EVALUATION OF A HEALTH PROMOTION AND POLICY INTERVENTION TO IMPROVE THE HEALTH OF THE PORTER POPULATION OF MOUNT KENYA NATIONAL PARK

by

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STATEMENT OF DISSERTATION APPROVAL

The following faculty members served as the supervisory committee chair and members for the dissertation of **Nathan Thomas Smith**.

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ABSTRACT

Few studies have examined the health of porter populations worldwide and none of the porters in Mount Kenya National Park. Because of health concerns (e.g., load weights and wage inequality), a health promotion partnership was formed between a team of university professors and students and the Kenyan Wildlife Service to improved porters' health by implementing a number of employment policy changes as well as wilderness medicine and health promotion workshops.

The specific aim of this evaluation using a mixed method data collection strategy was to assess changes in the overall health of the porters to determine the effectiveness of partnership interventions (e.g., policy changes, pack weight restrictions, wage guidelines, health promotion, and wilderness medicine workshops) on four outcome variables. The major research question was whether porters had experienced any improvements in their physical health, economic health, social health, and institutional health related to the interventions since the beginning of their employment.

Changes in the porter's health were evaluated using a mixed method research design involving both qualitative and quantitative data collection methods. Qualitative methods involved a narrative interview approach among 15 porters. Quantitative methods included a quasi-experimental recollection proxy pretest design involving a retrospective pre- and posttest survey of 70 porters. The survey measured the four major outcome domains and used modified standardized surveys from other porter populations. The

survey instrument was pilot tested and validated prior to use in this study with a similar population of 115 porters of Mount Kenya National Park. A convenience and snowball sampling method was used to enroll participants who all consented to participation following IRB approved methods. Data collection was done verbally with all questions and responses read to the porters with the help of a translator. The porter's responses were directly entered into an SPSS database on the researcher's laptop computer. The data analysis used SPSS in determining statistical significance using paired sample t-tests.

The quantitative survey revealed statistically significant positive pre- and posttest mean changes with p values below $p < .01$ in favor of improved working conditions in all of the four health outcome variables of interest. The identified themes helped to better explain the quantitative findings and support future policy recommendations to the Kenyan Wildlife Service, the land managing agency for Mount Kenya National Park.

This study suggests that working conditions for the Mount Kenya National Park porter population are improving over time with advocacy of the health promotion partnership and interventions to increase health education, policy changes and monitoring of the recommended porter load weights and minimum wages.

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I would like to dedicate my work to the porters of Mount Kenya National Park. Their kindness, determination, and strong work ethic are an inspiration to us all.

TABLE OF CONTENTS

LIST OF TABLES

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CHAPTER 1

INTRODUCTION

Problem Statement

While considerable research has been conducted and published on the health and lifestyle of Nepalese porters, the same cannot be said of the thriving East African climbing industry. Limited research has been devoted to the impact of climbing tourism on the health and lifestyles of porters serving in the mountainous regions of Kilimanjaro National Park in Tanzania, Mount Kenya National Park in Kenya, and the Rwenzori Mountains National Park in Uganda (Peaty, 2012).

The porter population of Mount Kenya National Park is geographically defined by the four primary park entrances: North, South, East, and West. Each entrance is associated with a distinct ethnic tribe that dwells in the foothills near each park entrance. These include the Masai, Kikuyu, Meru, and Embu; however, the majority of the working porters throughout the park are Kikuyu (T. Gregory, personal communication, August 7, 2011).

The national park is managed by the Kenyan Wildlife Service. Officials do not require that all mountain undertakings make use of local guides and porters for trips within Mount Kenya National Park (S. Gitau, personal communication, August 8, 2011)

This said, the majority of trips that occur within this park involve the use of local porters. The more popular working season for Mount Kenya National Park includes the months of January, February, March, June, July, and August. During this time a porter may work between two and four trips per month. A trip will range between 4 and 7 days in length (T. Gregory, personal communication, February 28, 2012). The Kenyan Wildlife Service has recently begun to promote various policies that are designed to protect the welfare of the working porter population (S. Gitau, personal communication, February 27, 2012). No data are available that document either the implementation of these new measures or their effect on the porters' health and wellbeing.

The recent national park policies were designed to address issues related to the porters' health and wellbeing. The following sections examine the rationale behind these latest measures.

Load Weight Concerns on Health

Commonly accepted load weights and carrying practices are well established among the active porter population of Mount Kenya National Park; nevertheless, no governing restrictions existed that specifically limit the load weights carried by these individuals. Also, there are no minimum or maximum age restrictions. The Kenyan Wildlife Service has recently taken steps to address these issues by establishing a porters' club that would provide guidelines and introduce policies for the benefit of the porter population (S. Gitau, personal communication, February 27, 2012). The Kenyan Wildlife Service has already endorsed certain policies (e.g., load weight restrictions) already adopted by the Tanzanian Wildlife Service for the Kilimanjaro porter population. Kenyan

Wildlife Service officials concede that current individual loads up to 45 kilograms have been a common practice among porters (T. Gregory, personal communication, February 28, 2012). The Kenya Wildlife Service now intends to promote individual weight limits for Mount Kenya National Park porters of 18 kilograms for group luggage plus 5 kilograms for personal items.

Wage Inequality Concern

Wage inequality is an additional concern related to the porters of Mount Kenya National Park. No government regulations currently address this topic. Park officials have recently introduced recommendations that link daily compensation to job description and seniority. While no reliable figures document historical wages of the Mount Kenya National Park porter population, there has been no consistent basis among the different tour operators in the past for relating porter wages to job title or seniority. (S. Gitau, personal communication, February 27, 2012). Typical wages for entry level porters have generally ranged between 350–550 Kenyan Shillings (approximately 4.21–6.61 United States Dollars) per day (T. Gregory, personal communication, February 28, 2012).

Payment methods have also not been standardized for Mount Kenya National Park. Payment of daily wages to the porters is deemed the responsibility of the hiring company, but will sometimes be taken care of by the lead guide for the trip (T. Gregory, personal communication, February 28, 2012). Payments are usually made at the conclusion of a trip.

Working Environmental Concerns on Porters' Health

It is understood that the physiological function of the human body is altered when operating in a hypoxic environment at altitude. Similar to Western tourists, porters often reside in lower elevations and thus do not adapt well when working at higher altitudes (Law & Rodway, 2008). Additional environmental concerns exist when traveling and living at altitude. Most noticeable is the often deteriorating weather patterns. Ambient temperatures decrease as altitude increases. Precipitation and high winds are common in mountainous settings. Snow is likely, as are colder wind chill values at any time throughout the year. These environmental risks combined pose a health concern to anyone who travels or lives among them including porters. Porters rarely have adequately warm clothing and do not carry extra clothes, allowing for more carrying capacity of the client's baggage. Not surprisingly, porters are prone to sickness such as hypothermia, frostbite and altitude illness, resulting in lost days of work and income for the family.

Duty of Care and Health Insurance Issues

Porter populations in similar regions including the Himalayan mountains lack a clear understanding of duty of care issues related to their working environment (Bellis, Parris, Thake, & Richards, 2005). Also, porters in this region rarely have access to any form of health insurance. Medical expenses are inevitably the responsibility of the porters themselves. This leads to inadequate medical attention, which, in turn, leads to chronic health conditions that limit their ability to work (Bellis et al., 2005).

Welfare responsibility for porters throughout the world is not clearly defined. The International Porter Protection Group (IPPG) was founded in 1997 to protect trekking

porters from neglect and exploitation in countries such as Peru, Nepal, and, more recently, Tanzania (Peaty, 2012). Their website lists three aims for every porter on a global level. These include: access to adequate clothing, boots, shelter and food (appropriate to the altitude and weather), medical care when ill or injured, and insurance. Currently the porter population within Kenya does not receive assistance from organizations such as the IPPG. Instead, duty of care responsibility for Kenyan porters usually defaults to the hiring company or is not addressed (T. Gregory, personal communication, February 28, 2012). Therefore future policies and procedures in Kenya need to consider illness or injury of porters, including onset, initial response, treatment, and extended care. Responsible parties of Kenyan porters need to be identified and the nature and degree of responsibility needs definition and enforcement.

Study Purpose

The purpose of this study is to assess changes in the overall health of the porter population of Mount Kenya National Park in Kenya, Africa that could possibly be attributed to policy and health promotion interventions implemented by a Mount Kenya porter health partnership. Four primary health and wellbeing constructs were selected by investigators which included Kenyan Wildlife Services officials, a team of health specialists headed by the principal investigator, and university students. The outcomes for measurement in this study are supported by prior research (Dixon, 2000; Lynch, Kaplan, & Shema, 1997; Wallston, Alagna, DeVellis, & DeVellis, 1983) as contributors to the health of this target population. These constructs include physical health, economic

health, social health, and institutional health, which reflect the quality of their relationship with the Kenyan Wildlife Service.

The research team wanted to determine if changes in working conditions concerning porters in Mount Kenya National Park could improve the health of the porters. The ensuing evaluation study documents the outcome survey results of interviews and surveys with porters that were specific to working conditions and changes experienced over time. More specifically, a comparison of prior conditions to current conditions was performed with relation to the four aforementioned health constructs.

Background of Researcher Including Health Education and Policy Interventions

This section summarized all of the health education and policy interventions conducted by the researcher and his team over several years to promote improved health of the porters that was measured in this evaluation study. Hence, this section discusses the many health interventions that resulted in improved health and provides a background on the years of work of the research team to improve the health of the Mount Kenya porters.

Prior to this study, the researcher had visited this region on four occasions. This included one trip to Kilimanjaro National Park in Tanzania and three to Mount Kenya National Park in Kenya. On each trip, the researcher interacted with the associated porter population. This included the use of their services for mountaineering related expeditions. Most related to this research study is that during these expeditions the researcher observed the poor health of the porters, the heavy pack loads, unsafe equipment, and poor

sanitation practices on the mountain. Hence, he designed for the porters and implemented as a health educator various outdoor recreational health courses and certification courses related to mountain rescue, wilderness first responder emergency medicine, wilderness first aid, appropriate pack loads and expedition equipment, safe water, cooking, and sanitation precautions to improve their health. He also worked with the Mount Kenya officials in the Kenyan Wildlife Service to reduce and enforce lighter pack loads and appropriate equipment as well as higher wages. The details of these health education and policy interventions are presented in greater detail below.

Background of the Researcher

Before this study, the researcher had acquired 8 years of professional outdoor recreation training and certification through university affiliated programs and various related professional outdoor organizations (e.g., American Mountain Guides Association). During this period, the researcher worked in different professional capacities including mountain guiding, outdoor education, and related research opportunities. For his master's thesis he implemented and conducted a research outcome evaluation of the University of Utah's for credit rock and ice climbing courses (Smith, 2010). Hence, he was well versed in research methods, data analysis, and writing results related to this wilderness health education study. He also is an instructor for many years in the wilderness education and outdoor recreation courses, so he is very experienced in teaching students about well managed technical wilderness experiences, such as mountain climbing, rock climbing, and ice climbing. He has participated in climbing related expeditions to many famous United States and international mountains and routes.

Research Team Health Promotion Partnership Intervention Activities

The Independent Variable

The intervention evaluated in the research was very complex and took several years to implement by a team headed by the principal investigator. Similar to any community partnership or coalition for health promotion, there are a number of steps to gaining community readiness for change, implementation and successful behavior or policy change (Kumpfer, Whiteside, & Wandersman/National Institute on Drug Abuse, 1997) as detailed below in the Substance Abuse and Mental Health Service Administration (SAMHSA)/Center for Substance Abuse Prevention (CSAP) Strategic Partnership Framework (2006).

The Strategic Prevention Framework (SPF) uses a five-step process known to promote health by reducing risk-taking behaviors, building assets and resilience, and preventing problem health behaviors across the life span. The SPF is built on a community-based risk and protective factors approach to prevention and a series of guiding principles that can be utilized at the community levels as defined as the Mount Kenya Park Service community including the officials and the porters.

The idea behind SPF is to use the findings from public health research to include in this case the importance of sanitation, food handling, water quality, appropriate pack loads, preventive medicine, emergency medicine and first aid, physical activity, and good nutrition to prevent diseases and injury. Common knowledge of germ theory, proper sanitation, and preventive health was not apparent in the practices of the cooks, porters, and head guides. Hence, providing health education and information about these concepts did lead to behavior changes to promote better health in the camps. Also evidence-based

medicine and wilderness medicine certification courses were conducted to build capacity within the porter and guide community. This in turn promotes resilience and decrease risk factors in individuals, families, and communities on Mt. Kenya.

The Strategic Prevention Framework Steps require the community partners or stakeholders to systematically

- Assess their prevention needs and community readiness for change,
- Build their prevention capacity by mobilizing a partnership,
- Develop a strategic prevention plan,
- Implement effective community prevention programs, policies and practices,
- Evaluate their efforts for outcomes.

Throughout all five steps, implementers of the SPF must address issues of sustainability and cultural competence.

Step One: Assessing Needs and Community Readiness for Change

Because no epidemiological needs data on porter health existed, the principal investigator had to first rely on informal techniques of observation and conversations with porters and Mount Kenya National Park officials to determine health promotion needs. The researcher began conversations with the local porters regarding their working conditions. Health concerns that seemed apparent to the researcher from observations, as mentioned above, were confirmed through in-depth discussion and storytelling. Other new health concerns and frustrations not readily apparent by observation, such as wage concerns, and sicknesses that kept them from working were discussed and acknowledged

in conversation between the porters and the researcher. During discussions, porters expressed their readiness for change.

The pilot test of the health assessment instrument also reveals that the observations were accurate related to the poor health of the porters. The effectiveness of most coalitions or partnerships for health promotion is generally evaluated by annual or semi-annual random surveys of a sample of members of the community, which is in this case the porter population. Because of the many health promotion interventions implemented, it is generally only possible to look at the impact of the totality of all of the health interventions compared to evaluating each separately.

Gaining Acceptance and Trust of Porters

Although not included in the SPF steps when working for policy and behavior changes in individuals outside the principal investigator's culture, gaining acceptance and trust is critical. Trust and acceptance of the study's participants was acquired on the researcher's first expedition to Mount Kenya National Park. The researcher participated in an unsupported expedition that involved a technical climb of Mount Kenya's summit referred to as Batian. This summit is rarely achieved and thought of as a significant accomplishment by the porter population of the park. Prior to this undertaking, the researcher experienced difficulty in conversation and interaction with the porters. After a successful climb of Batian, the porters were much more approachable and accepting of the researcher.

Step Two: Build Prevention Capacity by Mobilizing a Partnership

Formation of Research Team and Initial Health Interventions

The researcher returned to the United States and initiated conversations with fellow colleagues who shared similar professional experience in the field of outdoor education and health promotion. A small team totaling six was formed with a joint goal of returning to Mount Kenya National Park and developing educational training programs that could benefit the health of the local working professionals. Additionally, the team would work alongside the Kenyan Wildlife Service in the exploration of policy intervention and provide recommendations that would help improve the working conditions for associated outdoor professionals (e.g., porters and guides). This team developed into a United States based company titled Mountain Education and Development or MED with the researcher acting as the director.

Developing University Partnerships for Student Internships

Needing more manpower to meet the demand for health education courses on mountain, the principal investigator developed a University of Utah Study Abroad course in health promotion for university students. Based on the success of this expedition with students and their different health promotion workshops on the mountain, additional partnerships between MED and other United States based universities were developed. Internship opportunities for affiliated university students were established allowing their involvement in content delivery during the health educational courses in Kenya for the porters, rangers, and guides as well as community members and families. Hence, university interns from several universities (e.g., University of Utah and Westminster

College) accompanied the MED instructor teams during the 2012 expedition to Mount Kenya National Park.

Facilitating Partnerships with Officials to Impact Policy

Meetings continued between MED and the Kenyan Wildlife Service. Further discussion occurred regarding policy establishment and implementation concerning the working conditions for the porter population. Topics involving load weights carried by porters, wages paid by operators to porters and inadequate clothing and equipment were included in the conversations. A concern expressed by the researcher to the Kenyan Wildlife Service was that porter representation was lacking in these partnership meetings. Direct porter opinion was not involved.

Step Three: Develop a Strategic Prevention Plan

After involvement in two educational MED expeditions to the region, the researcher designed with his committee and initiated a loose health promotion or prevention plan to include these steps in this research study with the intention of improving the health and working conditions for the porters of Mount Kenya National Park. The activities of the plan have evolved over time with increased understanding of the porter's health needs and how current policies and practices affect this population. This information and the associated findings could then be shared with the Kenyan Wildlife Service in an effort to positively affect the decision making process as they develop policy that directly affects the working conditions of the porters. It should be

recognized that the porters involved in this research knew the researcher as a previous and current MED team member.

Step Four: Implement Effective Community Prevention Programs, Policies, and Practices

Critical to success of the Strategic Prevention Framework Model is that there be community acceptance and respect for the local community partners by the university team implementing the health promotion interventions. The local partners have to be heard and their needs and ideas acted upon with effective evidence-based interventions. Also the leadership model has to be one of an empowering style of leadership versus autocratic (Kumpfer, Turner, Hopkins, & Librett, 1993). In this case, the local porters, guides, and Mt. Kenyan officials expressed their health concerns and needs and the university team offered possible solutions. Those that were acceptable were implemented by the partnership and MED staff and students.

Therefore, the first MED expedition returned to Kenya in 2011. The researcher and five team members offered wilderness medicine, technical rock climbing, and outdoor living skill courses for porters, rangers, and guides including water quality protection, general health promotion, and ways to reduce back pain with better packs. The partnership team also solicited donations from major United States outdoor manufacturers of better packs and other climbing equipment and distributed these to the porters. This initial expedition was exploratory in determining what educational opportunities were most needed and beneficial for these local populations. Additionally, the team met and interacted with officials from the Kenyan Wildlife Service. These

meetings involved discussion and consideration of policy intervention as a method to improving the working conditions for the porter population of the park. The Kenyan Wildlife Service had already started implementing work related restrictions for the porters such as load weight maximums and minimum wage recommendations in an effort to improve the overall working conditions for these individuals. Enforcement and further advancement of these policies was discussed with the MED team.

The principal investigator and team then began implementing a number of health promotion and advocacy efforts to improve the health of the porters. A larger MED team, which included the researcher, returned to Mount Kenya National Park in 2012. Educational opportunities further developed with more focused curriculums to meet the needs and requests of the local working populations. A number of workshops and lectures on water quality, safe food preparations, sanitation, pack loads, mountain rescue, pacing and client comfort, technical rock climbing, camp establishment, and wilderness first response medical practices were provided in different locations for porters of Mount Kenya National Park. Throughout 2 years, approximately 200 people attended these health promotion and education activities. Credentialing type courses that yielded a certification upon successful completion were requested and provided. Examples included a 72-hour wilderness first responder medical course and a 24-hour wilderness first aid medical course. The local working populations started to want internationally recognized training and credentialing.

