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PHYSICAL EDUCATION

STANDARDS OF PRACTICE, RISK ASSESSMENT, AND SAFETY CONCERNS IN OUTDOOR ADVENTURE PROGRAMMES IN THE AFRO-ALPINE MOUNTAINS OF EAST AFRICA

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ABSTRACT

Background: Adventure is inevitably linked to risk of injuries and fatalities hence the numerous safety concerns in the outdoor adventure industry. This study investigated the safety concerns, risk management and standards of practice especially when preparing for and handling emergencies and incidents in the East African Afro-Alpine Mountain regions of Mt. Kenya, Rwenzori Mountains and Mt. Kilimanjaro.
Methodology: The study employed a qualitatively-driven mixed-method research design to allow triangulation of data captured from different methods and categories of respondents and data sources. The study conducted Focus Group Discussions with a sample of 105 outdoor practitioners and In-depth Key Informant Interviews with 12 participants. The study also recruited 18 institutions' representatives to complete the self-report questionnaires.
Results of the study: Generally, there were positive reports indicating compliance to safety standard and procedures and mitigating efforts towards minimizing effects of risks. The safety concerns reported included poor emergency response practices, inadequate number of rescue rangers on the mountains, lack of/very basic training of outdoor practitioners, lack of, inadequate or use of improper mountaineering gear and equipment, lack of regulation and legislations concerning safety related issues on the mountains, deplorable conditions for porters, poor visitor education and lack of risk assessment activities in most programmes and events. For the institutions, there was higher compliance for procedures related to management systems, staffing and execution of outdoor programme activities than for emergency procedures logistics.
Conclusion and policy recommendation: In many settings, there is lack of specific guidelines or locally adopted and documented safety standards of practice hence operators and practitioners which can lead to 'guess work' in many situations. The institutions, agencies and operators should embark on efforts to sensitize, educate and train practitioners in risk assessment and safe practices. This should be based on established local standards and best practice worldwide to empower the practitioners in performing their duties.

Keywords: *Outdoor adventure, Standards of practice, Risk assessment, Safety concerns, East Africa*

INTRODUCTION

The most prominent outdoor and adventure activities in the East African regions take place in the Afro-Alpine mountain regions of Mt. Kenya, Rwenzori Mountains and Mt. Kilimanjaro. These are all world heritage sites [1] that attract foreign and domestic tourists for adventure activities. These destinations in East Africa are home to varying outdoor adventure activities such as but not exclusive to hiking, mountaineering, camping, team building, sports, games, physical fitness programmes, camp craft, rock climbing, map reading and navigation, and solitude.

Adventure is inevitably linked to risk [2,3,4]. Adventure programmes and activities are regarded high risks events that raise numerous safety concerns such as accidents, threats, hazards and vulnerabilities that result in injuries, illnesses and fatalities [4,5]. Despite the obvious dangers inherent in adventure programmes, people continue to seek the remoteness and pleasures of outdoor adventure programmes such as mountaineering [6]. Outdoor adventure practitioners have the responsibility of providing safe environments for the enjoyment of all the activities [7]. Organizations that host and facilitate outdoor activities owe a duty of care towards participants in their activities by completely eliminating or maximizing the risk management [8]. Safety measures should also be employed within a broader risk assessment and safety management approach anchored on best practices for safety [9].

Consequently, practitioners need to conduct thorough risk assessment analysis on programmes and events. This entails a couple of investigations as detailed by Curtis [7] and Goldenberg [4]. They suggested that risk assessment should begin with the identification of possible risk areas through a thorough programme analysis. Every activity in a programme should undergo risk analysis with critical focus on the nature of the activity, location of the event, the weather expected, the age range and size of the group. The evaluation should include programme documentation, safety and emergency preparedness and procedures. Secondly, there should be an in-depth population analysis detailing the characteristics of the population involved in the programme. The risk levels may vary according to factors such as age, pre-existing injury and medical conditions, skill and fitness levels, disabilities, previous experience, and psychological stability. Of critical concern in risk analysis are ethical considerations such as documented informed consent and duly completed legal assumption of risk documentation from the participants. A third assessment scrutinizes the practitioners' qualifications, training and expertise. Outdoor leaders need such soft skills as facilitation, instructional, and organizational

skills; and hard skills, which include technical, safety, and environmental skills [4]. It is important to know the leaders skills in the specific activity, for example, their skills in camping, hiking, canoeing, backpacking, and technical climbing. This helps to gauge their ability to safely oversee the events. This analysis should investigate the practitioner's first aid knowledge, use of the first aid kit and experience in handling emergencies which are inevitable in some activities. In cognizance of the rapid changing technology, skills, equipment and practices, it is also important to note practitioners' engagement in ongoing training, assessments, recertification and upgrading of skill from time to time. There should be an evaluation of the practitioners' leadership and group dynamic skills.

Other risk assessments and safety management activities include evaluation of the adequacy and condition of equipment and gear, procedures for preparing equipment and gear, provision of pre-trip information and trip planning. There must be detailed participant screening requiring medical history information such as health history, allergies, medications, dietary restrictions, required immunizations; physical condition, previous experience and contact, insurance and special needs information. Participant pre-trip training is crucial to ensuring physical, mental, psychological and technical preparedness for facing challenges and unforeseen eventualities.

