of all the IHK hospital staff • Adjustment of the BP discrepancy of 170 scoring zero • Create a computer application which would automatically score and code the patients • A team should be put up to re-evaluate the signs and symptoms like SBP, controlled hemorrhage, closed fracture and add more symptoms. • Designated ECG machine in the EU and tests in the triage station • Adequate nurse staffing to allow for consistent use of the SATS • Provide educational and reading materials for patients on SATS • Streamlining the procurement processes of the supplies required in using this tool. 	<ul style="list-style-type: none"> • Inconsistent use of the tools by nurses/doctors • Inconsistent supply of color stickers by the hospital • Stable green coded patients not wanting to wait • Low nurse staffing • Low patient awareness of the tool

4. Discussion

The SATS was successfully introduced in this study and found to be applicable to the IHK setting. The introduction coincided with the hospital being in the process of acquiring COSASA accreditation which requires a standard triage tool to be used in the EU. The respondents acknowledged their skill set had improved. They felt that the tool is a necessity and recommended its continued use and introduction to other health facilities in Uganda.

The challenges previously experienced by the respondents while triaging patients were inappropriate triaging of patients, associated with many patient complaints, poor communication with between health workers themselves and patients, missed diagnosis, and delay in patients receiving much needed care. All these challenges were addressed by the introduction of the SATS.

The tool was found to have considerably more strengths than weaknesses. It is comprehensive yet easy to use with the provision to rescore patients. Patients who needed urgent care were easily identified, their waiting times reduced, diagnosis made and chances of complications reduced. The tool also fosters good health workers-patient communication and that between the health workers themselves. Nurses took up more responsibilities which were previously taken to be that of doctors. The tool was useful in administrative issues stemming from patients' complaints around their care. It was useful in guiding other hospital departments on providing care to patients from the EU and planning staffing depending on the category of patients admitted. The SATS could be used in phone triaging during ambulance calls. The efficiency of the respondents' response to emergencies was improved by the tool.

This study agreed with Augustyn *et al*¹⁷ on improved patient sorting following implementation of the SATS. While Augustyn *et al*¹⁷ recommended that only nurses should prioritize patients as is the case in IHK, this study found that the receptionists still had a role in triaging since they are in most cases the first to come in contact with patients.

While the SATS manual outlined that the triage provider can be a medical officer, registered nurse, enrolled nurse or enrolled nurse assistant, in this study a couple of respondents thought that the nurse assistant and auxiliary nurses used the tool with some difficulty. This study is in agreement with Augustyn *et al*^{23,24} who quoted Caroline, NL (1995:438)-Emergency care in the streets, 5thEd. Philadelphia, Pa: Lippincott that the person with much more training or experience has got to be in charge of the triaging which would in this case be a senior nurse or doctor overseeing what the nursing assistants and the auxiliary nurses are doing. This study similarly to what Augustyn *et al* says also re-iterates the issue of having adequate nursing staff for 100% use of the SATS. Augustyn *et al* says that interpersonal skills are required to enable the nurses communicate with patients and their relatives. This study adds to the finding that the SATS improves communication between the health workers, their patients and other hospital staff.

Edwards *et al*²⁵ argued that triage requiring patients coded green to wait was a delay in them getting care and this was seen in this study when non-urgent patients didn't want to wait and requested their codes changed to urgent colors.

A limitation to the study was that the SATS was used for only 4-6 months with four training sessions held. A clinical audit was done after 5 weeks of using the tool and a follow up clinical audit was not done. There was a 2 weeks period when the OPD had run out of green color code stickers since the hospital delayed in procuring them.

There is little doubt that the SATS is applicable in IHK and therefore its continued use in the hospital. The Ugandan Ministry of Health should consider taking up this tool, after testing its viability in a low resource hospital setting. This could improve the emergency care of patients in the different hospitals in the country. It would also be important to revise the triaging component in the curriculum training of Ugandan health workers.

IHK has continued to use the SATS which is a reflection of its value. The recently attained COSASA accreditation by IHK will ensure that the hospital consistently supplies the color code stickers, posters and patient education materials to maintain the required standards. It is recommended that the sustainability will be furthered by more training provided to the staff especially the new ones; special training could be arranged for the low cadre nurses to ensure they are up to speed with the rest; in-patient departments, laboratory, radiology and receptionists would also benefit from orientation. In the future creating an automated patients' coding application and ensuring adequate nurse staffing would ease triaging and ensure consistent use of the SATS.

5. Conclusion and recommendations

The SATS triage tool is useful compared to the previous triage system used. An overall positive impact like improved emergency response and communication was realized on the practice of IHK OPD&EU doctors and nurses in this period of use. It is applicable in the IHK setting and has proven to be sustainable with the continued use. There were other additional uses of this tool identified by the OPD&EU nurses and doctors other than just triaging. The strengths by far

outweighing the weaknesses paints a positive picture of the SATS being worthwhile and sustainable in IHK. The recommendations of the nurses and doctors clearly lent towards the continuous use of the tool.

There may be a need for this setting to create a committee to review the possibilities of adding more symptoms and tweaking the urgency labeling of some parameters already in the SATS. IHK was in the frontline of the recent Ebola epidemic in Uganda. Including symptoms of Ebola to the SATS would ultimately protect both patients and staff hence enhancing the already observed worthiness of the tool.

A study estimating the nurse-hours spent on every category of patient like red, orange, yellow and green would help in the planning of ward or unit staffing. Studies should be done on the role of a computer application on automating the triaging process and the use of the SATS in phone triaging.

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Appendix 1

In- Depth Interview Questionnaire

1. Having used the Triage Early Warning Signs (TEWS)/South African Triage Scale (SATS) as a triage tool in the IHK-EU, how did you find the use of this tool?
2. What did you think were the strengths of this TEWS triage tool?
3. What about the weaknesses of the tool, what challenges did you meet while using this tool?
4. What challenges did you identify in the IHK-EU/OPD triaging system before the introduction of this tool?
5. How has the use of this triage tool-TEWS/SATS affected your practice in the EU as a nurse/doctor?
6. What would be your recommendations regarding the ongoing use of the TEWS/SATS in the IHK-EU/OPD?
7. What difference has TEWS/SATS made to patient care?
8. What difference has TEWS/SATS made to patient complaints?