Step Five: Evaluate Effectiveness of the Partnership Intervention

The cumulative impact of the many different health promotion activities conducted by the principal investigator and the MED team over the years was evaluated using a mixed method (qualitative and quantitative) research within a nonexperimental design. Similar to most partnerships or coalitions for health promotion, there was no direct comparison community assessed so the research design is a nonexperimental research design with no comparison of a control group (Campbell and Stanley, 1963). If the health assessment is repeated each year then a quasi-experimental design could be created using a phase-in quasi-experimental design evaluating the effect of new policy changes or health promotion workshops over time.

However, in this dissertation only the total impact of the different partnership interventions rather than individual interventions were evaluated using a retrospective pre- and posttest survey asking about ratings of improvements in porter's health in four theoretical construct areas of physical health, economic health, social health, and institutional health. A qualitative interview with a small sample of porters was also conducted to help better interpret the quantitative survey results.

Step Six: Provide Feedback, Recommendations, and Make Corrections in Partnership Activities

While not officially a step in the SPF, the next step in this process is to make recommendations for future interventions and provide feedback to all stakeholders such as the porters and also the Kenyan Wildlife Service officials and begin the prevention intervention process all over again. The results of this evaluation will be shared with all

of these stakeholders. Publications and presentations on the outcomes or success of this partnership model for health promotion of rural mountain porters are planned for the future to disseminate the new knowledge from this research.

Specific Aims

Specific aims of this research are to 1) understand the individual porter's perception of working conditions related to their health and wellbeing while participating in narrative-based individual confidential interviews (Qualitative Study) and 2) determine whether changes in working conditions have improved the health and wellbeing of Mount Kenya National Park porters by conducting and analyzing quantitative data from a retrospective pre- and posttest survey (Quantitative Survey).

Research Questions

Qualitative Method

(1) What are the perceptions of change in working conditions overtime as it relates to ones sense of overall health within the porter population of Mount Kenya National Park.

Quantitative Method

(1) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's physical health?

H_o: Changes experienced are not associated with increased physical health among the porter population.

H_a: Changes experienced are associated with increased physical health among the porter population.

(2) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's economic health?

H_o: Changes experienced are not associated with increased economic health among the porter population.

H_a: Changes experienced are associated with increased economic health among the porter population.

(3) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's social health?

H_o: Changes experienced are not associated with increased social health among the porter population.

H_a: Changes experienced are associated with increased social health among the porter population.

(4) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's institutional health?

H_o: Changes experienced are not associated with increased institutional health among the porter population.

H_a: Changes experienced are associated with increased institutional health among the porter population.

(5) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's overall health?

H_o: Changes experienced are not associated with increased overall health among the porter population.

H_a: Changes experienced are associated with increased overall health among the porter population.

Study Methods

As mentioned previously, the research included a mixed method design to understand the porters' individual experience and changes related to their working conditions. The qualitative data were collected during narrative based individualized interviews with porters while in Kenya during November 2012. The quantitative methods involved an instrument validation study which was conducted on an earlier trip to the region prior to the actual data collected in this study. The selected quantitative design was a quasi-experimental survey that could collect data on the same questions from a "Then" and "Now" perspective; consequently, pre- and posttest data were collected on a retrospective pre- and posttest instrument. Advantages of this survey design included assurance of complete confidentiality since no names or codes were required (reducing fear of retribution or loss of employment and thus maximizing data integrity), lack of attrition among participants that might have compromised data validity, limited mental burden imposed on participants, and ease and limited cost of data collection by investigators.

Study Limitations

Qualitative Methodology Threats to Credibility and Transferability

Often, the researcher is the data collection instrument in a qualitative study. The data collection may include observations of individuals in naturalistic settings or in-depth interviews of participants. This contributes to two major potential threats to credibility of the collected data including data collector bias and data collector characteristics. Data collector bias refers to the unconscious distortion of data during the data collection process (Denzin, 1978). Examples include the asking of leading questions and rephrasing questions to meet the needs of the sample population. During the qualitative research portion of this study, the narrative interviews were the primary data source. Because of this, procedures were standardized to help control for data collector bias. Among these standardizations included (1) ensuring that identifying information is not associated with the interviewee's answers, (2) increasing interviewee comfort by asking more general, easy-to-answer questions first, (3) asking questions to all participants the same way, and (4) collecting all answers in a location where the interviewees felt comfortable.

Data collector characteristics refer to qualities of the data collector that may influence the intake of information gathered from the interviewees. Examples include gender, ethnicity, age, language patterns, and prior experience in the region. Measures were put in place to help control for this threat. A local and socially accepted translator participated in each interview and assisted as needed. This individual was academically qualified in both English and Swahili. The researcher had significant prior experience interacting with the target population. He had traveled to the region on four separate occasions prior to this study's data collection. Each experience included interactions with

the porter population of interest. Acceptance of the researcher was gained from the porters before this study. Additionally, the researcher is male, which is relevant as the entire sample shared this same gender.

Transferability refers to the ability for which the results of qualitative research can be generalized or transferred to other populations, contexts, or settings. This is often determined by how well the researcher describes the research context, analyzes the collected data, and presents the interpretation. To assist in the enhancement of transferability of the findings associated with this study, the researcher implemented thorough data collection techniques (e.g., tape recording interviews) and transcription methods. The transcription of the data was checked multiple times by the researcher in an effort to identify clear and concise themes.

Quantitative Methodology Threats to Internal and External Validity

The rigor of a research study is the ability to measure what actually happened during the study. It is directly influenced by internal validity that is strongly related to the strength of the selected experimental design and its ability to rule out the major threats to internal validity of the collected data (Valente, 2002). Limitations of internal validity in this study are directly related to the use of a quasi-experimental recollection proxy pretest design rather than a stronger true experimental randomized control design that controls for all threats to internal validity. However, a true randomized control design was not feasible for this field study because the policy changes impacted the total porter population.

This quasi-experimental design does control for many threats to internal validity of the outcome results such as history, maturation, attrition, testing, and instrumentation since the testing is done at one point in time only using a "Then" and "Now" testing methodology. Each of these controlled threats is discussed in more detail below after the uncontrolled threats.

Uncontrolled Threats to Internal Validity of Outcomes

The uncontrolled threats to internal validity in this type of quasi-experimental study include the following:

(1) Selection Bias. The participants were a convenience sample from one tribe (Kikuyu) and therefore were not representative of the total porter population that a randomized sample selection would include.

(2) Statistical Regression to the Mean. The selected porters might represent the most experienced, severe, or dissatisfied porters; therefore, their responses could regress to the mean naturally by their posttests.

(3) Selection Maturation. Differential rates of change may occur among the study participants of different ages or maturational stages as a porter.

Additionally, differential historical impact on the sample population is also uncontrolled. The passage of time with important historical events that affect most people unequally may influence outcomes of the study and lead to inaccurate results (Creswell, 2002). Study participants may have experienced changes to their personal health differently based on their experience working as a porter rather than because of recommended policy changes by the Kenyan Wildlife Service.

Controlled Threats to Internal Validity of the Outcomes

The controlled threats to internal validity are greatly improved by this quasi-experimental retrospective pre- and posttest design and analysis. Threats including testing, instrumentation, placebo, diffusion, Hawthorne effect, location, and implementation are now controlled. Each of these threats to the internal validity of the study results is discussed (Campbell & Stanley, 1963).

(1) Testing. This threat to internal validity of a testing effect is controlled for by the fact that all of the study's participants received the same retrospective "Then" and "Now" pre- and posttest. Hence, the impact of a pretest on the posttest is eliminated since there was no prior testing session to sensitize the participants that does not interact with the interventions. This testing methodology also reduced the testing burden and increased the likelihood of study participation of the porters. Additionally no names or code numbers had to be used to match up the pre- and posttests. Therefore, participants were more willing to answer more honestly with less concern about their employers seeing their answers. They can be more convinced and trust the confidentiality of their answers to the survey. Concerns with errors in the data analysis or matching pre- and posttests were reduced as well.

(2) Instrumentation. This threat was controlled because all study participants received the same questionnaire. Also, the retrospective pre- and posttest survey was designed after a previously validated instrument used by the Kilimanjaro Porter Assistant Project in Tanzania, Africa (Ndekirwa, Mtuy, Bernard, Valenti, & Forrest, 2011). Additional questions specific to the four health constructs of interest, namely their

physical health, economical health, social health, and institutional health, were added and some of the already existing questions modified to meet the parameters of this study.

(3) Placebo. This threat involves improvement due to real or perceived expectation of treatment effects rather than the treatment or intervention and can occur when the participants receive a treatment they believe is likely to be beneficial. This threat was controlled for because there was no promised treatment effect. All participants were assessed in the same manner such that they each were requested to reference their prior porter work experience since they had started their employment. Additionally, the data collection all took place during the same time period.

(4) Diffusion of treatment. This threat occurs when one group becomes aware of information or an intervention and influences practices meant for another experimental group. This threat was controlled for with the use of one primary experimental group of participants in the study and not two separate groups so diffusion of treatment effects was eliminated.

(5) Hawthorne effect. This threat involves the effect that being studied has on a participant such that it may cause them to act or respond differently. This threat was controlled for with the use of a retroactive pre- and posttest that was given to all participants at the same time.

(6) Location. The impact on the threat of location was controlled because all participants received the questionnaires under the same conditions.

(7) Implementation. This threat is the potential effect of differing methods of intervention implementation. This is controlled because the same participants were studied in the same time period under the same conditions.

(8) Selection and treatment interaction. The results can probably be generalized to other groups of similar participants only but not to a different study population that is ethnically or educationally vastly different. Because of the highly motivated and nearly homogeneous sample, external validity or generalization of the results to populations of differencing ethnicities, varying age groups, and more or less experience may be questioned.

(9) Setting and treatment interaction. This external validity threat was not controlled for because participants may not do as well at a different location or with different implementers. This threat would have to be tested in later replication studies.

(10) History and treatment interaction. This threat is controlled for by limiting the generalization of the results of this study to the specific time period of November 2012. All participants in this study were participants in this same time period.

Additional limitations to this study for both methodologies are the recall bias for participants in the retrospective pre- and posttests survey and also the cultural pressure to appear to have a positive image that creates a positive response bias. Recall bias refers to the accuracy of the participant's ability to reference past events. This may produce inaccurate delivery of information from the participants, thus skewing the results. Culturally, the study's participants might feel pressured to act or appear differently during the data collection process in an effort to maintain an appearance that may be perceived as more acceptable by the researcher. Particularly since their responses were not confidential since the data collection method required them to speak their answers to both the PI and the translator. This could occur for a multitude of reasons including cultural considerations and confidence.

Structure of the Dissertation Chapters

Chapter 1

This chapter includes an overview and introduction of the problem statement and justification for implementing a community partnership for health promotion. The implementation activities over several years of a team of university professionals and students plus the Kenyan Wilderness Services officials are organized within the five steps of the Strategic Prevention Framework (SPF) used for health promotion by community partnerships within the United States federal government. The final step is the focus of this dissertation, which is the evaluation of the impact of these partnership health promotion activities in measuring the changes in the physical health, economic health, social health, and institutional health of the porters of Mount Kenya National Park in Kenya, Africa. The study purpose is discussed, which includes the research specific, research questions, and hypotheses. Additionally, study limitations are discussed with an overview of the mixed research methodology used and the associated threats to validity.

Chapter 2

This chapter consists of a literature review that focuses on the impact of tourism on the porter population surrounding Mount Kenya National Park in Kenya, Africa. Limited prior research exists specific to this region. Comparisons to research previously gathered with like population in neighboring Kilimanjaro National Park in Tanzania and the porter population throughout the mountainous regions of Nepal is referenced. Different health issues for these working populations are discussed as is the associated theoretical framework that supports positive change in each situation.

Chapter 3

This chapter includes the findings associated with a narrative based qualitative study that explored the individual perceptions of the working conditions associated with being a porter in Mount Kenya National Park in Kenya, Africa. Background information is provided with the support of varying theoretical frameworks as they relate to four health constructs of interest including physical health, economic health, social health, and institutional health. An overview of the chosen methodology is explained as is an analysis of the collected data. A results and discussion section reveals identified themes and relates them to the effects of the working conditions on the health of the porter population.

Chapter 4

This chapter includes the outcome evaluation of the partnerships, many activities in policy advocacy and health promotion workshops. It present the findings from a quantitatively focused nonexperimental design evaluation study with 115 porters for pilot testing the newly developed survey instrument and 70 porters completing the final survey instrument that aimed to determine if changes in working conditions concerning portering in Mount Kenya National Park in Kenya, Africa, improved the health of the porters. The findings are shared from the results of a survey of porters specific to their working conditions and any changes experienced over time. More specifically, a comparison of prior conditions to current conditions was performed with relation to four health constructs. These include the physical health, economic health, social health, and

institutional health of this population. A discussion is included that relates the determined results to overall effects on the health of the sample population.

Chapter 5

This chapter includes a study summary as well as recommendations for future research and practical work to improve the health and wellness of porters. Continued improvement of working conditions for porter populations throughout similar geographic regions is discussed and considered.

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CHAPTER 2

A STRATEGIC PREVENTION FRAMEWORK OF SOCIAL, INSTITUTIONAL, PHYSICAL, AND ECONOMIC HEALTH CONSTRUCTS FOR EVALUATING THE IMPACT OF A HEALTH PROMOTION PARTNERSHIP TO IMPROVE MOUNT KENYA PORTERS' HEALTH STATUS

Introduction

This chapter focuses first on a literature review of the impact of tourism on the health of the porter population surrounding Mount Kenya National Park and then the theoretical frameworks used to implement the health promotion partnership, namely the Strategic Prevention Framework (SPF). Unlike studies conducted in Nepal and Mount Kilimanjaro National Park of porters, currently no data exist related to the health of this porter population and no research has attempted to measure whether the multiple activities of a community health partnership could improve the overall health of this population and relate it to their working conditions.

This chapter proposes that the SPF is useful for understanding the activities that any community partnership should follow to attain sustainable health promotion. We also proposed that the evaluation of the health of porters should be measured by a framework of four different health domains. There is theoretical support provided in this chapter

suggesting that four different constructs are contributors to the overall health and wellbeing of this population. These constructs include social health, institutional health, physical health, and economic health (Dixon, 2000; Lynch, Kaplan, & Shema, 1997; Wallston, Alagna, DeVellis, & DeVellis, 1983). In this context, social health involves the relationship the porters have with themselves, their family, and other porters. Institutional health involves the relationship a porter shares with the land managing agency and their employers. Physical health references the physiological stresses experienced by the human body of the porter. The economic health references the financial and lifestyle changes endured by the porter in relation to their work on the mountain.

Geography

Mount Kenya National Park is located to the East of the Great Rift Valley, approximately 175 kilometers northeast of the country's capital city of Nairobi. The park lies in or is surrounded by seven districts including Meru North, Meru South, Laikipia, Nyeri, Kirinyaga, Embu, and Tharaka. Together these districts account for a population of 2,629,137 ("Districts of Kenya Population," n.d., column 4) and a total area of 21,343 square kilometers ("Districts of Kenya Area," n.d., column 5). Four predominant ethnic tribes (Embu, Kikuyu, Masai, and Meru) live in the foothill landscape surrounding Mount Kenya National Park, with the Kikuyu tribe representing the majority of the working porter population of the park (T. Gregory, personal communication, August 7, 2011).

Mount Kenya is the second highest peak in Africa with a summit elevation of 5,199 meters and is considered an important water tower for the country; it provides water for 50% of the country's total population and produces 70% of Kenya's

hydroelectric power. The park itself is 2,800 square kilometers with its Northern slopes across the equator ("Mt. Kenya National Park Size/Location," n.d., para. 5). The park is operated by the Kenyan Wildlife Service. The Kenyan Wildlife Service explains the major attractions as

> Pristine wilderness, lakes, tarns, glaciers and peaks of great beauty, geological variety, forest, mineral springs, rare and endangered species of animals, high altitude adapted plains game, unique mountain and alpine vegetation with 11 species of endemic plants. Wildlife includes elephants, tree hyrax, white tailed mongoose, suni, black fronted duiker, mole rate, bush buck and elands. Animals rarely seen include leopard, bongo, giant forest hog and rhino. ("Mt. Kenya National Park Major Attractions," n.d., para. 8)

Tourism

Aside from the geology and natural resources of the mountain and surrounding area, tourism acts as a major economic contributor to local resources. In 2005, there were an estimated 15,000 tourists who visit the park annually (Burns, 2006). However, by February 2013, the Kenyan Wildlife Service reported that the number of visitors that toured the Mount Kenya region had doubled. Outdoor recreational tourism opportunities include mountain trips and wildlife game drives, which typically co-exist together. A tourist may first choose to participate in a mountain trip and then conclude their overall experience with a wildlife game drive while staying in safari style camp lodges. The increase in tourists has contributed to the economy of the region by providing jobs and sale of goods for expeditions. The degree to which the local guides are benefiting as compared to just tour companies is not known. The monetary incentive of the tour operators are to pay the least and get the highest weight loads by the porters; hence, the concern with the health of the porters. The impact on the environment and water quality

is also a concern that was addressed in porter education workshops on the mountain on an earlier trip by the research team.

Kenyan Wildlife Service officials do not require that all mountain undertakings make use of local guides and porters for trips within Mount Kenya National Park; however, the majority of trips that occur within the park involve the use of this working population (S. Gitau, personal communication, August 8, 2011). Different levels of hierarchy exist for this working class of porters, from the most senior to the least these will include the lead guide, assistant guide, cook, head porter, and other assistant porters as needed. Tourists to this region provide work to hundreds of porters each year who carry their provisions, luggage, and equipment from the trailheads up the mountain and back down. Beasts of burden are not utilized within the park for mountain trips and no additional methods of transport are available for movement of goods on the mountain for tourism related activity, leaving porters as the only means of luggage and supply transport.

Porters in Mount Kenya National Park work two to four trips per month, each trip lasting 4 to 7 days in length during the peak expedition months of January through March and June through August (T. Gregory, personal communication, February 28, 2012). There are no reliable figures available for the number of individuals working as porters in this region; however, it is estimated that as many as 1,000 porters per year seek employment on the mountain.

Comparable examples of this working class hierarchy exist in similar environments. Nearby, in neighboring Tanzania, Kilimanjaro National Park provides employment for mountain porters, while in Sagarmatha National Park, Nepal, thousands

of trekking porters are employed through tour operators providing expeditions on known climbs such as those on Mount Everest and the Annapurna Circuit treks (Law & Rodway, 2008).