A collective key factor to consider in risk and safety management revolves around policies, procedures and guidelines governing the programme and activity. These are important measures to be enforced. For instance, a policy that requires every participant on kayaking trips wears a life jacket, is key to safety and must be adhered to by every participant at all times. There are policies, procedures, and guidelines for each activity that are generally accepted within the outdoor industry. Many of these also exist as published standards. Finally, an incident data collection and analysis process is required. In the event of any accident, whether minor or very serious, it is essential to collect detailed information about what happened, analyze it carefully, and determine if there are changes that need to be made in the programmes to reduce the possibility of a similar incident occurring in the future [10,11,12]. This process therefore, requires clear written and verbal accident reporting procedures, close call reporting (there are normally more close calls and near misses than there are actual accidents), data analysis of the reports and implementing program change.

Continuous monitoring, risk assessment and planning should be organized against the back drop of existing guidelines, set standards and best practice worldwide [4]. Ideally, government agencies and regulating bodies should ensure that policies and documented standards for safety to protect the public during activities are available at all times. In the outdoor and adventure industry, professional bodies and institutions are expected to adhere to specific set standards of practice [9], code of conduct or universally acceptable guidelines suitable for the achievement of their mandate. In practice, this should be evident; although some institutions may place more emphasis on certain safety concerns, standards and procedures compared to others, based on previous occurrences or experiences [7].

Gathering detailed information on incidents and identifying contributing factors is a valuable component of risk management in outdoor programmes. Anecdotal sources, witnesses and media reports show that there is a high occurrence of injuries, illnesses and even fatalities during outdoor adventure activities in East Africa. However, the dearth of research-based information concerning outdoor adventure practice in East Africa, makes it very difficult to relate or link current phenomenon to risk management and practices in East Africa. Consequently, this study sought to investigate safety concerns, risk management and standards of practice in outdoor adventure programmes in the Afro-alpine Mountain regions – Mt. Kenya, Rwenzori Mountains and Mt. Kilimanjaro, in East Africa. This study was critical to providing important necessary information to evaluate and propose mitigating measures for safety and improvement of standards of practice in these key world-travel destinations.

RESEARCH METHODOLOGY

The findings presented in this paper are part of a larger study that aimed to establish the practice and preparedness in pre-hospital emergency care and risk management among outdoor adventure practitioners in the East African Afro-alpine mountain regions of Mt. Kenya, Rwenzori Mountains and Mt. Kilimanjaro. This cross-sectional study employed a qualitatively-driven mixed-method design involving quantitative and qualitative methods to allow triangulation of data captured from different categories of participants and data sources.

The study targeted outdoor adventure organizations' decision makers such as park authorities, institution management representatives and programme supervisor/department head. Practitioners in the designations of outdoor adventure facilitators and teachers, team-building

instructors, porters and guides were also part of the target population. The target also included key informants such as park officials, long serving mountaineering guides, and rescue rangers. These practitioners provided important eye-witness accounts and reports with regard to day-to-day operations in the East African outdoor adventure programmes. They were critical in confirming the standards of practice and regulations observed in their respective programme operations. They provided important insight into new information that is rarely recorded or documented in organizational records.

The main study data was from the qualitative data collected during Focus Group Discussions and In-depth Key Informants interviews. A sample/cohort of 105 outdoor practitioners both, employed and freelancers, participated in organized Focus Group Discussion meetings; while 12 key informants were interviewed. The study also used purposive approach to recruit park authorities and institution management representatives. This sampling procedure was suitable for selecting the 18 specific institutions-based respondents from existing key outdoor adventure institutions to complete a questionnaire. Table 1 presents the composition of respondents involved in this part of the study.

Table 1: Sample distribution

	Designation	Sample
Focus Group Discussions	Teachers	6
	Outdoor Adventure Facilitator	24
	Team-Building Instructor	9
	Guide and Porters	33
	Institution Management	6
	Parks Authorities	15
	Programme Leaders	9
	Any other support staff in outdoor adventure (e.g. driver)	3
Questionnaires	Institution-based practitioners in mountaineering leadership	18
In-depth Key Informants Interviews	Key Informants (park officials, managers of outdoor adventure-based organizations, long serving mountaineering guides, and rescue rangers)	12

A total of 13 focus group discussions constituting groups of 7 to 12 participants were conducted with selected practitioners (Table 1) and in some instances mixed groups, at various designated venues across the study sites. These discussions were meant to collect key information that would be complimented by the questionnaire data. Such information included review concerning standards of practice in various programmes, adherence to these standards by practitioners,

appraise adherence to day-to-day operations regulations, guidelines and practices. The discussions also sought prevailing safety concerns, and suggested measures for not only risk management but also for improving standards of operations. The study used specifically developed focus group discussion guidelines for the various groups. During the FGDs many themes emerged as respondents also built on each other's' points. The discussions were conducted in a mix of languages including English and Swahili by the investigators to accommodate the various respondents. All conversations were recorded with the full knowledge and consent from participants.