Porter Lifestyle

The Strategic Prevention Framework

The porter health promotion activities of the partnership and evaluation research was very complex and took several years to implement by a team headed by the principal investigator. Similar to any community partnership or coalition for health promotion, there are a number of steps to gaining community readiness for change, implementation and successful behavior or policy change (Kumpfer, Whiteside, & Wandersman/NIDA, 1997) as detailed below in the SAMHSA/CSAP Strategic Partnership Framework (2006).

The Strategic Prevention Framework (SPF) uses a five-step process known to promote health by reducing risk-taking behaviors, building assets and resilience, and preventing problem health behaviors across the life span. The SPF is built on a community-based risk and protective factors approach to prevention and a series of guiding principles that can be utilized at the community levels as defined as the Mount Kenya National Park Service community including the officials and the porters.

The idea behind SPF is to use the findings from public health research along with evidence-based prevention programs to build capacity within the community. This in turn will promote resilience and decrease risk factors in individuals, families, and communities.

The Strategic Prevention Framework Steps require the community partners or stakeholders to systematically

- Assess their prevention needs and community readiness for change,
- Build their prevention capacity by mobilizing a partnership,
- Develop a strategic prevention plan,
- Implement effective community prevention programs, policies, and practices,
- Evaluate their efforts for outcomes.

Throughout all five steps, implementers of the SPF must address issues of sustainability and cultural competence. Each of these steps and the activities conducted by the partnership were detailed in Chapter 1.

The final step is to evaluation the impact of the partnerships advocacy, education and health promotion activities. To measure the impact, an evaluation framework and associated survey measurement tool were created to measure four different health domains or measurement constructs as specified below of social health, institutional health, physical health, and economic health (Dixon, 2000; Lynch, Kaplan & Shema, 1997; Wallston, Alagna, DeVellis, & DeVellis, 1983). The reasons for the health needs in each of these four domains are discussed each in their four different sections below.

Social and Institutional Health

Another concern is with the impact of tourism, tourism policies or recommendations, and increased competition for the porter job on the social and institutional health of the porters. Questions related to social health include whether the competition for porter jobs and changes in porter policies create increased stress and

social conflict between tribes or individuals. Institutional health relates to the quality of the relationship between the individuals, tribes, and the governing institutions for Mount Kenya National Park and if these are improving with changes in policies related to porters.

The following section explains the social situation of the porters. The associated porter population is comprised of different ethnic tribes, which are largely geographically restricted. These tribes have had conflicts for reasons unrelated to working as porters on the mountain, and unfortunately these conflicts do occasionally appear within Mount Kenya National Park.

Porters of the same tribe often coordinate together and negotiate the terms of the work as a group. If one group of porters from one tribe is willing to negotiate a more lucrative arrangement for an operator versus a different group of porters from another tribe, the lower bidding group usually takes the work. This situation contributes to more conflict among the differing tribes on and off the mountain.

These differing tribes (Embu, Kikuyu, Masai, and Meru) can be considered a "firm" according to the definitions set forth by Nelson and Winter (1982), which describe evolutionary economics as a component of evolutionary theory of behavior and capabilities. Firms vary in routines they determine to conduct their business. A selection mechanism exists that explains how a firm's routine becomes revealed as being more efficient and effective than others. Nelson and Winter (1982) further explained how the least efficient and effective routines are often abandoned, or changed, or a firm is likely to not survive over time. When related to the porter population for Mount Kenya National Park, each tribe or firm offers their employment terms, which can be referenced as their

routine. As one tribe (firm) offers a more efficient or effective negotiation for their work (routine), operators make their choice accordingly. Porter tribes that do not offer enticing routines are left without work. There are circumstances where Nelson and Winter describe how a firm is able to demonstrate conditions under which some routines provide more sustainable competitive advantages compared to other routines. In this situation, the positive performance that the routine generates ensures the survival of the routine. It is feasible to match this situation with the porter population. Specific groups of porters may have proven their ability with prior work through various operators. Their performance may ensure work for future opportunities over other groups and though this may have positive impacts on the economic health of that particular tribe, it can also have negative impacts on the social health of the system as a whole.

Populations surrounding Mount Kenya National Park appear to split their time between tourism and agricultural-based employment opportunities within Kenya (T. Gregory, personal communication, August 7, 2011). There are no reliable figures representing the split between these two sources of income among this population. Those that choose to pursue tourism based employment opportunities usually start as assistant porters with the intention of working their way to the status of a head porter, then cook, and eventually a guide. Some may not acquire enough food handling experience to earn the position of cook but may still progress to that of a guide. Controlling factors that contribute to the determination of acquired positions include one's effort record, attitude, demand for higher ranking porters, and level of education (T. Gregory, personal communication, February 28, 2012). Guides are expected to be literate in the English language. The English literacy rate of Kenyan adults ages 15 and above was reported at

87% in 2009 ("Kenya Literacy Rate Data," n.d., para. 3); however, the specific literacy rates of the porter population are unknown. Though there is no literature available outlining the average time it takes to become a guide on Mount Kenya National Park, literature specific to the Nepalese porter population suggests that 10 years is common, though family connections could shorten this time (Law & Rodway, 2008).

The governing officials of Mount Kenya National Park appear to be interested in adjusting policy to create better situations involving the land in which they manage. This includes protection of the wildlife and natural resources, better relationships with the working populations, and enhanced reward experienced by the recreating tourists and other public members (S. Gitau, personal communication, February 27, 2012). Previous experience has affected the evolution of their policy over time. This effect may be considered imperfect learning and discovery, which is involved in evolutionary models relative to the social domain (Dosi & Nelson, 1994). They typically serve to explain the movement of something over time. This directly relates to the officials of the park where their end goal of effective and efficient management of the land is constantly evolving and continuing overtime. Their adjustments to affiliated methods of management are made through experience (imperfect learning and discovery).

Adjustments in policy specific to the working conditions for the porters of Mount Kenya National Park may yield positive social, institutional, and health benefits for both the porters and the governing officials. No official adjustments have been made to date except to make recommendations on reduced porter weight loads and higher standardized salaries across companies and job titles. However, these recommendations have not been enforced in as official policies. The recommendations seem to be having an effect as they

are used as guidelines of ethical practice by tour companies and also by the porter "firms" when negotiating rates.

The Kilimanjaro Porters Assistance Project was established in 2003 and has since been attempting to improve the working conditions of Kilimanjaro porters (Ndekirwa, Mtuy, Bernard, Valenti, & Forrest, 2011). In 2006 they began collecting information from this porter population regarding salaries, tip amounts, baggage weights, food provisions, and other items related to their work (Ndekirwa et al., 2011). In addition, they assisted the International Mountain Explorers Connection in the creation of a Partner for Responsible Travel Program (Ndekirwa et al., 2011). This program acknowledges those companies that adhere to recommended guidelines for proper porter treatment including not exceeding the load carry limits as set by the Tanzanian Wildlife Service listed above (Ndekirwa et al., 2011). Since the collection of data, which started in 2006, the Kilimanjaro Porters Assistance Project has presented an annual report to government ministers, park authorities, tour operators, mountain crew, and the general climbing public regarding current working conditions for porters on Kilimanjaro (Ndekirwa et al., 2011).

Similar to the Kilimanjaro Porters Assistance Project, the Kenya Wildlife Services would like to have annual surveys conducted of porters' working conditions in an effort to evaluate if the efforts of a university and community partnership, which could be called the Mount Kenya Porters Assistance Project (no official name has been used), is improving their health and well-being. Standardized measures for the entire porter population may ease the competition among them, thus helping to minimize tribal and other affiliated conflict. If any implemented policy is legally supported by the governing

officials, this may contribute to a positive viewpoint by the porters which ultimately may yield a positive social and institutional health benefit for the porter population.

Physical Health

The physical health of porters can be negatively impacted by the difficult conditions of the porter work on the mountains resulting in gastrointestinal ailments, colds and pneumonia, sprains, broken bones, and even death because of falls and pulmonary edema. The heavy weights carried by porters can negatively impact their health as well. The researchers have conducted educational workshops for porters to help improved their health related to water and food quality to reduce gastrointestinal ailments. Because the concern of the Mount Kenya National Park government officials is more with creating policy changes and recommendations that will result in reduced porter weight loads to improve their health these physical health concerns are discussed first. Later other physical health concerns are mentioned in this section.

Porter Weight Loads in Other Countries

In Nepal regulations do not exist that govern how much porters should carry (Law & Rodway, 2008). There are no age restrictions on who can be a porter, but the majority of porters are male; thus, very young boys and elderly men can be found working as porters (Law & Rodway, 2008). Additionally, there is a large range of documented weights being carried by porters in Nepal ranging from 35 kilograms by 12-year olds (Minetti, Formenti, & Ardigo, 2006) to an extreme case of a 22-year old carrying 150 kilograms (Law & Rodway, 2008). Additional studies looking at over 600

porters documented multiple porters carrying over twice their body weight (Malville, 1999).

The age range and loads carried by the Nepalese porter populations are considered unrealistic by Western standards and thus, many researchers have studied the energetics and physiology of this group and the work performed (Law & Rodway, 2008). When compared to the Mount Kenya National Park porter population, methods of load carry differ greatly. Nepalese porters routinely carry head supported loads exceeding their body weight (Bastien, Schepens, Willems, & Heglund, 2005). To achieve this style of carry, these porters use special equipment consisting of a tumpline (namlo), which is a rope that links the forehead to a basket (doko), which in turn leans along the porters bent back and is periodically rested on a T-shaped stick (tokma), also used as an alpenstock (Law & Rodway, 2008). Ultimately this population has discovered what they consider the most effective method for carrying a load in relation to money earned. Since payment for some porter loads in Nepal is based on weight, this population chooses to carry as much weight as is manageable even if negative health effects are possible (Law & Rodway, 2008). The load versus speed and energy-expenditure trade-off selected by these porters is to walk slowly for many hours each day, take frequent rests, and carry the greatest loads possible (Bastien et al., 2005).

Carrying Methods Differ from Nepal in Kenya

Carrying methods of the Mount Kenya National Park porter population differ from those used by the Nepalese porter population. Porters of Mount Kenya National Park use an assortment of different backpack or luggage style bags. Some tour operators

provide these. If not supplied, the porter is required to provide their own bag. In many cases, the porters are unable to acquire bags suitable for carrying heavy loads over long distances. Their bags may not have adequate back support or padding for the shoulders and waist. Often bags provided by the tour operator lack similar properties. It appears that regardless of the style of bag used, methods of carry include two shoulder style straps without the use of a hip belt. It is unknown at this time whether this decision is due to inadequate equipment or lack of education specific to the proper fitting and use of a long distance larger style backpack. Additionally, research specific to the physiological effects of this carrying method with this population has not been performed and/or documented. The carrying methods of the Kilimanjaro porter population appear similar to that of the porters of Mount Kenya National Park.

Recommendations for Mount Kenya National Park Weight Loads and Porter Clubs

In Mount Kenya National Park, similar to Nepal, there are currently no governing restrictions specific to the load weights carried by porters. Also, there is no minimum or maximum age expectation. The Kenyan Wildlife Service is currently working to establish a porters club that would set such restrictions and include policies and procedures to ensure adherence (S. Gitau, personal communication, February 27, 2012). The Kenyan Wildlife Service plans to use policies similar to the Tanzanian Wildlife Service on Kilimanjaro. On Mount Kilimanjaro, scales exist at the different start points for mountain trips and throughout the mountain at each high camp. The policy states that Tanzanian Wildlife Service employees are to weigh the loads of the porters at each of these sites. It

is understood that the tour operators are held responsible by method of a monetary fine if load weights exceed the set standard. Currently the load weight limit is set at 20 kilograms of group luggage plus 5 kilograms of personal items per porter operating on Kilimanjaro. The Kenyan Wildlife Service has recommended that the weight limit for Mount Kenya National Park be 18 kilograms of group luggage plus 5 kilograms of personal items. Park officials suspect that loads as high as 45 kilograms are being carried by the porters on Mount Kenya currently (T. Gregory, personal communication, February 28, 2012).

More recently, porters of Mount Kenya National Park have started resisting the heavier load expectations as set forth by their employer. This shift in mindset has spread throughout the porter culture. In some circumstances, groups of porters will deny work until a lower weight expectation is determined by the employer. Even with this change, there are other porters who will take the work regardless of the weight expectation. A lack in unity exists throughout the porter population specific to this topic, once again leading to a compromise in the social health of the porters as a group.

The weight carried by each porter may have negative effects on their physical health. The physical health construct in focus can be supported by the Health Belief Model (Glanz, Rimer, & Lewis, 2012). This model shares parallels with the target population and their working conditions relative to their physical health. It appears feasible that in order for sustainable change to occur, a porter must first believe that they either already are involved in unhealthy working conditions or that it is possible that their working conditions may become unhealthy (perceived susceptibility). Their belief would also include a level of severity specific to the identifiable condition or conditions they are

experiencing (perceived severity). Porters would need to possess a belief in the proposed intervention—load weight maximum restrictions (perceived benefits). Different triggers may aid in the porters decision to participate in the health intervention. This could include physical deterioration of their bodies from heavy load carries as evident by aches and pains experienced after a day's movement up the mountain (perceived barriers). The formation of a porters club and involvement in educational programs could promote strategies to activate a porters readiness to change (cues to action). Ultimately the porter's confidence in their ability to take action weighs heavily on the progression of intended change (self-efficacy).

The Kilimanjaro Porters Assistance Project 2010 annual report included 2,285 porter responses. 839 of these responses came from porters working for 19 partner companies. 1,446 responses came from porters working for 62 nonpartnered companies (Ndekirwa et al., 2011). The average group luggage load weight was recorded as 21.1 kilograms for partnered companies and 21.9 kilograms for nonpartnered companies (Ndekirwa et al., 2011). Complaints have been reported regarding problems with accurate measurements by Kilimanjaro National Park scales (Ndekirwa et al., 2011). Additionally, reports have been received that Tanzanian Wildlife Service staff may accept payments to allow higher than 20 kilograms of group weight to be carried by a porter (Ndekirwa et al., 2011).

Similar violations of recommended load weights could be occurring within Mount Kenya National Park. To date, there is not an equivalent association for the porters of the park, but they have begun to establish porter clubs. Because there has been no prior survey of porters' working conditions on Mount Kenya, similar data to the Mount

Kilimanjaro porters does not exist for Mount Kenya porters' health. A qualitative and quantitative survey has been undertaken by the researchers to address this issue of lack of data.

Additional Physical Health Issues and Concerns

Physical health concerns beyond those described previously related to porter load weights exist for the porters of Mount Kenya National Park. Environmental considerations as well as access to appropriate supplies and equipment are among different issues described in this section.

It is understood that the physiological function of the human body is altered when operating in a hypoxic environment at altitude (Tilton, 2010). Similar to Western tourists, porters often reside in lower elevations and thus do not adapt well when working at higher altitudes (Law & Rodway, 2008). Additional aspects posing concerns for porters exist when traveling and living on these large mountains. Most noticeable is the often deteriorating weather patterns. Ambient temperatures decrease as altitude increases. Precipitation and high winds are common in mountainous settings as are snow and colder wind chill values. These environmental risks combined pose a health concern to anyone who travels or lives among them, including porters.

Porters are often ill-equipped with regards to proper clothing and footwear for high altitude environments and mountain travel. They lack necessary equipment for each trip, such as a sleeping bag or backpack, contributing to hypothermia and musculoskeletal injuries (T. Gregory, personal communication, August 7, 2011). Some tour operators provide specific items for porters on a rental basis. For example, the Kilimanjaro Porters

Assistance Project explains that clothing, footwear, and equipment is available for some porters on an "as needed" basis. Mount Kenya National Park does not have a similar program in place for its porters. These types of items are available throughout markets in each country although porters are often unable to afford them. It is also worth noting that work in these harsh environments causes extra wear and tear on these personal items requiring more upkeep and frequent replacement, thus an added expense to this population.

Another physical health concern for individuals traveling and living on the mountain is high altitude illnesses. A measureable increase in ventilation and decrease in aerobic exercise performance has been recorded at elevations above 1,200 meters; thus this elevation is considered a starting point when defining high altitude (Tilton, 2010). It is more common for altitude illness to occur at or above 2,400 meters. Each of the three porter populations defined geographically throughout this chapter work at elevations above 2,400 meters. Three primary classifications of altitude illness exist. These include acute mountain sickness (AMS), high altitude cerebral edema (HACE), and high altitude pulmonary edema (HAPE). Each of these involve symptoms detrimental to an individual's functionality and if left untreated can eventually lead to death (Tilton, 2010). Reliable numbers specific to the occurrence of these illnesses in the porters of Mount Kenya National park does not exist.

Gathering days of sickness and types of impairment in porters and measuring changes is desirable to determine if the physical health of porters on Mount Kenya is improving or deteriorating.

Economic Health

Wage inequality is an additional concern regarding the porters of Mount Kenya National Park. Currently there is no government regulation specific to this topic (S. Gitau, personal communication, February 27, 2012). Mount Kenya National Park has provided recommendations as to the daily payment rates associated with the different levels of hierarchy within its porter population. A lack of consistency exists in these recommendations throughout the past (S. Gitau, personal communication, February 27, 2012). Wages for the lower level porter classification range between 350–550 Kenyan Shillings (approximately 4.21–6.61 United States Dollars) per day (T. Gregory, personal communication, February 28, 2012).

Payment methods are also not standardized for Mount Kenya National Park. Payment of daily wages to the porters is deemed the responsibility of the hiring agency. Typically a single day's advance is provided to each porter prior to the start of a trip for the purchase of personal items including food. Remaining money may be left with the porter's family. When a trip is completed, the hiring agency pays the remaining wage amount to each porter and their portion of any tip left by the client (J. Wright, personal communication, February 28, 2012). Unfortunately the appropriate payment and/or tip amount is often not distributed to the porters, thus arguments between the porters and hiring agency take place. Lack of fluidity in the transfer of funds from the hiring agency to the porter is a concern of both the Kenyan Wildlife Service and the porter population (T. Gregory, personal communication, February 28, 2012).

A framework of the economic health used to understand porter services and wages is the neoclassical microeconomics theory. This theory focuses on how market

forces determine the quantity, quality, and price of services and goods sold in a market (Barney, 2001). Associated assumptions include economic actors (stakeholders) as being large users of provided goods and services: that markets can vary in their competitiveness and that information can vary in how it is diffused across a market. Further detail of this framework explains that resources and capabilities are elastic in supply. When demand for a particular resource or capability increases, the price of acquiring this resource will also increase, and the total amount of this resource made available to the market will also increase. As tourism grows within Mount Kenya National Park, so does the demand for porter services. The porter services can be considered elastic in nature. Thus a demand in porter services can yield an increase in the cost of the wages for the porters. This demand may also increase the amount of porters in the working population as a whole. Porters have shared their opinion that the wage amount among the different operators is lower than desired and that there is severe wage inequality among the different available jobs.

As demand for porter services increases on Mount Kenya National Park, operators may not be adjusting wages appropriately. Lemos (2009) described a study involving minimum wage effects on employment in a developing county (Brazil). The findings of this study show that a minimum wage implementation resulted in no or small adverse employment effects, meaning that tour operators cut the size of their workforce if they had to pay more per day. Hopefully, a minimum wage determined by the Kenyan Wildlife Service could help improve porter salary and not impact chances of employment for Mount Kenya National Park.

Recommended Wage Guidelines for Mount Kenya Porters Clubs

An expectation of the Kenyan Wildlife Service sponsored porters club is a required minimum wage of 800 Kenyan Shillings (approximately 9.62 United States Dollars) per porter per day for lower level porter classification. Additionally, it will be expected that hiring agencies pay this amount in full at the conclusion of each trip and distribute the tips associated objectively (S. Gitau, personal communication, February 28, 2012). These wage expectations are similar to those enacted on Kilimanjaro by the Tanzanian Wildlife Service which were shown to effectively increase wages there to an average of 9,647 Tanzanian Shillings (approximately 6.05 United States Dollars). The Kilimanjaro Porters Assistance Project believes that the wages should be distributed to the porters by a representative of the hiring agency's office rather than by the head guide in the field for fear that the head guide may not be paying the full amount intended (Ndekirwa et al., 2011). This would also be a positive recommendation for Kenyan porters.

Conclusion

Based on the prior literature review and interviews with park officials, it appears that Mount Kenya National Park contributes to the economic welfare of its surrounding populations through tourism and agricultural opportunities. As a World Heritage Site its varied high altitude mountainous landscape attracts an array of tourism similar to both Kilimanjaro and Sagarmatha National Parks. Tourism related activities provide many opportunities for employment on the mountain, the most abundant of which is working as a porter. Porters are the only means of transportation of goods for tourism related

activities such as hiking and mountaineering on Mount Kenya. Additionally, it provides income to individuals who might otherwise be unemployed. Mount Kenya porters appear to value the opportunities associated with working as a porter (S. Gitau, personal communication, February 27, 2012).

The Strategic Prevention Framework (SPF) has been presented in Chapters 1 and 2 as the planning model for the activities of the porter health promotion partnership. This partnership was formed by the Mount Kenya National Park officials and University of Utah health professionals with support of students. To promote sustainability of the partnerships efforts, in the future, the University of Utah research team and the Mount Kenya National Park officials should also include the outdoor tour operators to work together in establishing improved working conditions for the associated porters. Some considerations should include minimum age regulations, load weight maximums, load carrying equipment requirements, minimum wage standards and payment enforcement, and personal clothing, footwear, and equipment assistance. Research on this population specifically will aid in the overall evaluation of current existing conditions and future improvements.

When considering the working environment for the porter population of Mount Kenya National Park, the four health constructs discussed in this chapter may contribute as indicators of the overall health of the porters. These include social health, institutional health, physical health, and economic health. Theoretical support exists for the consideration of these separate health constructs when evaluating the overall health of this working group.

Park officials, tour operators, and the porters themselves need to discuss realistic goals and objectives for this working population. The park officials then need to establish policies and procedures that protect the rights and health of porters. Enforcement of such requirements is equally important. Collaboration with tour guide operators is essential in the sustainability of this effort. Additional agreement and appreciation from the porters is necessary for the overall success.

In addition to enforcement of protective rights for this population, education and training in related occupational skills is arguably equally important. These opportunities could enhance employment options and further a porter's progression, safety, and well-being.

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CHAPTER 3

UNDERSTANDING THE HEALTH OF THE MOUNT KENYA NATIONAL PARK PORTER POPULATION: A QUALITATIVE APPROACH

Abstract

The purpose of this qualitative research was to gain an understanding of the working conditions of the porter population of Mount Kenya National Park in Kenya, Africa related to their health in four major constructs. These new thematic data would help the researchers to design appropriate questions for a quantitative health survey and to be able to better interpret the results with more in-depth understanding of the context of the porters' working conditions. The questions explored involved porters' subjective perceptions of changes in their working conditions and impact on their health since the start of their employment. The qualitative methodological techniques used were narrative based in-depth interviews with data analysis using hermeneutic thematic content analysis (Wertz, et al., 2011). Convenient and snowball sampling techniques were used to acquire the study cohort of currently working porters. Porters previously involved in related expeditions were contacted by the research team and requested to participate in this study, resulting in 15 married participants from 22 to 46 years of age. The participants all spoke English although Kikuyu Swahili is their primary language; hence, a local translator was hired to assist during the open ended who was from the Meru tribe, was

from the Kikuyu tribe. Interviews were conducted at a convenient location for all. Each interview lasted about 15 minutes and began with personal introductions, some time to get to know each other and establish trust, and an explanation of the purpose and the consent procedure. Then the researcher directed the participants to consider questions related to their working conditions as a porter within Mount Kenya National Park based on the framework of the four health constructs previously defined (physical health, economic health, social health, and institutional health). Participants were asked to explain how conditions were when they started working, any change in conditions experienced over time, and their current working conditions. They were tape recorded with permission of the participant for later thematic analysis.

Subsequent data analysis was based upon theories of health promotion, education, economics, and evolution. The results of this study suggest that porters have experienced limited employment opportunities, a difficult start to their employment, wage concerns including lower than desired per day wage rates, and load weight improvements. Additionally, the porters expressed a need for clothing, equipment, and education. A qualitative methodology was employed to assist in understanding the effects of working conditions on the porter populations of Mount Kenya National Park in Kenya, Africa.

Background or Context of the Qualitative Study

The life of a porter is difficult and dangerous. For the sake of making a living they take calculated risks with their health. Life on the mountain and at high altitude can lead to major health problems and even death. The physical health of porters can be negatively impacted by the difficult conditions of the porter work on the mountains,

resulting in gastrointestinal ailments, colds and pneumonia, sprains, broken bones, and even death because of falls and pulmonary edema. The heavy weights carried by porters can negatively impact their health as well. The researchers have conducted educational workshops for porters to help improve their health related to water and food quality to reduce gastrointestinal ailments. Because of the concern of the Mount Kenya National Park government officials to gather information on the working conditions and health of porters, this qualitative research study was conducted. The information will hopefully be used in creating policy changes and recommendations that will result in improved porter health.

Study Purpose

The purpose of this qualitative research was to gain a better understanding of the perceived working conditions by the porters working in Mount Kenya National Park in Kenya, Africa. The open-ended questions were structured to provide information based on the proposed framework of the porters' health in four major health constructs or areas—physical, economic, social, and institutional health. These new thematic data were needed to help the researchers to design appropriate questions for a quantitative health survey of a larger sample of porters and to be able to better interpret the survey results with more in-depth understanding of the context of the porters' working conditions. The questions explored involved porters' subjective perceptions of changes in their working conditions and impact on their health since the start of their employment.

Need for the Qualitative Health Study

While there is considerable research from Nepal, there is a lack of research concerning the impact of climbing tourism on a porter's health and lifestyle in the mountainous regions of Africa including Kilimanjaro National Park in Tanzania, Mount Kenya National Park in Kenya and the Rwenzori Mountains National Park in Uganda (Peaty, 2012). Recently in 2006, the Kilimanjaro Porters Assistance Project in an attempt to improve the conditions of Kilimanjaro porters (Ndekirwa, Mtuy, Bernard, Valenti, & Forrest, 2011) began collecting information from this porter population regarding salaries, tip amounts, baggage weights, food provisions, and other items related to their work (Ndekirwa et al., 2011).

According to the Kenyan Wildlife Service, no research exists specific to the porters of Mount Kenya National Park (S. Gitau, personal communication, February 28, 2012). Clients and operators involved in Mount Kenya National Park tourism opportunities (hiking, wildlife viewing, mountaineering, etc.) suspect that the working conditions for this porter population are inappropriate and warrant change (T. Gregory, personal communication, August 7, 2011). Similar to the Kilimanjaro Porters Assistance Project, the Kenyan Wildlife Services would like to have annual surveys conducted of porters' working conditions in an effort to improve their health and wellbeing. Hence, the need to design a good survey and also to understand the cultural context of the porters on Mt. Kenya. Luckily, the research team has worked with the porters on prior expeditions and also have conducted health promotion workshops for the porters on Mt. Kenya so they were not totally new to their realities of the working conditions of the porters.

However, it was needed to also ask for the porters' perceptions or interpretations of their working conditions and impact on their health in the four major construct areas.

Porter Lifestyle and Institutional Background

This study focused on the impact of change on overall health as experienced overtime by the porter population working in Mount Kenya National Park in Kenya, which is the second highest peak in Africa. While four ethnic tribes live in the foothills of the park, including the Masai, Kikuyu, Meru, and Embu, the majority of the working porters are Kikuyu (T. Gregory, personal communication, August 7, 2011).

Kenyan Wildlife Service officials do not require that all mountain undertakings make use of local guides and porters for trips within Mount Kenya National Park (S. Gitau, personal communication, August 8, 2011). This said, the majority of trips that occur within the park involve the use of porters. The more popular working season for Mount Kenya National Park include the months of January, February, March, June, July, and August. During this time a porter may work between two and four trips per month. A trip will range between 4 and 7 days in length (T. Gregory, personal communication, February 28, 2012). The following sections describe some of the concerns with porter's health that lead to a need to conduct this qualitative research on changes in porter's health following the four proposed health related areas or constructs.

Physical Health Concerns

It is understood that the physiological function of the human body is altered when operating in a hypoxic environment at altitude. Similar to Western tourists, porters often

reside in lower elevations and thus do not adapt well when working at higher altitudes (Law & Rodway, 2008). Additional environmental physical health concerns exist when traveling and living at altitude. Most noticeable is the often deteriorating weather patterns. Ambient temperatures decrease as altitude increases. Precipitation and high winds are common in mountainous settings. Snow is likely, as are colder wind chill values. These environmental risks combined pose a health concern to anyone who travels or lives among them including porters.

Another issue present in this porter population, as is with similar working populations, is a lack of clear understanding concerning duty of care if a working porter becomes injured (Bellis, Parris, Thake, & Richards, 2005). The responsibility of porter welfare is not clearly defined by the associated land managers. Instead, duty of care appears to be the responsibility of the tour guide operator or hiring agency, although this is not always the case. Consideration needs to be put forth concerning policies and procedures for handling illness or injury of porters while working. This includes onset, initial response, treatment and extended care. Responsibility of expense associated also needs to be considered.

Knowledge of load weights concerns and carrying methods is known with respect to the porter population of Mount Kenya National Park. There are currently no governing restrictions specific to the load weights carried by these individuals. Also, there is no minimum or maximum age expectation. The Kenyan Wildlife Service is currently working to establish a porters club following the model set for Mount Kilimanjaro National Park that would set such restrictions and include policies and procedures to ensure adherence (S. Gitau, personal communication, February 27, 2012). The Kenyan

Wildlife Service intends on using policies similar to those used by the Tanzanian Wildlife Service with the Kilimanjaro porter population. The Kenyan Wildlife Service has recommended that the weight limit for Mount Kenya National Park be 18 kilograms of group luggage plus 5 kilograms of personal items. The Kenyan Wildlife Service suspects that loads as high as 45 kilograms are being carried by the porters on Mount Kenya currently (T. Gregory, personal communication, February 28, 2012).

Economic Concerns about Porters

Wage inequality is an additional concern related to the porters of Mount Kenya National Park. Currently there is no government regulation specific to this topic. Park officials have provided recommendations as to the daily payment rates associated with the different levels of hierarchy within its porter population. A lack of consistency exists in these recommendations throughout the past (S. Gitau, personal communication, February 27, 2012). Reliable figures do not exist concerning the wages of this porter population. Wages for the lower level porter classification range between 350–550 Kenyan Shillings (approximately 4.21–6.61 United States Dollars) per day (T. Gregory, personal communication, February 28, 2012). Payment methods are also not standardized for Mount Kenya National Park. Payment of daily wages to the porters is deemed the responsibility of the tour guide operator.

Social and Institutional Health Concerns

With increased competition for jobs that are brokered through tribal porter groups, there is a possibility of social tension and conflict between the tribes. The

recommendations of the Kenyan Wildlife Services can impact additional conflict between porters and tour operators who want them to carry higher weight loads or accept lower wages.

Theoretical Justification for the Four Construct Health Framework

This study focuses on the impact of change on overall health as experienced throughout a porter's employment history while working within Mount Kenya National Park. Four constructs are of interest with respect to the overall health of this population. These include physical health, economic health, social health and institutional health. Research suggests that positive contributions in each of these four categories may yield overall health benefits for this porter population (Dixon, 2000; Lynch, Kaplan & Shema, 1997; Wallston, Alagna, DeVellis, & DeVellis, 1983). Different health and economic theories provide support for the proposed four health constructs concerning this study and are discussed below.

Physical Health Construct Theory

The physical health construct associated with this research is supported by the Health Belief Model (Glanz, Rimer, & Lewis, 2002). This model shares parallels with the target population and their working conditions relative to their physical health. It appears feasible that in order for sustainable change to occur, a porter must first believe that they either already are involved in unhealthy working conditions or that it is possible that their working conditions may become unhealthy (perceived susceptibility). Their belief would also include a level of severity specific to the identifiable condition or conditions they are

experiencing (perceived severity). Porters would need to possess a belief in the proposed intervention—load weight maximum restrictions (perceived barriers). Different triggers may aid in the porters decision to participate in the health intervention. This could include physical deterioration of their bodies from heavy load carries as evident by aches and pains experienced after a day's movement up the mountain. Ultimately the confidence of the porter in their ability to take action weighs heavily on the progression of intended change (self-efficacy).

Theory for the Economic Health Construct

This construct is associated with the target population through financial exchange between the porters and the tour guide operators. Typically the porters do not determine their wage directly. This is similar for government officials. Usually the operator sets the amount without regulation by the government and provides to the porter accordingly. Most wages are determined by your position as a per day amount. There are three positions specific to the porter population of Mount Kenya National Park. From lowest paid to highest, these include a porter, a head porter, and a cook.

Similar with the load weight amounts described previously, the government has recently recommended a minimum wage for all three levels of porters. Current discussion may lead to a legally defined minimum wage for this working population.

A supporting framework of this construct as it relates to this research is the neoclassical microeconomics theory. This theory focuses on how market forces determine the quantity, quality, and price of services and goods sold in a market (Barney, 2001). Associated assumptions include economic actors (stakeholders) as being large

users of provided goods and services, that markets can vary in their competitiveness, and that information can vary in how it is diffused across a market. Further detail of this framework explains that resources and capabilities are elastic in supply. When demand for a particular resource or capability increases, the price of acquiring this resource will also increase, and the total amount of this resource made available to the market will also increase. This relates directly to the porters services and wages associated. As tourism grows within Mount Kenya National Park, so does the demand for porter services. The porter services can be considered elastic in nature as previously discussed. Thus a demand in porter services can yield an increase in the cost of the wages for the porters. This may also increase the number of people wanting to work as porters, thus increasing the working porters population as a whole. A described concern of the porters is that the wage amount among the different operators is lower than desired and that there is severe wage inequality among the different available jobs or job categories, for example, head porter, porter, cook, etc. (T. Gregory, personal communication, February 28, 2012).

Currently there is no minimum wage legally required for the different types of jobs in the porter population (S. Gitau, personal communication, August 8, 2011). The elasticity of the porter services may be exploited such that as demand increases for porter services on Mount Kenya National Park, the operators may not increase the wages accordingly if the supply of porters willing to accept low wages is sufficient to meet demand. Lemos (2009) described a study involving minimum wage effects on employment in a developing county (Brazil). The findings the Lemos study show that minimum wage implementation relates with no or small adverse employment effects (e.g., fewer jobs). Therefore a minimum wage determined and enforced by the Kenyan

Wildlife Service may contribute positively to the economic health of the related porter population.

Theory Behind the Social and Institutional Health Construct

Relative to this study, the social health construct is defined as the relationship of porters with each other regardless of tribal or other affiliation. The institutional health construct is defined as the relationship a porter has with the governing body of Mount Kenya National Park, the Kenyan Wildlife Service.

Porters of the same tribe often stay together and negotiate the terms of the work as a group. If one group of porters from one tribe is willing to negotiate a more lucrative arrangement for an operator versus a different group of porters from another tribe, the lower bidding group usually takes the work. This situation contributes to more conflict among the differing tribes.

These differing tribes (Embu, Kikuyu, Masai, and Meru) can be considered "firms" according to the definitions set forth by Nelson and Winter (1982), which describe evolutionary economics as a component of evolutionary theory of behavior and capabilities. Firms vary in routines they determine to conduct their business. A selection mechanism exists that explains how a firm's routine becomes revealed as being more efficient and effective than others. Nelson and Winter (1982) further explained how the least efficient and effective routines are often abandoned, or changed, or a firm is likely to not survive over time. When related to the porter population for Mount Kenya National Park, each tribe or firm offers their employment terms, which can be referenced as their routine. As one tribe (firm) offers a more efficient or effective negotiation for their work

(routine), operators make their choice accordingly. Porter tribes that do not offer enticing routines or business products at the best rates are left without work. There are circumstances where Nelson and Winter describe how a firm is able to demonstrate conditions under which some routines provide more sustainable competitive advantages compared to other routines. In this situation, the positive performance that the routine generates ensures the survival of the routine. It is feasible to match this situation with the porter population of Mount Kenya National Park. Specific groups of porters may have proven their ability with prior work through various operators. Their performance may ensure work for future opportunities over other groups and though this may have positive impacts on the economic health of that particular tribe, it can also have negative impacts on the social health of the system as a whole.

The governing officials of Mount Kenya National Park appear to be interested in adjusting policy to create better situations involving the people and the land in which they manage. This includes protection of the wildlife and natural resources, better relationships with the tribal working populations, and enhanced reward experiences by the recreating tourists and other public members (S. Gitau, personal communication, February 27, 2012). It is not without previous experience that their policy has evolved over time. Evolutionary models relative to the social domain involve some level of imperfect learning and discovery (Dosi & Nelson, 1994). They typically serve to explain the movement of something over time. This directly relates to the officials of the park where their end goal of effective and efficient management of the land is constantly evolving and continuing overtime. Their adjustments to affiliated methods of management are made through experience (imperfect learning and discovery).