The study contacted a total of 12 key informants (park officials, managers of outdoor adventure-based organizations, long serving mountaineering guides, and rescue rangers) for in-depth interviews. Outdoor adventure practitioners with greater knowledge and experience about the wilderness have an ethical obligation to share their seasoned knowledge, wisdom and experiences with others. This goes a long way towards training and informing on best strategies for dealing with various situations. Specifically developed interview guides were used to direct the Key Informants' Interviews and discussions. The interviews were based on themes similar to those of FGDs but with in-depth explanations and evidence. Participants were encouraged to narrate and compare their personal experiences and observations in the context of existing world standards and practices. Interview meetings were scheduled at locations convenient to the identified Key Informants. All conversations were recorded with the full knowledge and permission from the informants. All recorded data was later transcribed for data analysis.

A self-administered questionnaire was used to collect quantitative data. The respondents were required to rate their institutions' preparedness and compliance to safety standards and procedures. The instrument had a checklist of nine categories constituting 41 items pertaining to safety, standards and procedures; participant preparation and screening, staff hiring, training and assessment, management systems, outdoor program activities, emergency, logistics, physical infrastructure, transportation, manuals/policies and procedures. Each item had a possible score of four (4) on a Likert scale. The mean scores of the perceived compliance rate were generated such that a high mean indicated a greater compliance to safety standards and procedures by the institution. The questionnaire was constructed and validated by the study team during the instrument testing exercise. Respondents were first asked for consent prior to completing the

questionnaires. Questionnaires were then distributed and collected upon completion at the various outdoor adventure venues.

For data analysis, quantitative data from questionnaires was cleaned prior to entry and analysis using the Statistical Package for Social Sciences (SPSS version 24) [13]. Descriptive statistics was applied and results presented as means and standard deviations. One-way repeated measures ANOVA was conducted to determine whether there were statistically significant differences in compliance across the nine categories. The audio record files from the FGDs and KIIs were used to compile the qualitative data. Data were transcribed and the few that were in Swahili language were concurrently translated into English for analysis using the Express Scribe Transcription Software Pro ^{TM}. The process of self-transcription enabled the investigators to enhance familiarity with the data as well as develop insights for themes and categories prior to analysis. After transcription, the data were organized and analyzed using the MAXQDA Analytics Pro 2018. Due to the large and diverse data generated as results for this paper, the key results are presented in summary points and tables.

Ethical considerations

The research project was reviewed and approved by an Ethical Review Board in Kenya (Kenyatta University Ethics Review Committee - KU/R/COMM/51/15 –PKU005/104). Necessary research authorizations were obtained prior to data collection and permission to conduct the study was sought from the selected heads of institutions. Due to the outdoor/wilderness settings of the study, oral introductions and explanations about the project in different languages (considering the location and differing levels of education) detailing its aims and concerns as well as assurance of anonymity and confidentiality were provided. Participants then gave an informed consent inform of signing participants' list prior to the various discussions and interviews meetings. The focus group discussions and Key Informant Interviews were digitally recorded with the full knowledge and permission from the participants. Participants' anonymity was maintained during the whole process of the analysis and reporting. An important aspect to consider is that practitioners based in government and tourism agencies may fear to portray a negative picture of their practices which may tarnish their reputation and affect the tourism market. Thus, an assurance of anonymity, a respectful and non-judgmental approach during the interviews was important irrespective of some obvious prevailing human-driven safety compromises and risks on their part.

RESULTS

Institution Standards of Practice on Selected Procedures

As seen in Table 2, overall, the results indicate higher compliance (higher means) for management systems related procedures (2.39, 0.56), participant preparation and screening (2.14, 0.76), staffing and assessment procedures (2.09, 0.88) and procedures for outdoor program activities (2.07, 0.92) compared to the less compliance lower means for emergency procedures (1.93, 0.88), logistics (1.99, 0.88), physical infrastructure (1.89, 0.68), transportation (1.98, 0.85) and policies and regulations in staff manuals (1.69, 0.85).

Table 2: Institutional Standards in Outdoor Adventure Practice: Selected Policies and Procedures

S/N	ITEM	Mean	Std. Dev
A.	**Participant Preparation and Screening**	**2.14(0.76)**	
1	Pre-trip/course materials are adequate in describing hazards, equipment requirements and physical condition requirements	2.28	0.85
2	Participants are required to have current medical examinations	2.00	1.09
3	We have a written program for preparing participants physically and mentally before the trip/course	2.17	1.10
B.	**Staff Hiring, Training and Assessment**	**2.09(0.88)**	
1	The employee files are complete and up to date (first aid certification, recent trainings, workshops, experience, evaluations, original application and letter of reference)	2.00	1.19
2	The program is able to identify and hire enough adequately trained and experienced staff	2.39	0.92
3	The administration bases marketing and enrollment decisions on availability of staff	1.89	1.08
C.	**Management Systems: Covers Board of trustees, management and field supervision.**	**2.39(0.56)**	
1	There is an active board of trustee safety committee involved in safety monitoring	1.67	1.14
2	There is a management review process to authorize new program activities or areas of operation which sufficiently addresses safety issues	2.44	1.04
3	There is good communication, cooperation and respect among managers and staff	2.78	0.65
4	Job descriptions are current, accurate and understood	2.67	0.59
5	There are adequate time-off plans. Managers/supervisors do not appear fatigued/over-burdened for prolonged periods	2.39	0.92
D.	**Program Activities e.g. Rope course, backpacking, climbing, canoeing, sailing etc.**	**2.07(0.92)**	
1	Safety policies and recommended program procedures are documented in a staff manual	2.11	1.18
2	The staff is familiar with safety policies and procedures	2.11	1.18
3	The staff follow the safety policies and procedures	2.00	1.14
E.	**Emergency Procedures: Emergency response and communication**	**1.93(0.88)**	
1	There is a written plan for emergency response and communication regarding all operations	1.72	1.13
2	There are written plans for field emergencies covering lost or runaway participants	1.72	1.07
3	Staff is trained in emergency response	2.17	0.99