Adjustments in policy specific to the working conditions for the porters of Mount Kenya National Park may yield positive benefits for both the porters and the governing officials. Standardized measures for the entire porter population may ease the competition among them, thus helping to minimize tribal and other affiliated conflict. If any implemented policy is legally supported by the governing officials, this may contribute to a positive viewpoint by the porters, which ultimately may yield a positive social and institutional health benefit for the porter population.

Methodology

Qualitative research's essential concern is meaning and understanding (Bogdan and Biklen, 1982). The purpose of qualitative research is to understand and display the experiences and actions of people as they encounter, engage, and live through situations (Elliott, Fischer, & Rennie, 1999). This further has the intention of exploring ways in which people makes sense out of their lives. Qualitative research includes techniques such as participant observation, focus groups, and in-depth interviews. Each of these assists the researcher in the collection of relatively rich information about relatively few people (Davidson, 2007). More detailed, these techniques are well suited to analysis that focuses upon meanings and perceptions since they allow terms, concepts, and relevant issues to be defined by the participants rather than predetermined by the researcher (Davidson, 2007).

Qualitative research can be narrative in form allowing close attention to detail. The narrative approach allows a participant to share their experience as a story where everything shared has the potential of being a clue or meaningful piece of information

(Wertz et al., 2011). Participants are encouraged to speak in their own tone and provide their own perspective. It is important that researchers make clear their theoretical orientations and personal anticipations in advance of a study and as they become apparent throughout the research (Elliott et al., 1999). The researchers values, interests, and assumptions contribute to the understanding of the narrative provided by the participant and therefore should be considered throughout the study.

In this study of the porter population of Mount Kenya National Park, qualitative methods were employed to explore the individual perceptions of the working conditions associated with being a porter. A narrative approach was used to acquire information from each porter. Questions related to the four constructs previously discussed (physical health, economic health, social health, and institutional health) were prepared in a semistructured interview (see Table 3.1). The questions started with a discussion of how conditions were when a porter started their employment. The discussion then included if and how the conditions changed throughout their employment. Finally the porter was asked to describe how their working conditions are currently and relate them to their overall health.

Research Question

(1) For this qualitative in-depth interview study the major research question was "What are the perceptions of change in working conditions over time as it relates to one's sense of overall health for the porter population of Mount Kenya National Park?"

Background of Researcher

The researcher had previously visited this region on four prior occasions before this study. This included one trip to Kilimanjaro National Park in Tanzania and three to Mount Kenya National Park in Kenya. On each experience, the researcher interacted with the associated porter population. This included the use of their services for mountaineering related expeditions as well as working as an educator in various outdoor recreational courses designed for the porters themselves.

Prior to this study, the researcher had acquired 8 years of professional outdoor recreation training and certification through university affiliated programs and various related professional outdoor organizations (e.g., American Mountain Guides Association). During this period, the researcher worked in different professional capacities including mountain guiding, outdoor education, and related research opportunities.

Trust and acceptance of the study's participants were acquired on the researcher's first expedition to Mount Kenya National Park. The researcher participated in an unsupported expedition that involved a technical climb of Mount Kenya's summit referred to as Batian. This summit is rarely achieved and thought of as a significant accomplishment by the porter population of the park. Prior to this undertaking, the researcher experienced difficulty in conversation and interaction with the porters. After a successful climb of Batian, the porters were much more approachable and accepting of the researcher.

The researcher began conversation with the local porters regarding their working conditions. Health concerns that seemed apparent were confirmed through in-depth

discussion and storytelling. For example, it appeared evident that the porters were carrying heavy loads. This was confirmed by the porters as they described carrying loads as high as 35 kilograms. The porters appeared to be inadequately equipped for high altitude mountain expeditions. They explained that their wages were too low which prevented the acquisition of proper clothing and equipment. Other concerns and frustrations were discussed and confirmed in conversation between the porters and the researcher.

The researcher returned to the United States and initiated conversations with fellow colleagues who shared similar professional experience in the field of outdoor education and health promotion. A small team totaling six was formed with a joint goal of returning to Mount Kenya National Park and developing educational training programs that could benefit the local working professionals. Additionally, the team would work alongside the Kenyan Wildlife Service in the exploration of policy intervention and provide recommendations that would help improve the working conditions for associated outdoor professionals (e.g., porters and guides). This team developed into a United States based company titled Mountain Education and Development or MED.

The first MED expedition returned to Kenya in 2011. The researcher and five team members offered wilderness medicine, technical rock climbing, and outdoor living skill courses for porters, rangers, and guides who worked within Mount Kenya National Park. This initial expedition was exploratory in determining what educational opportunities were most needed and beneficial for these local populations. Additionally, the team met and interacted with officials from the Kenyan Wildlife Service. These meetings involved discussion and consideration of policy intervention as a method to

improving the working conditions for the porter population of the park. The Kenyan Wildlife Service had already started implementing work related restrictions for the porters such as load weight maximums and minimum wage recommendations in an effort to improve the overall working conditions for these individuals. Enforcement and further advancement of these policies were discussed with the MED team.

A larger MED team, which included the researcher, returned to Mount Kenya National Park in 2012. Educational opportunities further developed with more focused curriculums to meet the needs and requests of the local working populations. Partnerships between MED and United States based Universities developed. Internship opportunities for affiliated university students were established allowing their involvement in content delivery during the educational courses in Kenya for the porters, rangers, and guides. Meetings continued between MED and the Kenyan Wildlife Service.

After involvement in two educational MED expeditions to the region, the researcher initiated this study with the intention of generating a better understanding of how working conditions for the porters of Mount Kenya National Park have evolved over time and how they affect this population currently. It should be recognized that the porters involved in this study knew the researcher as a previous and current MED team member.

Study Participants

Study participants were recruited from the town of Naro Moru just outside of the West entrance into Mount Kenya National Park during November 2012. Inclusion criteria included those that worked as a porter, head porter, or cook within the national park and

were 18 years or older in age. Additional inclusion criteria required verbal agreement to consent as deemed appropriate by the associated Institutional Review Board. Convenience and snowball sampling techniques were used to select porters. For example, porters previously involved in related expeditions were contacted by the researcher and requested to participate in this study resulting in 15 participants' total. A local translator was hired to assist during all researcher and participant interactions. The participants all spoke English although Kikuyu Swahili is their primary language.

All participants involved in this research were male porters, between the ages of 22 and 46. All but one participant was identified as a member of the Kikuyu tribe. The single participant was from the Meru tribe. All participants were working as porters within Mount Kenya National Park. The length of employment varied from half a year to 19 years with a mean years of employment equal to 7 years. All 15 participants were married with children. Additionally each participant was able to speak some English and answer the questions asked during the interview process. All questions were asked in English by the researcher. The translator assisted using the participant's native language, Kikuyu Swahili, as needed.

Location and Logistics

The researcher traveled to Kenya, Africa during a low season month (November 2012). The researcher met with the translator and performed all necessary recruitment procedures, which involved contacting previously affiliated porters, explaining the study purpose, informing of the associated logistics, and requesting their participation. Arrangements were made to meet the research participants at a local gas station on the

north side of the town of Naro Moru. Interviews occurred between 2 days midweek at this gas station. Each participant was incentivized with a Black Diamond headlamp at the conclusion of their participation in the interview.

The Interviews

During 2 days of interaction with the participants, the researcher conducted semistructured, in-depth interviews. Each interview began with personal introductions, some time to get to know each other and establish trust, an explanation of the purpose, and the consent procedure. Then the researcher directed the participants to consider questions related to their working conditions as porters within Mount Kenya National Park and the four health constructs previously defined (physical health, economic health, social health and institutional health). Participants were asked to explain how conditions were when they started working, any change in conditions experienced overtime, and their current working conditions. Questions were left open ended as it was intended to allow the sharing of information beyond the researcher's viewpoint. Each interview lasted approximately fifteen minutes. They were tape recorded with permission of the participant for later thematic analysis.

Analysis

Qualitative research methods were developed in the social sciences to allow researchers the ability to study cultural and social phenomena (Myers, 1997). Different qualitative data sources exist including observation, interviews, questionnaires, and the researchers' impressions and reactions. In this study, narrative interviews of participants

were tape recorded by the researcher and later transcribed into a textual representation. Kaplan and Maxwell (1994) provided support that the ability to understand a phenomenon from the point of view of the participants and its specific social and institutional context is largely lost when textual data are quantified. Therefore the methods associated with this study as qualitative focused. Further, this study specifically involves the hermeneutic experience as a mode of analysis for the acquired participant interviews and is discussed below.

Hermeneutic Experience

Gadamer (1976) explained the hermeneutic experience as an inclusion of both the horizon (perspective) of the interpreter and the historical conditions that are brought to the interpretive study. Further, the readers (as interpreters) will also approach the transcribed interviews and participant stories with their own horizons. Both the researcher and reader bring their own preconceptions to the analysis process in qualitative research (Knoch, 2006). The researcher forms a dialogue with the text similar as a reader does with an interpretation. A basic understanding of this experience is that the emerging themes from the text are not always the same for the researcher and the reader. In this situation, the reader should be able to follow the path in which researchers arrived at their interpretations (Knoch, 2006). Perfect agreement of interpretations is not expected among different individuals.

In hermeneutics, the basic question is what is the meaning of this text? (Radnitzky, 1970). Gadamer (1976) introduced the concept of a hermeneutic circle as a dialectic between the understanding of the text as a whole and the interpretation of its

parts. Understanding rotates constantly from the whole to the part and back to the whole. (Meyers, 1997). This is explained by Gadamer as a circular relationship.

Theme Identification

Analyzing text in qualitative research involves several tasks. Among these include (1) discovering themes and possibly subthemes, (2) deciding which themes are important, and (3) linking themes into theoretical models (Ryan & Bernard, 2003). Theme identification dates back as early as anthropologist Morris Opler (1945). He said, "In every culture are found a limited number of dynamic affirmations, called themes, which control behavior or stimulate activity. The activities, prohibitions of activities, or references which result from the acceptance of a theme are its expressions. The expressions of a theme, of course, aid us in discovering it." More recently, Strauss and Corbin (1990) have determined that the links between expressions and themes are "conceptual labels placed on discrete happenings, events, and other instances of phenomena."

Themes emerge both from the data (an inductive approach) and from the researcher's prior theoretical understanding of the phenomenon under study (an a priori approach; Ryan & Bernard, 2003). Theme identification typically starts with proofreading the collected text and underlining key phrases (Sandelowski, 1995). In this study, interviews were tape recorded. The researcher then transcribed each interview and checked the transcription's accuracy to the tape recorded data twice. This analysis technique is supported by Bogdan and Biklen (1982). The transcription process occurred once the researcher had returned back to the United States from Kenya. Therefore the

transcriptions were not confirmed with each participant as a method of validating the credibility of the data.

Themes were identified in the transcriptions as the researcher noted repetitious expressions shared by the participants throughout the interview process. Ryan and Bernard (2003) supported repetition of topics within the data as one of the "easiest ways to identify themes." The higher the frequency of an expression in a text, the more likely it is to be a theme.

To process the themes identified, the researcher used a variation of the "cutting and sorting" technique (Lincoln and Guba, 1985). When sorting through the text of each transcribed interview, quotes or expressions were marked with different color highlighters where each color represented a similar concept. After this process was performed for all 15 interviews, the researcher identified each grouping with an associated name. These names represented each identified theme. The transcribed data and this thematic analysis were double checked by a qualitative researcher who teaches qualitative methods at a major university. The results were also presented a year later to the Kenyan Wildlife Service and to some of the porters for their interpretation of the results.

Major Themes Identified

In this study, five themes were identified from the data analysis process. These themes included limited employment opportunities; difficulties related to starting employment as a porter; wage concerns; load improvement; and clothing, equipment, and education needs. Each of these themes is elaborated in more detail below.

Limited Employment Opportunities

All of the interviews involved information relative to why the participant became a porter. Employment surrounding Mount Kenya National Park appears to be limited. Porters would rather have a job and receive a wage than stay stationary without the ability to provide basic needs to themselves and their family. Porters appear interested in work as it becomes available to them. Due to their geographic location, access to work as a porter may be more abundant than other opportunities such as those available in a more developed infrastructure.

> *"I just one thing that I made me want to go to the mountain most of them are going to mountain so I got involved. I need a job."*
>
> *"I became a porter to find a place for daily bread instead of staying idle."*
>
> *"I became a porter for the payment. It was the only opportunity when I started."*

Difficult Beginnings

Each of the interviews contained some comparison of working conditions over time for the research participant. A common focus involved conditions when the participant started working as a porter. Participants claimed that it was more difficult in the beginning due to varying reasons. Among these were lack of experience, physical adjustment to carrying heavy loads, and the environmental conditions associated with working on the mountain. The participants worked through this difficult beginning and continued their employment as a porter regardless of the possible related negative health effects.

> *"When I started working was very difficult because I don't have experience. The journey was not good."*

"In the beginning my health is good, but sometimes my body is feeling it because we carry a lot of kg."

"It was harsh conditions because I was not used to the conditions of working."

Wage Concerns

The participants all share a common belief that the wage amounts associated with porter work within Mount Kenya National Park is inconsistent and not adequate. Some believe the money is "Ok" but not "Good" or "Great." All would like to see the per day wage increased due to the nature of the work performed. The participants appear to believe that their efforts warrant more payment than they are currently receiving.

"I was just paid 400 Kenyan Shillings per day. The money was not good because the conditions that the mountain. The climate was not good. We need to raise the money to 700 Kenyan Shillings per porter (per day)."

"The money is not ok. When we started the work in the morning and in the evening, maybe, to up the salary because 700 Kenyan Shillings is hard because the amenities are going up but our salaries are still down."

"When I started, they gave us 350 Kenyan Shillings, 380 Kenyan Shillings, or 400 Kenyan Shillings per day but right now it is 500 Kenyan Shillings, which is ok right now. I want more. Like 800 Kenyan Shillings."

Load Improvement

Participants were asked about the loads carried while working as a porter within the National Park. This resulted in responses of a noticed weight decrease in the amount they are expected to carry since initially starting their employment as a porter. This change appears related to time and cultural shift rather than due to physiological adjustment by the porter as associated with increased experience. Each participant

appeared pleased with this change and associated it with emotions of happiness and relief.

> *"When I started the bags were more than 30 kg. The luggage. There was a complaint about them being too heavy and the director of the company dropped it to 20 kg."*

> *"In the past we carried more than 34 kg, which was bad because we are not a many people for a porter. Now we carry 18 to 22 kg. It is not hard now."*

> *"When I started on the mountain we carried about 25 kg, 26 kg. Now we carry 18 or 19 kg. We just talked as a group and said we carry a lot of kilograms and walk a long distance, so we sit together and talk, and then we talked to our bosses. Sometimes the Kenyan Wildlife Service helped but not all the time. We complained to the Kenyan Wildlife Service to help us and they did sometimes."*

Clothing, Equipment, and Education Needs

An additional theme identified by the researcher involved the acquisition of clothing, equipment, and education. A need for these items and or services was stated in each interview. Lack of these items is evident throughout the porter culture for Mount Kenya National Park. The discussion with each participant validated this concern. Each participant expressed a lack of available resources specific to these three items. Additionally, each participant confirmed that access to these three items would assist in the improvement of working conditions within the park.

> *"It would be good to find a donor to help us now. Coats, jackets, boots. Even education. Provide a seminar about hiking Mount Kenya."*

> *"Training would benefit porters or cooks because many people don't go through school or work of tourism, so maybe it can get us better."*

> *"To see well equipped with jackets and boots, maybe from the club. Sometimes education from a private company would be a good thing. It would be good for the clubs to assist porters by providing better equipment with jackets and other things."*

Conclusion

The focus of this study was to understand the working conditions of porters who operate within Mount Kenya National Park through their own expressions. A discussion of conditions during the beginning of employment, changes in conditions over time and a review of current working conditions occurred between the researcher and 15 male Kikuyu porters whom actively work within the National Park.

Qualitative methods were used to gather the data from the participants. Five themes were identified during the data analysis. These themes included limited employment opportunities; difficulties related to starting employment as a porter; wage concerns; load improvement; and clothing, equipment, and education needs. Each of these themes and other expressions shared by the participants are related to four constructs supported by previous research identified as contributions to individual health (Dixon, 2000; Lynch et. al., 1997; Wallston et. al., 1983). These constructs include physical health, economic health, social health, and institutional health. A discussion linking each construct to the themes identified or other expressions shared by the participants in this research follows.

Physical Health

The research participants explained that conditions were difficult in the beginning of their employment due to varying reasons. Among these included the physical challenge of carrying a heavy load. Also mentioned were the harsh environmental conditions of the mountain. One can consider that when a porter starts their employment, they experience negative physical health effects. Over time it was noted that load weights

have improved with the support of both the operators and the Kenyan Wildlife Service. This can be considered a positive contribution to the physical health of this population.

Economic Health

Participants explained in agreement that the wages provided to the porter population for Mount Kenya National Park are not adequate. Participants shared the amount they currently make and referenced it with how much they believe they should receive. Each of the participants believes that they should receive more payment than they currently do considering the type of work they are performing. Increases in wages earned may contribute positively to the economic health for this population.

Social Health

In this study, the social health construct is defined as the relationship shared among the porters of Mount Kenya National Park. The participants were mostly homogeneous in their tribal affiliation. As previously stated, all but one of the 15 participants was from the Kikuyu tribe. The single participant stated he was from the Meru tribe although he resided within the town of Naro Moru, which is predominately Kikuyu. When asked how their relationship was with other porters, all participants shared a similar positive expression of getting along with one another. The researcher did not identify these positive relationships as a primary theme in this study. This was because each participant did not relate their expressions to the working conditions as a porter on Mount Kenya National Park. Regardless, these positive expressions are contributory to the social health construct as it fits into a model of overall health indication for this porter

population. It is encouraged that future research studies attempt to diversify the participants regarding their tribal affiliation to gain better understanding of the social health of this population.

Institutional Health

Institutional health, in this study, is defined as the relationship shared between the porters and land management officials (Kenya Wildlife Service) of Mount Kenya National Park. Assistance provided by the Kenyan Wildlife Service was indicated by each of the study's participants. This included their support in lowering load carry weight maximums while working as porters within the National Park. Expressions of encouragement and happiness were shared among the participants specific to this assistance. Additionally, each of the participants requested assistance with equipment, clothing and education. Included in this request was that the assistance come from the Kenyan Wildlife Service. Examples of this assistance were provided by the participants such that the Kenyan Wildlife Service could offer these services to active porters as a rental program or annual training opportunity. Participants verified that this level of assistance would contribute positively to the relationship shared between the porters and the Kenyan Wildlife Service.

Summary

Based on the results of this study, improvement of physical, economic, social, and institutional health has occurred over time for this porter population. It is difficult to determine how much improvement or what impact this improvement has had on this

target population as a whole when only referencing the data collected in this study. The involved participants appeared encouraged by the improvements experienced; however, they expressed further desire for continued and more extensive improvement in porter working conditions. Although there has been change over time, it does not appear to be as abundant or consistent as the participants would like.