4	There is adequate rescue resource/cache and personnel available to assist with any field emergency	1.94	1.26
5	First aid kits are present and accessible in all activities	2.17	1.20
6	First aid kits are appropriately stocked at all times for activities	1.83	1.25
F.	**Logistics and related Concerns**	**1.99(0.88)**	
1	The outdoor trip organizers and logistics staff is satisfied with management's attention to their concerns	2.39	0.92
2	Food storage and distribution is clean and sanitary	2.50	0.86
3	The program has developed a professional plan for nutrition and food amounts	1.67	1.28
4	A systematic equipment maintenance and shelf-life/end of use policy is documented that is observed/followed	1.56	1.20
5	Specialized safety and rescue equipment are easily available	2.00	1.19
6	Specialized safety and rescue equipment are in good condition	1.83	1.15
7	The outdoor trip organizers and logistics staff is satisfied with management's attention to their concerns	-	-
G.	**Physical Infrastructure: Buildings and structures**	**1.89(0.68)**	
1	Fire extinguishers are properly located, regularly charged and dated	1.39	1.29
2	The base camp fire procedure is well known, posted and practiced regularly	1.44	1.25
3	Flammable materials are stored away from buildings	2.28	1.07
4	Kitchens, showers, toilets and living area are clean	2.44	0.86
H.	**Transportation: Vehicle maintenance and driver training**	**1.98(0.85)**	
1	Vehicles are regularly serviced and adequate service records are kept	2.44	0.98
2	Vehicles are regularly checked for adequate tread on tires	2.56	0.92
3	First aid supplies are available in vehicles for transport accidents	1.50	1.38
4	The programs possess current Certificate of Insurance for 3rd party organizations involved in participant transport	1.78	1.22
5	Seat belt wearing policy is observed by participants and staff during transport	1.61	1.15
I.	**Manuals/Policies and Procedures: Staff manual and safety policies**	**1.69(0.85)**	
1	The manual is current and inclusive of all program activities	1.67	1.33
2	Staff is familiar with the manual, the policies and procedures	1.39	1.20
3	Policies are in line with National and International industry standards	1.89	1.08
4	Appropriate procedures are outlined for a wide range of possible environmental emergencies such as lightning, bees, snakes, and rock fall	1.50	1.15
5	There is a clear policy on drug and alcohol use in the field	2.00	1.28

The one-way repeated measures ANOVA was conducted to determine whether there were statistically significant differences across the nine categories and to establish whether there was significance difference in adherence to some factors compared to others. Even after adjustment for multiple comparisons using Bonferroni, we found that the differences were not statistically significant.

Safety Management: Policies, Set Standards and Procedures in the Afro-Alpine Mountain Regions

This study sought to investigate the safety standards, procedures and protocols followed at the East African Afro-alpine Mountain regions as reported during focus group discussions and key informant interviews. The following were reported:

Rwenzori Mountains

The Rwenzori Mountains has a comprehensive Risk Management Plan that describes the procedures and protocol to follow. It was formed to harmonize all services given to visitors and patients on the mountain. The following are examples of some guidelines and practices followed (in case of an emergency) in the Ruwenzori Mountains Risk Management Plan as reported by focus group discussion respondents.

1. When a person is ill or injured they should remain in the hands of the guide until they get to the point where a Wildlife Authority ranger can take over and proceed to evacuate the person.
2. There are 2 stretchers in every camp, at every ranger's station and at major points in case of an injury or illness of climbers. In case of need for another stretcher, a porter will run to the next/nearby camp, just 30 minutes away to fetch a stretcher.
3. When an incident occurs, sufficient guides and porters rush to the scene; some to evacuate the patient; while the others guide the remaining group to continue the climb. At no point are the uninjured climbers left alone.
4. Whenever there is need for rescue, the group leader calls to inform the rangers about the incident. While they wait for the rangers to arrive, they provide first aid and rush the casualty to the pick-up point. The rangers usually find the guides and porters already attending to the patient.

Mt. Kilimanjaro

We did not access a Mt. Kilimanjaro Risk Management Plan or any other document detailing the set guidelines, procedures or standards of practice. The following are examples of reports given by practitioners from some tour companies that have guided groups on Mt Kilimanjaro.

1. There are set regulations and legislation with the backing of the government. This is key to empowering those in charge when ensuring that programme practitioners and operators observe the regulations.