Future research is recommended that involves the porter population of Mount Kenya National Park to see if improvements in the porters' working and health conditions continue with informal or formal enforcement of policy recommendations. Geographic diversity, other areas of interest, and differing research techniques are all encouraged. More research with this population will provide broader insight and understanding of their daily routines and the associated conditions. This study served as a baseline understanding of continued improvement of health opportunities for the porter community within Mount Kenya National Park.

Table 3.1
Interview Questions by Category

Porter Information*
What is your porter position?
What is your age?
What tribe are you a part of?
How many years have you been working as a porter within Mount Kenya National Park?
What is your marital status?
Do you have any children?
On Mountain Information*
What company have you worked the most for within Mount Kenya National Park?
What route within Mount Kenya National Park have you worked the most?
What are the average number of days per trip when working within Mount Kenya National Park?
Economic Health*
How much was your daily wage when you started working as a porter?
How much is your daily wage when you work as a porter now?
How much was your tip per trip when you started working as a porter?
How much is your tip per trip now when you work as a porter?
Who paid your salary when you started working as a porter?
Who pays your salary when you work as a porter now?
When you started working as a porter did you pay a bribe to work a trip?
When you work as a porter now do you pay a bribe?
Physical Health*
When you started working as a porter how heavy was the load you carried?
Now when you work as a porter how heavy is the load you carry?
When you started working as a porter did your load get weighted before the start of a trip?
When you work as a porter now does your load get weighted before the start of a trip?
When you started working as a porter how many meals did you eat per day?
Now when you work as a porter how many meals do you eat each day?
Social Health*
When you started working as a porter, how was your relationship with other porters?
How has your relationship with other porters changed or adjusted throughout your employment as a porter?
How is your relationship with other porters now?
Do you experience tribal conflicts with other porters?
Do you experience any other issues or concerns with other porters?

Table 3.1 Continued

Institutional Health*
When you started working as a porter how would you describe your relationship with the Kenyan Wildlife Service?
How has your relationship with the Kenyan Wildlife Service changed or adjusted throughout your employment as a porter?
How is your relationship with the Kenyan Wildlife Service currently?
Has the Kenyan Wildlife Service helped the porter population of Mount Kenya National Park?
General*
How have conditions for porters who work within Mount Kenya National Park changed overtime?
How would you bring improvement to the working conditions for porters that work within Mount Kenya National Park?
Can you share any additional thoughts related to your employment as a porter?

**Questions were used to assist in the progression of the interview. All questions were presented as open ended. Further explanation and expression from the participant was encouraged by the researcher with all answers.*

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CHAPTER 4

IMPACT OF CHANGES IN CLIMBING TOURISM POLICY RECOMMENDATIONS AND HEALTH AND SAFETY INTERVENTIONS ON THE HEALTH OF PORTERS OF MOUNT KENYA NATIONAL PARK

Abstract

Background: Few studies have examined the health of porter populations worldwide and none have examined the conditions of the porters in Mount Kenya National Park. Because of health concerns (e.g., load weights and wage inequality), porter employment policy changes were recommended by the Kenyan Wildlife Service.

Objective: The specific aim of this mixed method research study was to assess the overall health of the porters to determine the effectiveness of the changes in porters' health on four outcome variables that could be due to the health partnership interventions. These interventions included policy recommendations that included pack weight restrictions and wage guidelines and health education and wilderness medicine certification courses. The major research question is whether porters had experienced any improvements in their physical health, economic health, social health, and institutional health related to the changes in policy recommendations and the partnership health promotion interventions since the beginning of their employment.

Methods: This research included a quasi-experimental recollection proxy pretest design involving a retrospective pre- and posttest survey of 70 porters. The survey measured the four major outcome domains and used modified standardized surveys from other porter populations. The survey instrument was pilot tested and validated prior to use in this study with a similar population of 115 porters of Mount Kenya National Park. A convenience and snowball sampling method was used to enroll participants who all consented to participation following IRB approved methods. Data collection was done verbally with all questions and responses read to the porters with the help of a translator. The porters' responses were directly entered into an SPSS database on the researcher's laptop computer. The data analysis used SPSS in determining statistical significance using paired sample *t*-tests.

Results: The survey revealed statistically significant positive pre- and posttest mean changes with p values below $p < .01$ in favor of improved working conditions in all of the four health outcome variables of interest.

Conclusions: This study suggests that health and working conditions for the Mount Kenya National Park porter population are improving over time with the increased monitoring of the recommended porter load weights and minimum wages.

Introduction

While there is considerable research from Nepal and some recent surveys of porters in Kilimanjaro National Park in Tanzania, there is a lack of research concerning the impact of climbing tourism on porters' health and lifestyle in the mountainous regions

of Africa including Mount Kenya National Park in Kenya and the Rwenzori Mountains National Park in Uganda (Peaty, 2012).

Study Purpose

The purpose of this study is to obtain a better understanding with regards to the overall health of the porter population of Mount Kenya National Park in Kenya, Africa. Four constructs are of interest that we believe contribute to the health of this target population. These include their physical health, economic health, social health, and their relationship with the land managing agency, the Kenyan Wildlife Service, referenced as institutional health.

The researcher was interested in determining if changes in working conditions for porters in Mount Kenya National Park could improve the health of the porters. Hence, this article reports the results of a survey of porters specific to their working conditions and any changes experienced over time since beginning employment as porters. More specifically, a statistical comparison of prior conditions to current conditions was performed with relation to the four constructs.

Background

The porter population of Mount Kenya National Park is geographically defined by the four primary park entrances, North, South, East, and West. While four ethnic tribes live in the foothills of the park, including the Masai, Kikuyu, Meru, and Embu, the majority of the working porters are Kikuyu (T. Gregory, personal communication, August 7, 2011).

The national park is managed by the Kenyan Wildlife Service. Officials do not require that all mountain undertakings make use of local guides and porters for trips within the park (S. Gitau, personal communication, August 8, 2011). This said, the majority of trips that occur within this park involve the use of porters. The more popular working season for Mount Kenya National Park includes the months of January, February, March, June, July, and August. During this time a porter may work between two and four trips per month. A trip will range between 4 and 7 days in length (T. Gregory, personal communication, February 28, 2012). The Kenyan Wildlife Service makes an attempt at recommending different policies in an effort to protect the welfare of the working porter population (S. Gitau, personal communication, February 27, 2012). No data has been collected to measure if there have been positive impacts on the porters' health and well-being as a result of the proposed porter club and changes in policy recommendations.

Load Weight Concerns on Health

Knowledge of load weights and carrying methods is known with respect to the porter population of Mount Kenya National Park. There are currently no governing restrictions specific to the load weights carried by these individuals. Also, there is no minimum or maximum age expectation. The Kenyan Wildlife Service is currently working to establish a porters club that would set such restrictions and include policies and procedures to ensure adherence (S. Gitau, personal communication, February 27, 2012). The Kenyan Wildlife Service plans to use similar policies as the Tanzanian Wildlife Service with the Kilimanjaro porter population by introducing load weight

restrictions for the porters. The Kenyan Wildlife Service has recently recommended that the weight limit for Mount Kenya National Park be 18 kilograms of group luggage plus 5 kilograms of personal items. The Kenyan Wildlife Service suspects that loads as high as 45 kilograms are being carried by the porters within the park currently (T. Gregory, personal communication, February 28, 2012).

Wage Inequality Concern

Wage inequality is an additional concern related to the porters of Mount Kenya National Park. Currently there is no government regulation specific to this topic. Park officials have provided recommendations as to the daily payment rates associated with the different levels of hierarchy within its porter population. A lack of consistency exists concerning the adherence of these recommendations throughout the past (S. Gitau, personal communication, February 27, 2012). Reliable figures do not exist concerning the wages of the Mount Kenya National Park porter population. Wages for the lower level porter classification range between 350–550 Kenyan Shillings (approximately 4.21–6.61 United States Dollars) per day (T. Gregory, personal communication, February 28, 2012). Payment methods are also not standardized for Mount Kenya National Park. Payment of daily wages to the porters is deemed the responsibility of the hiring company but will sometimes be taken care of by the lead guide for the trip.

Working Environmental Concerns on Porters' Health

It is understood that the physiological function of the human body is altered when operating in a hypoxic environment at altitude (Tilton, 2010). Similar to Western tourists,

porters often reside in lower elevations and thus do not adapt well when working at higher altitudes (Law & Rodway, 2008). Additional environmental concerns exist when traveling and living at altitude. Most noticeable is the often deteriorating weather patterns. Ambient temperatures decrease as altitude increases. Precipitation and high winds are common in mountainous settings. Snow is likely, as are colder wind chill values. These environmental risks combined pose a health concern to anyone who travels or lives among them, including porters.

Lack of Policies on Duty of Care for Porters' Health Issues

Another issue present in this porter population, as is with similar working populations, is a lack of clear understanding concerning duty of care if a working porter becomes injured (Bellis, Parris, Thake, & Richards, 2005). The responsibility of porter welfare is not clearly defined by associated land managers. Instead, duty of care appears to be the responsibility of the hiring company although this is not always the case. Consideration needs to be put forth concerning policies and procedures for handling illness or injury of porters while working. This includes onset, initial response, treatment, and extended care. Responsibility of expense associated also needs to be considered.

Research Team Health Promotion Partnership Intervention Activities

The Independent Variable

The intervention evaluated in the research was very complex and took several years to implement by a team headed by the principal investigator. Similar to any community partnership or coalition for health promotion, there are a number of steps to

gaining community readiness for change, implementation, and successful behavior or policy change (Kumpfer, Whiteside, & Wandersman/NIDA, 1997) as detailed below in the SAMHSA/CSAP Strategic Partnership Framework (2006).

The Strategic Prevention Framework (SPF) uses a five-step process known to promote health by reducing risk-taking behaviors, building assets and resilience, and preventing problem health behaviors across the life span. The SPF is built on a community-based risk and protective factors approach to prevention and a series of guiding principles that can be utilized at the community levels as defined as the Mount Kenya Park Service community including the officials and the porters.

The idea behind SPF is to use the findings from public health research along with evidence-based prevention programs to build capacity within the community. This in turn will promote resilience and decrease risk factors in individuals, families, and communities.

The Strategic Prevention Framework Steps require the community partners or stakeholders to systematically

- Assess their prevention needs and community readiness for change,
- Build their prevention capacity by mobilizing a partnership,
- Develop a strategic prevention plan,
- Implement effective community prevention programs, policies and practices,
- Evaluate their efforts for outcomes.

Throughout all five steps, implementers of the SPF must address issues of sustainability and cultural competence.

Step One: Assessing Needs and Community Readiness for Change

Because no epidemiological needs data on porter health existed, the principal investigator had to rely on informal techniques of observation and conversations with porters and Mount Kenya National Park officials to determine health promotion needs. The researcher began conversations with the local porters regarding their working conditions. Health concerns that seemed apparent to the researcher from observations, as mentioned above, were confirmed through in-depth discussion and storytelling. Other new health concerns and frustrations not readily apparent by observation, such as wage concerns and sicknesses that kept them from working, were discussed and acknowledged in conversation between the porters and the researcher.

Gaining Acceptance and Trust of Porters

Although not included in the SPF steps when working for policy and behavior changes in individuals outside the principal investigator's culture, gaining acceptance and trust is critical. Trust and acceptance of the study's participants was acquired on the researcher's first expedition to Mount Kenya National Park. The researcher participated in an unsupported expedition that involved a technical climb of Mount Kenya's summit referred to as Batian. This summit is rarely achieved and thought of as a significant accomplishment by the porter population of the park. Prior to this undertaking, the researcher experienced difficulty in conversation and interaction with the porters. After a successful climb of Batian, the porters were much more approachable and accepting of the researcher.

Step Two: Build Prevention Capacity by Mobilizing a Partnership

Formation of Research Team and Initial Health Interventions

The researcher returned to the United States and initiated conversations with fellow colleagues who shared similar professional experience in the field of outdoor education and health promotion. A small team totaling six was formed with a joint goal of returning to Mount Kenya National Park and developing educational training programs that could benefit the health of the local working professionals. Additionally, the team would work alongside the Kenyan Wildlife Service in the exploration of policy intervention and provide recommendations that would help improve the working conditions for associated outdoor professionals (e.g., porters and guides). This team developed into a United States based company titled Mountain Education and Development or MED with the researcher acting as the director.

Developing University Partnerships for Student Internships

Needing more manpower to meet the demand for health education courses on mountain, the principal investigator developed a University of Utah Study Abroad course in health promotion for university students. Based on the success of this expedition with students and their different health promotion workshops on the mountain, additional partnerships between MED and other United States based universities were developed. Internship opportunities for affiliated university students were established allowing their involvement in content delivery during the health educational courses in Kenya for the porters, rangers and guides as well as community members and families. Hence, university interns from a number of universities (e.g., University of Utah and

Westminster College) accompanied the MED instructor teams during the 2012 expedition to Mount Kenya National Park.

Facilitating Partnerships with Officials to Impact Policy

Meetings continued between MED and the Kenyan Wildlife Service. Further discussion occurred regarding policy establishment and implementation concerning the working conditions for the porter population. Topics involving load weights carried by porters, wages paid by operators to porters and inadequate clothing and equipment were included in the conversations. A concern expressed by the researcher to the Kenyan Wildlife Service was that porter representation was lacking in these partnership meetings. Direct porter opinion was not involved.

Step Three: Develop a Strategic Prevention Plan

After involvement in two educational MED expeditions to the region, the researcher designed with his committee and initiated a loose health promotion or prevention plan to include these steps in this research study with the intention of improving the health and working conditions for the porters of Mount Kenya National Park. The activities of the plan have evolved over time with increased understanding of the porter's health needs and how current policies and practices affect this population. This information and the associated findings could then be shared with the Kenyan Wildlife Service in an effort to positively affect the decision making process as they develop policy that directly affects the working conditions of the porters. It should be

recognized that the porters involved in this research knew the researcher as a previous and current MED team member.

Step Four: Implement Effective Community Prevention Programs, Policies, and Practices

The first MED expedition returned to Kenya in 2011. The researcher and five team members offered wilderness medicine, technical rock climbing, and outdoor living skill courses for porters, rangers, and guides including water quality protection, general health promotion, and ways to reduce back pain with better packs. The partnership team also solicited donations from major United States outdoor manufacturers of better packs and other climbing equipment and distributed these to the porters. This initial expedition was exploratory in determining what educational opportunities were most needed and beneficial for these local populations. Additionally, the team met and interacted with officials from the Kenyan Wildlife Service. These meetings involved discussion and consideration of policy intervention as a method to improving the working conditions for the porter population of the park. The Kenyan Wildlife Service had already started implementing work related restrictions for the porters such as load weight maximums and minimum wage recommendations in an effort to improve the overall working conditions for these individuals. Enforcement and further advancement of these policies was discussed with the MED team.

The principal investigator and team then began implementing a number of health promotion and advocacy efforts to improve the health of the porters. A larger MED team, which included the researcher, returned to Mount Kenya National Park in 2012.

Educational opportunities further developed with more focused curriculums to meet the needs and requests of the local working populations. A number of workshops and lectures on water quality, safe food preparations, sanitation, pack loads, mountain rescue, pacing and client comfort, technical rock climbing, camp establishment, and wilderness first response medical practices were provided in different locations for porters of Mount Kenya National Park. Throughout two years, approximately 200 people attended these health promotion and education activities. Credentialing type courses that yielded a certification upon successful completion were requested and provided. Examples included a 72-hour wilderness first responder medical course and a 24-hour wilderness first aid medical course. The local working populations started to want internationally recognized training and credentialing.

Step Five: Evaluate Effectiveness of the Partnership Intervention

The cumulative impact of the many different health promotion activities conducted by the principal investigator and the MED team over the years was evaluated using a mixed method (qualitative and quantitative) research design. Similar to most partnerships or coalitions for health promotion, there was no direct comparison community assessed, so the research design is a nonexperimental research design with no comparison of a control group (Campbell and Stanley, 1963). If the health assessment is repeated each year, then a quasi-experimental design could be created using a phase-in quasi-experimental design evaluating the effect of new policy changes or health promotion workshops.

However, in this dissertation only the total impact of the different partnership interventions rather than individual interventions were evaluated using a retrospective pre- and posttest survey asking about ratings of improvements in porter's health in four theoretical construct areas of physical health, economic health, social health, and institutional health. A qualitative interview with a small sample of porters was also conducted to help better interpret the quantitative survey results.

Step Six: Provide Feedback, Recommendations, and Make Corrections in Partnership Activities

While not officially a step in the SPF, the next step in this process is to make recommendations for future interventions and provide feedback to all stakeholders such as the porters and also the Kenyan Wildlife Service officials and begin the prevention intervention process all over again. The results of this evaluation will be shared with all of these stakeholders. Publications and presentations on the outcomes or success of this partnership model for health promotion of rural mountain porters are planned for the future to disseminate the new knowledge from this research.

Research Specific Aim and Questions

The specific aim of this research was to determine 1) if changes in working conditions have improved the health and lifestyle of Mount Kenya National Park porters by conducting a retrospective pre- and posttest survey.

(1) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's physical health?

H_o: Changes experienced are not associated with increased physical health among the porter population.

H_a: Changes experienced are associated with increased physical health among the porter population.

(2) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's economic health?

H_o: Changes experienced are not associated with increased economic health among the porter population.

H_a: Changes experienced are associated with increased economic health among the porter population.

(3) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's social health?

H_o: Changes experienced are not associated with increased social health among the porter population.

H_a: Changes experienced are associated with increased social health among the porter population.

(4) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's institutional health?

H_o: Changes experienced are not associated with increased institutional health among the porter population.

H_a: Changes experienced are associated with increased institutional health among the porter population.

(5) Did the changes in working conditions over time on Mount Kenya National Park contribute to improvements in the porter's overall health?

H_o: Changes experienced are not associated with increased overall health among the porter population.

H_a: Changes experienced are associated with increased overall health among the porter population.

Methods

Study Design

The research design consisted of a quasi-experimental recollection proxy pretest design including a retrospective pre- and posttest survey conducted at the end of the study period. This design and data collection methodology was selected because it controls for most threats to the internal validity of the data, reduces testing burden, increases likelihood of enrollment in the research and quality of the data with increased honesty, and reduces the logistical costs associated with the travel requirement for this research opportunity.

Profile of Participants

Understanding the focus of this research, the researcher performed a power analysis using the G-Power software package that helped to determine the associated power levels, effect sizes, and respective sample sizes. This technique provided a desired sample size of approximately 50 porters.

Study participants (n = 115) were recruited initially for a survey measure validation pilot study by the researcher on a visit to Mount Kenya National Park during the May–June of 2012. Additional participants (n = 70) were used for the final retrospective pre- and posttest survey in the fall of 2012. Inclusion criteria included those that worked as a porter, head porter, or cook within Mount Kenya National Park and were 18 years or older in age. Additional inclusion criteria included that the study participants all understood or spoke basic English, although Kikuyu Swahili is their primary language. Of course, verbal agreement to consent to the research procedures was required of all study participants as approved by the University of Utah's Institutional Review Board (IRB).

Participant Recruitment Procedures

Study participants were recruited from the town of Naro Moru just outside of the West entrance into Mount Kenya National Park during November 2012. Inclusion criteria included those that worked as a porter, head porter, or cook within the national park and were 18 years or older in age. Additional inclusion criteria required verbal agreement to consent as deemed appropriate by the associated Institutional Review Board. Convenience and snowball sampling techniques were used to select porters. For example, porters previously involved in related expeditions were contacted by the researcher and requested to participate in this study resulting in 15 participants' total. A local translator was hired to assist during all researcher and participant interactions. The participants all spoke English, although Kikuyu Swahili is their primary language.

Data Collection Procedures

Individual porter interviews occurred during 2 days midweek at a gas station on the north side of Naro Moru. Each participant was incentivized with a Black Diamond headlamp at the conclusion of their participation in the interview. During the 2 days of interaction with the research participants, the researcher spoke with the 70 porters using a face-to-face, structured survey technique. Logistical constraints, primarily available time at the research site, made it impossible to interview and analyze the data from any more than 70 participants.

At the start of the interview process, the researcher explained the research opportunity and requested the participation from each participant individually. It was made clear that no identifying information would be collected because they would have no names or codes on the tests. The participants' cell phone numbers were collected allowing for future contact if additional research were to be performed. However, cell phone numbers in Kenya are prepaid and not linked to any personal information.

Research study enrollment consent was requested with the use of the IRB approved consent method. The researcher collected their cell phone number. The translator assisted as necessary. There was no waiting period once consent was obtained, which reduced attrition from the sample.

To increase understanding of the questions, all survey questions and possible response categories were verbally and visually presented in English to each participant by the researcher. This was done by using an offline mode software package on a laptop computer. Translation into the native language and answers to questions about the survey were handled by the translator when the participant experienced difficulty in

understanding the English presentation. Verbal responses of the interviewees were recorded directly on the laptop computer by the researcher using the software and exported directly into an SPSS database. This database was kept on a password protected computer that could be accessed by only the researcher. Each participant met the inclusion criteria as previously explained. All survey questions were complete with no missing data.

Measures

The retrospective pre- and posttest survey was designed after a previously validated instrument used by the Kilimanjaro Porter Assistant Project in Tanzania, Africa. Additional questions specific to the four health related constructs of interest, namely their physical health, economical health, social health, and institutional health, were added and some of the already existing questions modified to meet the parameters of this study (Ndekirwa, Mtuy, Bernard, Valenti & Forrest, 2011). Questions were divided into eight sections including porter information, on-mountain information, wages, tips, loads, food, opinion questions about institutional relationships and opinion questions about the porter's personal health. Table 4.1 displays these questions by category.

A retrospective pre- and posttest analysis method was selected as it could yield more accurate results specific to this study. It was not feasible to reconnect with the same sample population at a later date. For each question, porters rated the answers twice. "In the past" referencing working conditions when they started their employment and "Now" specific to working conditions during their current employment. This method allowed for an analysis of changes since they started their employment and hopefully captured the

impact of the policy changes on concerns such as pack weights and wages as they relate to their health and well-being.

This retrospective measurement technique has been used in a number of evaluation studies successfully. It increases assurance of confidentiality of the responses when the data is of a sensitive nature (e.g., substance abuse, sexual behavior, criminal activities, child maltreatment, physical punishment, etc.; Kumpfer, Magalhães, & Xie, 2012; Kumpfer, Xie, & O'Driscoll, 2012; Kumpfer, Fenollar, & Jubani, 2013) and in workplaces where employees would not want their employers to know their answers on a survey (Lamb, 2005; Wright, 2007). Another positive reason to use this data collection method was because it reduces the data collection time by half and hence the testing burden on hard-to-reach participants.

Data Analysis

Descriptive statistics were performed as a means to organize and describe the characteristics of all the collected data. Once the data were collected and summarized, a series of inferential (parametric) statistics were performed with the intention of making inferences from the study's cohort to the larger target population as a whole. A one-tailed *t*-test for dependent samples was used comparing the pre- and posttest surveys based on the individual quantitative research questions. This allows a *p* value comparison of .05 rather than .10, which is an important consideration when analyzing data with a relatively small sample size.

Results

The survey instrument collected data specific to demographic information of the sample as well as past and current conditions specific to the four health related constructs of interest including physical health, economic health, social health, and institutional health.

Demographic Information

The majority or 70% of the sample (*n* = 49) described their current position as a porter. The next largest classification was that of a head porter (*n* = 13, 18.6%). The remaining (*n* = 8, 11.4%) described themselves as a cook. The entire sample was male. The average age was 31.9 years with a minimum of 19 years and maximum of 62 years. The majority, or 73%, of the sample (*n* = 51) reported being married and having at least one child (*n* = 46, 65.7%). The length of employment as a porter ranged between 1 and 30 years with an average of 7.5 years.

Almost the entire sample (*n* = 67, 95.7%) listed their tribal affiliation as Kikuyu. Two participants listed themselves as originating from the Meru tribe, while one participant listed both Kikuyu and Meru. Four companies were listed as the primary source of employment when working as a porter. Mountain Rock appeared to be the most popular (*n* = 33, 47.1%). Next was Burgret Youth (*n* = 14, 20%), then Rift Valley Adventures (*n* = 11, 15.7%), and Ice Rock (*n* = 5, 7.1%).

The Sirimon route appears to be the most popular destination for work among this sample (*n* = 66, 94.2%). Other frequently worked routes included Chogoria (*n* = 2, 2.9%) and Naro Moru (*n* = 2, 2.9%). Most trips on the mountain are 5 days (*n* = 42, 60%) or 6

days (*n* = 18, 25.7%) in length. Three day (*n* = 1, 1.4%) and 4 day (*n* = 9, 12.9%) trips were also listed. See Table 4.2 for a summary of all the demographic findings.

Physical Health

Question 2 listed in Table 4.3 was used to assist in the measurement of physical health of the sample. Tables 4.4 and 4.5 show that there is a statistically significant difference at the .001 significance level (*n* = 70, 95% CI for mean difference -1.34 to -.72) in pre- to posttest scores specific to the porter's opinion of their body aches and pains. The porters' self-reported pain levels were reduced from a pretest mean of 3.31 to a posttest mean of 3.84. Since higher scores indicated less pain, these means suggest that there has been a significant reduction in reported body pain. Hence, there have been improvements in this physical health concern since the start of their employment.

As displayed in Table 4.6, on average, porters carry significantly less weight currently (M = 19.69, SD = 4.33) than they did when they started their employment (M = 29.24, SD = 6.89) at the .001 level of significance (*n* = 70, 95% CI for mean difference 7.79 to 11.32). Baggage weight carried is about 9.55 kilograms lighter than when employment started.

The bags appear to be weighed at the park gate more frequently now than in the past. At the current state of employment the majority of this samples bags are weighed (*n* = 45, 64.3%) compared to when they first started working as a porter (*n* = 7, 10%).

Porters consume significantly more meals per day currently (M = 2.21, SD = .82) than they did when they started their employment (M = 1.51, SD = .72) at the .001 level

of significance (*n* = 70, 95% CI for mean difference -.87 to -.53). On average, daily meals consumed are about 1 meal higher than when employment started. See Table 4.7.

Economic Health

Porters earn significantly greater wages currently (M = 621.43, SD = 229.30) than they did when they started their employment (M = 324.14, SD = 145.33) at the $p < .001$ level of statistical significance (*n* = 70, 95% CI for mean difference -361.19 to -233.37). Wages earned are about 297.29 Kenyan Shillings (approximately 3.50 United States Dollars) higher than when employment started. See Table 4.8.

Guide companies appear to be paying the wages directly to the porter more so now (*n* = 61, 87.1%) than they did in the past (*n* = 51, 72.9%). If the hiring company does not pay the porter, the guide does. More porters are saying no to bribe payouts now (*n* = 68, 97.1%) than in the past (*n* = 42, 60%).

As shown in Table 4.9 porters earn significantly greater tips currently (M = 5267.86, SD = 10603.27) than they did when they started their employment (M = 1642.14, SD = 2954.65) at the .001 level of significance (*n* = 70, 95% CI for mean difference -5602.54 to -1648.88). Tips appear about 3625.72 Kenyan Shillings (approximately 42.66 United States Dollars) higher than when employment started.

Currently, tips appear to be paid primarily by the tourist (*n* = 54, 77.1%), then the guide (*n* = 9, 12.9%), and last the company (*n* = 7, 10%). This differs from the past such that the guide (*n* = 37, 52.9%) mostly handled tip distribution, then the tourist (*n* = 29, 41.4%) and last the company (*n* = 4, 5.7%).

Question 8 listed in Table 4.3 was used to assist in the measurement of economic health of the sample. Table 4.4 shows that there is a statistically significant difference at

the .001 significance level (n = 70, 95% CI for mean difference -1.25 to -.63) in pre- to posttest scores specific to the porters' opinion of their income from working as a porter. Results show that there has been improvement in this economic health concern since the start of their employment.

Social Health

Questions 3, 4, 5, and 6 listed in Table 4.3 were used to measure the social health of the sample. Table 4.4 shows that there are statistically significant differences at the .01 significance level (Question 6) and at the .001 significance level (Question 3, 4, and 5) in pre- to posttest scores specific to the porters social health. Results show that the sample's opinion for each of these questions has improved since the start of their employment.

Institutional Health

Four questions specific to institutional health are displayed in Table 4.10. Table 4.11 shows that there are statistically significant differences, at the .001 significance level, in pre- to posttest scores for all four of these institutional health questions. Results show that the participant's opinion for each question improved since the start of their employment as a porter.

Discussion

The results of this study are unique because there has been a lack of research on the health and economic status of the porter population of Mount Kenya National Park in Kenya, Africa. As previously explained, there is similar research on porter populations in

other geographic locations throughout the world, primarily in Nepal and Mount Kilimanjaro National Park (Law & Rodway, 2008; Ndekirwa et al., 2011).

The best result of this study is that, while not ideal, the porters are reporting significant improvements in their health and well-being. These improvements could be because of the changes in policy recommendations in pack loads and payment guidelines related to the porter clubs, but without a true randomized control trial causation cannot be determined.

Demographically, this study's cohort was fairly homogeneous such that all participants were male and most shared the same tribal affiliation. The age range was fairly broad as was the experience in years working as a porter. A limited number of employers were listed when referencing which company was most worked for. Almost all of the participants primarily work on one specific route within the park. The average duration of a trip ranged between 4 and 6 days in length.

This study was focused on the evaluation of the working conditions of the porter population of Mount Kenya National Park and how to relate to the health of each porter. Currently there is no standardized measurement instrument that focuses on a porter's health. However, there was a prior survey with porters on Mount Kilimanjaro that served as a model for this Mount Kenya porter health survey (Ndekirwa et al., 2011). With support of associated literature and theoretical backing, four constructs were chosen that may together be an indication of a porter's overall health. As previously discussed, these include physical health, economic health, social health, and institutional health.

Parts of the survey instrument used in this study are specific to each of the proposed four health constructs. We discuss the results found specific to each construct and then summarize the synergistic effect when involving the results of each together.

Physical Health

The participants of this study indicated that there has been a decrease in the amount of weight carried per load since they started their employment as a porter. The difference in weight is about 9.55 kilograms. The difference experienced by each porter was determined as statistically significant with an alpha of .001. Heavier loads may lead to a negative physical health effect for the porter. For example, it is understood that in situations where additional loads or complex postures are experienced by a human that the spine stabilizing system may become dysfunctional and lead to discomfort such as low back pain (Panjabi, 1992). Therefore, a decrease in loads carried could have positive implications pertaining to the physical health of this porter population.

The data suggest that there has been an increase in the prevalence of porter baggage weighing at the various park gates during the start of a trip by the Kenyan Wildlife Service. The park officials appear to be making an attempt to regulate how much weight the porters are carrying. This model is similar to that used at the neighboring Kilimanjaro National Park in Tanzania. This measured increase may contribute to the lower weights currently being carried by the porters who work within the park. If so, this too could be considered a positive contributor to the physical health of this population.

The amount of meals consumed per day while working has increased significantly since each of the participants started their employment as a porter. This indicates that

overall, the porter is consuming more food per trip than in years past. Food provides energy to the human body and is measured as kilocalories (Wardlaw, Hampl, & DiSilvestro, 2004). The intake and expenditure of this energy is termed energy balance. The body's energy needs are met by the consumption of food. Physical activity increases energy expenditure beyond that which is typically experienced while at rest. Working as a porter requires physical activity and thus requires higher energy needs than a more sedentary profession. The data collected in this study did not indicate how many kilocalories are actually being consumed per meal per day. It is unknown if adequate nutritional intake is being obtained by the participants. Even at their current state of employment, the average daily meal consumption is 2.21 meals per porter. This is significantly higher than an average of 1.51 meals per day per porter as reported when the participants started their employment. Without more information, we cannot positively link this increase in meals to improvements in physical health for this porter population. We can note that more energy is being consumed by porters when working within Mount Kenya National Park and that this increased consumption helps offset the energy expenditure experienced by this active profession.

One of the opinioned questions regarding the porter's personal health was specific to their experience with body aches and pains. Participants reported significant improvement since starting their employment with regards to this topic. A multitude of reasoning is possible for this improvement. With confidence we can positively contribute this improvement to the physical health construct of focus as it is directly related.

Economic Health

This study suggests that there has been a significant increase in wages earned from employment as a porter within Mount Kenya National Park. Study participants reported earning about 297.29 Kenyan Shillings (approximately 3.50 United States Dollars) more now than when they started working as a porter. The same finding exists with regards to income from tips. Participants reported tips per trip as being 3625.72 Kenyan Shillings (approximately 42.66 United States Dollars) higher than when they originally started working as a porter.

An increase in wages and tips does not directly yield an increase in happiness or contribute positively to the economic health of a given population. When referenced generally, happiness, or subjective well-being, varies directly with one's own income and inversely with the incomes of others (Easterlin, 1994). The positive effect of higher income is offset by the negative effect associated with increased living level norms that result from a growth in incomes or the economy. This said, an increase in income for a population as a whole does increase the living level norm for all as well, thus helping offset the negative effect that may be experienced if inequality exists. In this study, a significant wage and tip increase was experienced by all participants. If this same situation exists for all porters, this may contribute positively to the economic health of this population as a whole. Another notable change reported by this sample population is the now nearly nonexistent payout of bribes as a method of acquiring work.

According to the Kilimanjaro Porters Assistant Project in Tanzania, Africa, distribution of wages and tips is of concern when referencing the welfare of the porter populations (Ndekirwa et. al., 2011). It is strongly recommended that the hiring agency

provide the agreed upon wage and if possible the client provide the appropriate portion of the tips directly to the porters. This recommendation stems from a history of the guides, of Kilimanjaro National Park, keeping a percentage of both the wages and tips for themselves before distributing to the porters. The study participants indicated that this recommendation is the current norm with regards to this topic. This appears to be an improvement from years past as additionally reported on the survey instrument.

An increase in wages and tips earned, decrease in bribe payouts and better handling of wage and tip distribution may all contribute positively to the economic health of the Mount Kenya National Park porter population. Additionally, one of the opinioned questions regarding the porter's personal health was specific to their income from portering. Participants reported significant improvement since starting their employment regarding this topic. This further contributes to the direction of overall improvement in the economic health of this porter population.

Social Health and Institutional Health

In the context of this study, social health was defined as the relationship the porters have with themselves, each other, and their family. Four opinion questions were used to measure this health construct. All of this study's participants explained significant improvement with each of these four questions since starting work as a porter within Mount Kenya National Park. Participants all explained improvement in their enjoyment of being a porter, enjoyment of their family, level of happiness, and their relationship with other porters. From the limited data associated with this survey instrument, we can conclude that positive improvements with regards to the social health of the porter population has been experienced over time.

Similar to the social health construct, four opinion questions were used to measure the institutional health construct. For the purposes of this study, institutional health is defined as the relationship the porters have with the land managing agency of Mount Kenya National Park, the Kenyan Wildlife Service. Significant improvements with each of these four questions were expressed by all of the studies participants. The data suggest that when compared to their initial employment as a porter, the Kenyan Wildlife Service's policies are helping porters improve their health, the enforcement of a minimum daily wage is improving, the enforcement of a maximum bag weight is improving, and that the working conditions for porters on Mount Kenya is improving.

Conclusions for Overall Health

As previously discussed, this study strived to piece together a model that could attempt to display the health of the porter population of Mount Kenya National Park. To look at the overall health of this population, four different health constructs were focused on. It was believed that positive improvements over time in each of these four constructs would contribute to the understanding of the overall health of this population and whether or not associated working conditions were improving. The four health constructs of focus included physical health, economic health, social health, and institutional health.

Improvements were measured over time in each of these four constructs. Time was determined as the length between the start of employment as a porter and a porter's current employment status. All measurement parameters within each of the four constructs yielded improvement. Within the limitations of this study, we concluded that the health of this population has improved overtime as have the working conditions.

This study serves as a pilot for research involving the porter population of Mount Kenya National Park in Kenya, Africa. The data associated is thus broad in its understanding and warrants future research. Studies that focus on different aspects of this population's health and their associated working conditions are strongly encouraged. The results of this study could be used in comparison to like populations in different geographic locations throughout the world.

Table 4.1
Survey Questions by Category

Porter Information
Porter position.
Age.
Tribe.
Portering experience (years).
Martial Status.
Children.
On Mountain Information
Name of company most worked for.
Name of route most climbed.
Average number of days per climb.
Wages*
What daily amount would you receive.
Who paid your salary.
Did you pay a bribe to get jobs.
Tips*
What amount were you paid.
Who gave you the tip.
Loads*
How many kilograms was the bag you carried for a company.
Was the bag weighed at the park gate.
Food*
How many meals did you eat each day.
Opinion – Institutional*/**
The Kenyan Wildlife Service policies are helping porters improve their health.
The enforcement of a minimum daily wage is improving.
The enforcement of a maximum bag weight is improving
Working conditions for porters on Mt. Kenya are improving.
Opinion – Personal Health*/***
Your overall health.
Your body aches and pains.
Your enjoyment of being a porter.
Your enjoyment of your family.
Your level of happiness.
Your relationship with other porters.
Your income from portering.