2. The standards of operations at Mt. Kilimanjaro are high compared to the other East African Afro-alpine Mountains observed by this study. From the discussions, Mt Kilimanjaro seems to have a more professional approach and better services due to direct involvement of private tour companies and the national park authority. It would appear that the direct involvement of private tour companies and the Tanzanian National Park Authority has forced a more professional approach on Mt. Kilimanjaro.
3. The Tanzania National Park Authority conducts annual training in mountain safety, natural and cultural history, as well as customer care. The rigorous training requires a climb to Uhuru peak and only those who reach the top qualify for the license to guide visitors on Mt. Kilimanjaro.
4. The adventure travel institutions have constituted high safety standards and practice protocols regarding care and management of visitors on the mountains. For example, tour companies maintain high safety measures and standards of training their personnel. This has direct impact on maintaining a company's reputation, high rating and marketing strategy. More importantly, it directly mitigates risk and safety concerns.
5. Tour companies are responsible not only for guiding the tourists; but they are the frontline responders in cases of injuries and illnesses on the mountain. They are more directly involved in the care of the patients than park officials, whose main job is to keep records of all incidents and call for rescue services.
6. Kilimanjaro trip leaders are required to be trained and certified as Wilderness First Aiders or First Responders. However, the porters are not required to have any training in First Aid. Porters usually operate independent of clients under the leadership of the lead guide. Such training in First Aid could enhance their ability to care for each other in event of an accident or illness.
7. Instructors operating within Mt. Kilimanjaro region are better trained in emergency and rescue operations. They synchronize their efforts very professionally and quickly to evacuate the injured. Even their porters are well prepared in responding to unforeseen incidents.
8. There is no commensurate institution capacity for responding to guides or porters when they are injured. In most cases, they go on 'self-rescue' while allowing their colleagues to continue supporting the clients' climb.

Mt. Kenya

We did not access a Mt. Kenya National Park Risk Management Plan or any document detailing the set guidelines, procedures or standards of practice for Mt. Kenya. Practitioners reported that they engage their own personal knowledge from training and experience when making decisions concerning safety matters. The following are a few examples by practitioners who have guided groups on Mt Kenya.

1. In order to control the entry and practice of unauthorized mountain guides and instructors, the Mountain Park Services instituted regulations that all potential guides and instructors must be evaluated to establish their competency and skill to guide. They would also need certification of up-to-date training in Wilderness First Aid. Subsequent to satisfactory completion of training, they receive a clearance and licensing card as proof of authenticity to be allowed to enter the park and guide groups up the mountain.
2. Mt. Kenya is the only Afro-Alpine Mountain National park in the region that allows freelance visitors to enter the park unaccompanied by guides and porters. This has led to some dire consequences of visitors being lost on the mountain. The Kenya Wildlife Service is reviewing this 'freelance' scenario to require every visitor being accompanied by a certified guide and porters.
3. There have been reports about climbers self-attempting the two technically difficult peaks of Batian and Nelion without any guides. Guides and porters have been left behind at the base camp. In the event of an accident or illness, there is no direct communication between the clients and support staff. This aspect is being reviewed by park authorities to ensure that all clients are accompanied to the peaks as part of safety management regardless of their expertise or climbing history.
4. There is no group size restriction and/or minimum client/guide ratio requirement in Mt. Kenya. The authorities are reviewing this protocol in line with world best practices to ensure safety.
5. Apart from the Naro-Moru route, none of the other climbing routes have adequate park ranger stations with radio communication, rescue personnel and resources. Neither are there proper campsites or established accommodation camps. Compared to the other study sites, Mt. Kenya appears to be lagging behind. Efforts are being made to remove this anomaly as part of risk management.

6. There is no requirement for rescue rangers to have Wilderness First Aid training and certification before deployment. The authorities have embraced the importance of training all personnel in Wilderness First Aid as part of risk management.

Safety Concerns: Risks, Standards and Procedures during Practice

The study also sought to investigate the prevailing risks and safety concerns. The results were analyzed from recordings of focus group discussions and interviews with participants. Generally, there were many positive reports indicating ongoing campaigns and mitigating efforts towards minimizing effects of risks and promotion of safety in the three study sites. However, several safety concerns especially those that pose direct danger and/or increase the risks for injuries, illnesses and fatalities were highlighted. These concerns are include poor emergency response practices, inadequate number of rescue rangers on the mountains, lack of/very basic training of outdoor practitioners, lack of/inadequate/use of improper mountaineering gear and equipment, lack of regulation and legislations concerning safety related issues on the mountains, deplorable conditions for porters, poor visitor education, lack of risk assessment activities for most programmes and events.

Table 3 presents a summary of safety issues and concerns reported by respondents during Focus Group Discussions and Key Informant Interviews.

Table 3: FDG and KII Reported Safety Concerns

1	Some of the trips or programs are a disaster, waiting to happen. In the outdoors, people fall into craters, get bitten by snakes, experience flush floods, drowning incidents, wild animal attacks and illnesses in the wilderness. Yet our level of preparedness is low. No elaborate plans have been made before hand to access, attend to or evacuate the victims.
2	There are injuries/illnesses arising due to lack of proper gear, especially for porters. They climb: -without adequate clothing for the harsh mountain weather and conditions -without waterproof clothing -while wearing improper foot ware such as gumboots and plastic slippers during the climb. -many porters sleep without tents and without sleeping bags even under the rain.
3	Inadequate or lack of first aid kits for administering first aid during trips. This is mainly witnessed in trips led by non-mountain based private/freelance instructors.
4	Many guides, porters and personnel handling clients lack training in basic wilderness first aid and are unable to adequately respond or attend to a patient on the mountain.
5	Many climbers do not know the right procedures and techniques for climbing leading to injuries.
6	Many climbers are defiant of the instructions given by guides and instructors which have resulted

to serious injuries and even fatalities.

7 Climbers usually drink pond or river water. The water usually appears clear and clean but it is not treated, leading to diarrhea and stomach infection. Many of these water bodies are contaminated with animal waste and other pollutants.

8 There is lack of proper and quick emergency rescue services and procedures. Climbers rely on the human 'ambulances' (porters) to carry and transport the patient down the mountain. Some emergencies require very quick and specialized assistance to save a life.

9 There are no health facilities to administer critical emergency aid on the mountains. Many casualties with severe conditions tend to deteriorate due to the long distance of travel, time taken and logistics to transfer a patient from the mountain to the hospital.

10 There are inadequate numbers of rangers along the routes at any given time to assist in case of an incident. Those present are also poorly equipped, with only a radio to notify the office.

11 Lack of/poor/use of inadequate mountaineering gear for climbers. Poor or no gear is a high-risk to the visitors, the porters, guides and especially for rescue rangers who have to engage certain technical aspects in the rescue/evacuation activity.

12 Compromised participant-instructor ratio compromising safety standards. In one of the study sites, the guides feel the need to lessen the number of the required guides per a group of visitors hence reducing the facilitation fees for the client consequently attracting more clients. If they assign a guide for every three visitors as required, the costs will rise significantly attracting fewer clients.

-Some follow the required ratio but a bigger challenge arises with the guides' abilities, competency and training level to handle the situation in case of an emergency.

13 Inadequate number of rescue rangers. There is a high turnover of mountain-based skilled rescue rangers who are often redeployed to other non-mountain parks. This greatly compromises skilled manpower necessary for technical rescue operations on a mountain park.

14 Lack of visitor education and sensitization. This is a situation where clients come to the park gate, pay the entry fees and follow the guide up the mountain or can embark the climb all by themselves without much pre-trip education/knowledge. In cases of emergencies during the trip, the clients do not know what to do or how to respond or behave. They learn about the mountain and the risks when it is too late or after an incidence has occurred.

15 Engaging unqualified cooks leads to safety issues related to gastrointestinal ailments. Some of the porters also play the role of cooks, thus, compromising standards of health and safety.

16 Carrying very heavy loads. Many porters are overloaded. They carry too much to earn more money, compromising their own health and safety.

17 Lack of legislation or regulation for practice in place that indicates/recognizes wilderness first aid as a minimum requirement for mountaineering leaders. It is instead considered remote first aid as described by Red Cross, which is not the same and does not adequately address mountain based emergencies.

18 The key decision makers responsible for managing disaster incidences, approving programs and budgets and availing funds have no mountain experience. They are not familiar with the actual

	risks in mountaineering and do not understand the importance of safety considerations, wilderness emergency care and rapid rescue.
19	Many mountain guides do not have training or certification to work as guides. They have the experience as climbers due to numerous trips up the mountain but in the event of an incident during a trip, their preparedness, emergency response and rescue skills fail. Many of them have no training/certification/qualification to handle the situation.
20	Delay in commencing emergency aid leading to quick deterioration of the patient which many times lead to increased severity or fatality.
21	Lack of legislation/law to regulate mountaineering activities. This makes it difficult for the park officials to restrict entry or maintain best practices without the backing of the law. For instance, visitors accessing the park with no guide. One can go in without a guide or bring any other person who claims to be a guide and knows their way up the mountain as long as they pay park fees. This compromises safety.
22	Some visitors opt to climb solo/unaccompanied by guides or porters because of cost implications or overconfidence or familiarity with the mountain.
23	Lack of weighing luggage or inspecting the luggage at the park gate as in other sites worldwide. This poses a safety concern.
24	There are no turn-around program and strategies during the expeditions. There is no clear plan of what to do in case of situations that compromise the safety of the group where the entire group is expected to abort the trip and turn back.
25	Very few practitioners are aware about the assessment tools and incidents documentation required during emergencies. There is no standard reporting protocol followed in the assessment of casualties, accident and incident reporting, and safety management.

DISCUSSIONS

There are several factors that must be addressed by institutions that host or offer programmes to prevent or minimize risks and promote safety. Examples of such factors in outdoor and adventure institutions' programs are pre-trip awareness, medical and physical examinations, preparation of safety materials and equipment, engaging highly trained and qualified instructors, good documentation, adherence to safety policies, procedures, emergency procedures and response, food, outdoor equipment and transportation logistics, and safety of physical infrastructure. This study investigated nine standard policies and operations categories of participant preparation and screening, staff hiring, training and assessment, management systems, program activities, emergency procedures, logistics, physical infrastructure, transportation, and policies procedures. Results indicate higher compliance in management systems related procedures, participant preparation and screening, staffing and assessment

procedures, and outdoor program activities procedures. On the other hand, emergency procedures, logistics, physical infrastructure and policies saw lower compliances. This reflects a bias preference in system and human resource related functions, compared to actual outdoor adventure activity related functions, from which most safety concerns emanate. Examples of such safety concerns include emergency handling procedures, preparing for the outdoor physical infrastructure which is unique to every event, programme logistics, and safety policies, all of which are key factors in ensuring a safe trip. It is possible that in such institutions, procedures may have been set and enforced selectively, with more focus/emphasis on certain safety standards and procedures compared to others. This may be due to previous occurrences, accidents or experiences. We, however, found no significance difference in the adherence across the factors. In addition, as Hogan [9] posits, it is also not always a case of full compliance to standards and it does not necessarily follow that complete adherence to every guidelines will guarantee incidents prevention, as the risks in the outdoor adventure programmes are still high.

This study revealed that many organizations appeared to follow certain set of rules and regulations. However, we also found that practitioners in the East African region borrowed the rules and regulations from their observations of others, or heard about the rules and regulations in other countries. Unfortunately, these rules and regulations have not gone through the process of local documentation nor have they been formally adopted as the recognized standard of practice. On the contrary, on many occasions there seemed to be conflict during implementation and practice because of differences in interpretation across mountain settings. Generally, there appears to be a lack of specific guidelines for operations, local adoption and documentation regarding safety standards of practice for practitioners at some study sites. The absence of documented rules and regulations raise concerns about safety, practice and operations. It was obvious that some sites did not have standard recommendations for concerns such as instructor-participant ratio during expeditions or the training and certification qualifications of the mountain guide or the instructor. Of greater concern is the lack of regulation regarding training and certification of those who might handle injuries and illnesses during expeditions. Other factors impacted negatively by the lack of documented rules and regulations include pre-trip procedures and documentation, turn-around programme or strategy, availability of appropriate training, gear, equipment and protocols to follow in the event of incident, especially on the mountain. The absence of clear rules and regulations could jeopardize the chances of a serious

casualty. Most practitioners reported that in the event of an incident, they used past experience and practice to reason what made most sense at the time to effect a response.

From the personal experiences reported by practitioners during the focus group discussions, it was evident that practitioners would have benefited from documented standards of procedures for every activity. These would provide clear points of reference for every practitioner; and thus avoid poor decision-making, compromising safety, loss of life and damaging lawsuits. The consensus during the focus group discussion recognized that, in the scarcity of sufficient well-trained and knowledgeable guides, groups also suffered when a knowledgeable instructor became a casualty to be evacuated. Ideally, government agencies, regulating bodies and outdoor practice accreditation associations should institute policies and documented standards for safety to protect the public during activities. Such standards may dictate specific directions for service delivery, the conditions under which these can be delivered, qualifications of instructors, instructional methodology, the documentation required, risk assessment, risk management plans and procedures; and pre-hospital emergency care. Several countries and organizations worldwide have instituted such standards and regulations such as Australia [14], the UK [15] and international accreditation bodies such as the Association for Experiential Education (AEE) [16]. For instance, the AEE Standards Manual should be the gold standard for East African countries to follow and the outdoor adventure programmes and institutions in East Africa should consider its accreditation.

Risk management in outdoor practices requires that institutions understand the kind and level of risks they face in order to plan adequately for them [4]. Gathering detailed information on incidents, safety concerns and identifying contributing factors is a valuable component of risk management in outdoor programmes. As is evident in Table 3, there were several safety concerns raised during the FGDs and KIIs. In response to each of the raised safety concerns, the study presents participants input and our suggestions and recommendations for alleviating, reducing or eliminating the effects of these concerns in Table 4.

Table 4: Suggestions and Recommendations: Mitigation/Corrective Measures for safety concerns

1	Ensure there is a risk assessment exercise for every outdoor facility and programme prior to every event. Prepare for the worst scenarios. Institute step-by-step emergency procedures

and response strategies for each eventuality.

2 Inappropriate and ill-fitting gear, especially footwear and in harsh mountain conditions, are all predisposing factors to injury. No climber, whether a programme participant, instructor, guide or porter, should be allowed to proceed on the trip without adequate and proper climbing gears prior to being allowed to take a trip.

3 Each team must carry adequate first aid/emergency kit and equipment that has been ascertained against a checklist.

4 It should be mandatory for every instructor, guide, porter, ranger, and medical staff involved in any outdoor wilderness activity, to possess an up-to-date fully trained certification in Wildness First Aid. This will enhance the efficacy, confidence and readiness of every member in the 'staff' team to assist the patients on the mountain or wilderness before handing them over to next level for further care.

5 Every climber must be thoroughly prepared in the best climbing techniques and adhere to using these techniques during climbing.

6 Every visitor, regardless of previous expertise and experience in other wilderness and mountain locations, must follow instructions and guidance given by designated facilitators of the expedition.

7 The relevant Government agencies, tour companies and outdoor wilderness institutions should form official collaborating partnerships for providing safe, hygienic, and conducive environmentally friendly wilderness destinations

8 Introduce better rescue and evacuation systems, such as rapid rescue helicopters, cable systems, and zip lines, to facilitate faster emergency evacuation for any person in need, whether a foreigner or a local porter.

9 Establish a fully equipped and staffed dispensary/health unit at the base or at a camp on the mountains. This would provide immediate care and stabilization, especially of severe cases, until transfer to a hospital.

10 There seems to be a serious need for an increase in the number of rescue ranges, especially during peak seasons. This would ensure availability of several rescue rangers at any time. Government agencies, such as Tourism ministries, National Parks, Forest and Wildlife services should be actively involved in complementing each other's services. The end result should be augmentation of safety, rescue services and better standards of practice

11 Proper climbing gear is beyond the financial reach of most practitioners in the East African region. They rely on second-hand gear and donation of used equipment from friendly visitors. Government agencies cannot procure second-hand equipment. The Governments should therefore waive taxes on gear and equipment for wilderness activities; thus bringing the costs down to more manageable levels for all. The Wilderness practitioners could either allow climbers to buy from them at a subsidized rate or hire it at a reasonable rate. The income should be used to the repair and maintain the gear and equipment.

12 All mountain practitioners should have clearly legislated standard procedures that will inform the ratio of participant group sizes to instructors, guides, and porters. The lack of legislation makes it difficult to enforce standards. In addition, park entry fees for guides and porters into wilderness destinations should be minimal. In the ultimate analysis, this will reduce the overall cost for the visitor; and in turn, will encourage more visitors.

13 Mountain rescue is a very technical and specialized skill. Every mountain ranger needs this specialized training. It takes time to build the expertise and aptitude in mountain rescue. Therefore, it is imperative that such trained personnel, be deployed exclusively as Mountain

	Rangers where they can continue to hone their skills and abilities in mountain rescue. We recommended against the practice of deploying such trained personnel to other non-mountain parks.
14	Visitors must be educated and briefed about what to expect and the dos and don'ts prior to taking the trip. They must understand what they are getting themselves into, the risks and dangers involved and the regulations to make informed decisions. They should be allowed to ask questions and be answered. Visitors should also sign a document to indicate their consent and understanding of what they are about to get involved in. They should also agree that the guides directive to abort trip and go back is final should one get ill or injured (many visitors refuse to turn back before reaching the summit).
15	Wilderness, especially mountain wilderness, requires proper diet. Therefore, it is imperative that the expedition cook/chef be conversant about preparing food that meets the dietary and culinary needs in varying wilderness environments. Just like any professionally practicing cook/chef, every wilderness cool/chef must provide a current medical clearance certificate.
16	In order to reduce costs of paying more porters, porters are often required to carry excessively heavy loads; which in the long-term has detrimental effects on their health. Adequate legislation requiring that all porter packs be weighed at the entry gate would go a long way towards protecting the porters' health.
17	Government agencies should help develop standards for outdoor and adventure programs especially on safety issues and publish or gazette them as well as regulate its operations. For example, due to the uniqueness of wilderness based emergencies wilderness first aid should be recognized as a mandatory aspect for practitioners.
18	Non-mountain based stakeholders, influencers and decision makers should be sensitized to understand the safety concerns on the mountain in order to offer well informed support to the industry.
19	There should be continuous training of practitioners. Provide more opportunities to train and retrain the mountain guides, facilitators and porters.
20	Be aware of the Golden hour, especially in wilderness rescue. The first hour of injury or illness is critical to the outcome of the situation. Within that hour, instructors/rescuer should note what is happening to the person, monitor the patients' vitals and can use that information to seek guidance from a doctor on the decision and care to give during rescue and evacuation. Time is of the essence.
21	Ensure that regulations are set with the backing of the government. This helps the enforcers to be backed by law when enforcing the regulations.
22	No person should be allowed to enter the park and climb without a licensed guide and porters.
23	The visitors' luggage needs to be weighed at the gate before entry is allowed in all parks.
24	Institute a turn-around program and strategies during the expeditions. Highlight cases that warrant a turn-around and the strategies to be employed by practitioners in unique circumstances.
25	Practitioners should use the required assessment tools and documentation during incidents and emergencies necessary in reporting protocol of accidents and incidents.

CONCLUSIONS

Some of the wilderness sites in the East African region lack specific locally adopted guidelines and documented standards for safety, practice, operations and practitioners. It is important for all stakeholders in the industry to get accreditation or form an association which can serve as a regulating body. There is need for a detailed manual that will stipulate procedures and practices for operating Wilderness or Outdoor Adventure activities or programmes. Such a manual will guide decision making in the event of risk related incidents. The manual should include a standardized safety assessment format for every programme. The format should be regularly reviewed to address newly rising risks and safety concerns. Most of all, there is need to establish a regulatory body that has legislative powers to enforce adherence to guidelines and oversee operations in the Outdoor and Adventure industry in the region. This will serve to enforce appropriate practices, continuously training and ensure practitioners operate within laid-down rules and regulations that are based on best practice worldwide but adapted to suit local environments. This, in turn, will improve standards in practice and reduce chances of litigation against practitioners.

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Declaration of Interest

The authors declared no conflicts of interest.

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