**Questions were asked twice regarding conditions in the past and now.*

Table 4.1 Continued

***Statements used a 5-point Likert scale for responses from strongly disagree to strongly agree.*

****Statements used a 5-point Likert scale for responses from bad to great.*

Table 4.2
Demographic Information of Sample Population

Characteristic	*N*	%	Mean	Min	Max
Position					
Porter	49	70			
Head Porter	13	18.6			
Cook	8	11.4			
Gender					
Male	70	100			
Age*			31.9	19	62
Marital Status					
Single	19	27.1			
Married	51	72.9			
Children					
None	24	34.3			
≥ 1	46	65.7			
Porter Experience*			7.5	1	39
Tribal Affiliation					
Kikuyu	67	95.7			
Meru	2	2.9			
Kikuyu & Meru	1	1.4			
Top Four Primary Employers					
Mountain Rock	33	47.1			
Burgret Youth	14	20			
Rift Valley Adventures	11	15.7			
Ice Rock	5	7.1			
Primary Route Used					
Sirimon	66	94.2			
Chogoria	2	2.9			
Naro Moru	2	2.9			
Most Frequent Trip Length					
Six Days	18	25.7			
Five Days	42	60			
Four Days	9	12.9			
Three Days	1	1.4			

**Characteristic is measured in years.*

Table 4.3

*Questions Used to Assess a Porter's Opinion with Regards to their Personal Health**

Question 1: Your overall health.
Question 2: Your body aches and pains.
Question 3: Your enjoyment of being a porter.
Question 4: Your enjoyment of your family.
Question 5: Your level of happiness.
Question 6: Your relationship with other porters.
Question 7: Your income from portering.

**Statements used a 5-point Likert scale for responses from bad to great.*

Table 4.4

Descriptive Statistics and t-test Results for Personal Health Opinion Questions

	Pretest		Posttest			95% CI for Mean
Outcome	M	SD	M	SD	*n*	Difference
Question 1**	2.64	1.05	3.59	.77	70	-1.26, -.62
Question 2**	2.43	1.00	3.46	.81	70	-1.34, -.72
Question 3**	3.00	1.13	3.56	.99	70	-.86, -.25
Question 4**	3.31	.99	3.84	.75	70	-.80, -.26
Question 5**	3.13	1.15	3.93	.82	70	-1.15, -.45
Question 6*	3.67	.99	4.10	.73	70	-.71, -.15
Question 7**	2.31	.83	3.26	.97	70	-1.25, -.63

*$p < .01$. **$p < .001$.

Table 4.5

Results of t-test and Descriptive Statistics for Porter Opinion of Their Body Aches and Pains

	Pretest		Posttest			95% CI for Mean
Outcome	M	SD	M	SD	*n*	Difference
Question 2*	2.43	1.00	3.46	.81	70	-1.34, -.72

*$p < .001$.

Table 4.6

Results of t-test and Descriptive Statistics for Starting and Current Baggage Weight (Kilograms)

	Starting Amount		Current Amount			95% CI for Mean Difference
Outcome	M	SD	M	SD	*n*	
Baggage Weight*	29.24	6.89	19.69	4.33	70	7.79, 11.32

*$p < .001$.

Table 4.7

Results of t-test and Descriptive Statistics for Starting and Current Daily Meal Amount

	Starting Amount		Current Amount			95% CI for Mean Difference
Outcome	M	SD	M	SD	*n*	
Daily Meals*	1.51	.72	2.21	.82	70	-.87, -.53

*$p < .001$.

Table 4.8

Results of t-test and Descriptive Statistics for Starting and Current Wages Earned (Kenyan Shillings)

	Starting Amount		Current Amount			95% CI for Mean Difference
Outcome	M	SD	M	SD	*n*	
Wages Earned*	324.14	145.33	621.43	229.30	70	-361.19, -233.37

*$p < .001$.

Table 4.9

Results of t-test and Descriptive Statistics for Starting and Current Tips Earned (Kenyan Shillings)

	Starting Amount		Current Amount			95% CI for Mean Difference
Outcome	M	SD	M	SD	*n*	
Tips Earned*	1642.14	2954.65	5267.86	10603.27	70	-5602.54, -1648.88

*$p < .001$.

Table 4.10

*Questions Used to Asses Porters' Opinions with Regard to their Institutional Health**

Question 1: The Kenyan Wildlife Service's policies are helping porters improve their health.
Question 2: The enforcement of a minimum daily wage is improving.
Question 3: The enforcement of a maximum bag weight is improving.
Question 4: Working conditions for porters on Mt. Kenya are improving.

**Statements used a 5-point Likert scale for responses from strongly disagree to strongly agree.*

Table 4.11

Descriptive Statistics and t-test Results for Institutional Health Opinion Questions

	Pretest		Posttest			95% CI for Mean
Outcome	M	SD	M	SD	*n*	Difference
Question 1*	2.23	.84	3.44	.93	70	-1.48, -.95
Question 2*	2.24	.71	3.07	1.03	70	-1.10, -.55
Question 3*	2.34	.83	3.51	.86	70	-1.46, -.88
Question 4*	2.59	.97	3.76	.81	70	-1.43, -.91

*$p < .001$.

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CHAPTER 5

CONCLUSION

Summary

Health Concerns of the Mount Kenya Porters

This study sought to assess improvements in the health of Mt. Kenya porters related to a number of health promotion activities and policy advocacy changes implemented by the PI and his team of university professionals and students over several years with the goal of improving the health of the porters. The intervention was a community partnership that could loosely be called the Mt. Kenya Porters Health Project. This partnership involved the University of Utah team members and also the Mt. Kenya officials within the Kenyan Wildlife Services. Only these officials could formally change health policy, but the partnership members could advocate for these policy changes and provide health education knowledge and education to Mt. Kenya official, tour operators, the porters, and their community.

The theoretical framework for the community change partnership is the SAMHSA (2006) Strategic Prevention Framework (SPF) that is mandated as the planning model for all community partnerships and coalitions for health promotion using federal funds. The steps of this intervention framework are described in more detail below. Because a number of health promotion interventions were implemented with over 200 individuals,

only the total impact of the partnerships activities could be evaluated in improving the health of the porters. Of course community acceptance and readiness for change has to first be gained following the preliminary implementation steps in Kumpfer and associates (1997) book for NIDA entitled, *Assessing and Increasing Community Readiness for Prevention: A Handbook of Issues, Tips, and Tools.* These steps begin with assessing needs that was done at the same time that the new evaluation instrument was piloted with 115 porters. Also recognition of a need for policy and health practices had to be assessed and was determined to be adequate to proceed with health promotion and wilderness medicine interventions.

The evaluation survey created for this study and based on that used for the assessment of the Mt. Kilimanjaro Porters Assistance Project (Ndekirwa, Mtuy, Bernard, Valenti, & Forrest, 2011) addressed the overall health of the porter population of Mount Kenya National Park in four specific constructs that contribute to the health of this target population. These included physical, economic, social, and institutional health, the latter represented by the land managing agency known as the Kenyan Wildlife Service.

Theoretical Support for the Four Health Evaluation Constructs

Theoretical support was provided for each of these four evaluated health constructs in a specifically designed (and pilot tested with 115 porters) evaluation survey instrument by the PI to assess each of these four areas of porter health as approved by the dissertation committee. The theory behind the physical health construct was described, in part, using the Health Belief Model and Social Cognitive Theory that includes self-efficacy theory (Bandura, 1986; 2001). Neoclassical microeconomics theory provides a

supporting framework for the economic health construct. Evolutionary economics, as a component of evolutionary theory of behavior and capabilities, was referenced in support of both the social and institutional health constructs.

Research Team Health Promotion Partnership Intervention Activities

The Independent Variable

The intervention evaluated in the research was very complex and took several years to implement by a team headed by the principal investigator. Similar to any community partnership or coalition for health promotion, there are a number of steps to gaining community readiness for change, implementation, and successful behavior or policy change (Kumpfer, Whiteside, & Wandersman/NIDA, 1997) as detailed below in the SAMHSA/CSAP Strategic Partnership Framework (2006).

The Strategic Prevention Framework (SPF) uses a five-step process known to promote health by reducing risk-taking behaviors, building assets and resilience, and preventing problem health behaviors across the life span. The SPF is built on a community-based risk and protective factors approach to prevention and a series of guiding principles that can be utilized at the community levels as defined as the Mount Kenya Park Service community, including the officials and the porters.

The idea behind SPF is to use the findings from public health research to include in this case the importance of sanitation, food handling, water quality, preventive medicine, physical activity, and good nutrition to prevent diseases. Common knowledge of germ theory, proper sanitation, and preventive health was not apparent in the practices of the cooks, porters, and head guides. Hence, providing information about these

concepts did lead to behavior changes to promote better health in the camps. Also evidence-based medicine and wilderness medicine certification courses were conducted to build capacity within the porter and guide community. This in turn will promote resilience and decrease risk factors in individuals, families, and communities.

The Strategic Prevention Framework Steps require the community partners or stakeholders to systematically

- Assess their prevention needs and community readiness for change,
- Build their prevention capacity by mobilizing a partnership,
- Develop a strategic prevention plan,
- Implement effective community prevention programs, policies, and practices,
- Evaluate their efforts for outcomes.

Throughout all five steps, implementers of the SPF must address issues of sustainability and cultural competence.

Critical to success of the Strategic Prevention Framework Model is that there be community acceptance and respect for the local community partners by the university team implementing the health promotion interventions. The local partners have to be heard and their needs and ideas acted upon with effective evidence-based interventions. Also the leadership model has to be one of an empowering style of leadership versus autocratic (Kumpfer, Turner, Hopkins, & Librett, 1993).

Research Objectives

The research team's objective was to advocate for policy changes that had helped porters on Mt. Kilimanjaro and also to conduct health education and promotion

workshops and lectures to improve the health of the porters. The final survey was then conducted with 70 porters to see if they perceived that their work conditions had improved. Then following the partnership SPF model, additional recommendations and interventions would be designed that could result in future health benefits for Mount Kenya National Park porters. Hence, the associated chapters of this dissertation report the results of interviews and surveys of porters specific to their working conditions and any changes experienced over time. More specifically, a comparison of prior conditions to current conditions was performed with relation to the four health constructs included in the instrument model as discussed more below.

Methodology

The research associated with this study involved mixed methods data collection that included both qualitative and quantitative methods within a nonexperimental research design since there was no comparison community for this Mt. Kenya porter project. The chosen qualitative methodology was narrative based in-depth interviews with data analysis using hermeneutic thematic content analysis (Wertz et al., 2011). Convenient and snowball sampling techniques were used to acquire the study cohort of currently working porters. The quantitative method adopted a quasi-experimental recollection proxy pretest design that included a retrospective pre- and posttest survey instrument. The limitations of this mixed methods approach were discussed in Chapter 1.

Conclusions

Qualitative Methodology

Fifteen male porters between the ages of 22 and 46 participated in this research. All but one participant was identified as a member of the Kikuyu tribe. The single participant was from the Meru tribe. All participants worked as a porter within Mount Kenya National Park (average length of employment equal to 7 years with a range of half a year to 19 years). All stated that they were married with a minimum of one child. All participants had sufficient language skills to answer questions in English during the interview process.

Data collection techniques included semistructured in-depth interviews presented visually and verbally on a handheld computer. The researcher provided guidance through topics related to the porter's working conditions. Records were kept of conditions when a porter started, changes to conditions over time and latest conditions as they are currently experienced.

Five prominent themes emerged from a data analysis of the interviews: limited employment; difficult beginning; wage concerns; load improvement; and clothing, equipment, and educational needs. Each of these themes was addressed in the context of the four health constructs as follows

Physical Health

Various participants explained that conditions were difficult in the beginning of their employment due to a number of causes. Included among these was the physical challenge of carrying an extra heavy load. Another frequent response was the physical

challenge associated with the harsh mountain terrains. It was clearly established that the combined impact of these simultaneous conditions had a negative physical effect on the health of beginning porters. Over time it was noted that load weights have improved with the support of both the operators and the Kenyan Wildlife Service. This is considered a positive contribution to the physical health of this population.

Economic Health

Virtually all participants concurred that porter wages provided are not adequate. Participants disclosed what their individual compensation was and offered ideas for fairer wages for the tasks performed. Results confirmed the obvious: that some level of wage appreciation appears warranted and can only benefit the economic health of this population.

Social Health

The common tribal origin of the research population (i.e., Kikuyu) was a limiting factor relative to this construct. As mentioned previously, different tribes are split by geographic location. Participant recruitment and interviews all took place on one side of Mount Kenya National Park in the town of Naro Moru. Consequently, diversity was limited by the social uniformity of the sample population. Future research should consider targeting a broader geographical area to distinguish social health issues among the prominent tribes employed within Mount Kenya National Park.

Institutional Health

Many participants expressed a positive response to the recent support for lower carry weight maximums by the Kenyan Wildlife Service. They appeared genuinely grateful and encouraged by this demonstration of institutional support for their well-being. Additionally, each of the participants requested assistance with equipment, clothing, and education. One future solution may be for the Kenyan Wildlife Service to offer such assistance to active porters on a rental basis and through annual training opportunities. Such direct involvement on the part of the Kenyan Wildlife Service would contribute to a more positive relationship between porters and land managers of Mount Kenya National Park.

Quantitative Methodology

The demographics of this study were fairly homogeneous given that all participants were male and most share the same tribal affiliation. The age range was fairly broad as was the experience in years working as a porter. A limited number of employers were listed when referencing which company was most worked for. Almost all of the participants work on one specific route within the park. The average duration of a trip ranged between 4 and 6 days in length.

Quantitative survey instruments used in this study are specific to each of the proposed four health constructs and was modeled on the Mt. Kilimanjaro porter survey (Ndekirwa, Mtuy, Bernard, Valenti, & Forrest, 2011).

Physical Health

Participants confirmed that there was a reduction in weight carried per load since they began their employment as a porter. The difference in weight is about 9.55 kilograms. The difference experienced by each porter was determined to be statistically significant with an alpha of $p <$. 001. Heavier loads may lead to a negative physical health effect for the porter. For example, it is understood that in situations where additional loads or complex postures are experienced by a human, the spine stabilizing system may become dysfunctional and lead to discomfort such as low back pain (Panjabi, 1992). Therefore, a decrease in carried loads could have significant positive implications relative to the physical health of this porter population.

Park officials appear to have stepped up the degree of weight regulating and oversight. Data suggest that there has been a heightened scrutiny of porter baggage weights at the various park gates during the start of trips by the Kenyan Wildlife Service. This model is similar to that used at the neighboring Kilimanjaro National Park in Tanzania, Africa. This measured increase of governing weight allowances should reduce average carry weights within the park and contribute positively to the physical well-being of this population.

The number of meals consumed on the job per day by porters has increased significantly since each of the participants began their employment. This reflects increased food consumption per trip versus previous years. Food provides energy to the human body and is measured as kilocalories (Wardlaw, Hampl, & DiSilvestro, 2004). The intake and expenditure of this energy is termed energy balance. The body's energy needs are met by the consumption of food. Physical activity increases energy expenditure

beyond that which is typically experienced while at rest. Working as a porter requires physical activity and thus requires higher energy needs than a more sedentary profession. The data collected in this study did not indicate how many kilocalories are actually being consumed per meal per day. It is unknown if adequate nutritional intake is being achieved by the participants. Even at their current state of employment, the average daily meal consumption is 2.21 meals per porter. This is significantly higher than an average of 1.51 meals per porter per day as reported when the participants started their employment. Though a positive link between increased number of meals and improved physical health cannot be established without further information, it can be stated that more energy is being consumed by porters, which helps offset the energy expenditure experienced by this active profession.

Among the physical health questions posted to the porters was a question dealing with body aches and pain. Participants reported a significant improvement in this regard since the start of their employment. It appears reasonable to attribute at least some of this improvement to the physical health construct identified in this study.

Economic Health

Results of this study indicated a significant improvement in porters' daily wages has occurred since each participant started their employment as a porter within Mount Kenya National Park. Study participants reported earning about 297.29 Kenyan Shillings (approximately 3.50 United States Dollars) more per day now than when they started working as a porter. The same finding exists with regard to income from tips. Participants

reported tips per trip as being 3625.72 Kenyan Shillings (approximately 42.66 United States Dollars) higher than when they originally started working as a porter.

An increase in wages and tips does not necessarily translate into increased happiness or guarantee a positive impact on the economic health of a given population. When referenced generally, happiness, or subjective well-being, varies directly with one's own income and inversely with the incomes of others (Easterlin, 1994). The positive effect of higher income is offset by the negative effect associated with increased living level norms that result from a growth in incomes or the economy. This said, an increase in income for a population as a whole does increase the living level norm for all as well, thus helping offset the negative effect that may be experienced if inequality exists. In this study, a significant wage and tip increase was experienced by all participants. If this same situation exists for all porters, this may contribute positively to the economic health of the population as a whole. Another notable change reported by this sample population is the now nearly nonexistent payout of bribes as a method of acquiring work.

According to the Kilimanjaro Porters Assistant Project in Tanzania, Africa, the method of wage and tip distribution is a cause of concern for the welfare of the porter populations (Ndekirwa et. al., 2011). Past examples of widespread abuse have led authorities in Tanzania to strongly advise hiring agencies to provide negotiated wages directly to the porter and clients to provide appropriate tips also directly to the porters. These recommendations are designed to counteract the historical practice by some Kilimanjaro guides of keeping an unfair percentage of both wages and tips for themselves before distributing to the porters. Study participants indicated that the recommended

method of wage and tip distribution has become the new norm and reflects, along with the reduction in bribe payouts, a significant improvement in the economic health of the Mount Kenya National Park porter population.

One of the questions porters were asked during the surveys was to assess their current level of compensation relative to past levels of compensation. Most participants responded positively and verified that economic improvements were realized since starting their employment within Mount Kenya National Park. Responses were measured using a Likert scale ranging from 1 (Bad) to 5 (Great) and compared using a retrospective pre- and posttest. Results of this measurement add further support to the conclusion that improvements in porter compensation have directly contributed to an overall improvement in the economic health of this porter population.

Social and Institutional Health

Social health, as defined in the context of this study, is a function of the relationship that porters have with themselves, each other, and their family. Four opinion questions were used to measure this health construct. All study participants showed significant improvement in response to each of the four questions since beginning work as a porter within Mount Kenya National Park. Participants expressed greater satisfaction both in their role as a porter and as a family member as well as improved relationships with other porters. From the limited data associated with this survey instrument, it is concluded that positive improvements with regards to the social health of the porter population was realized within the time frame of the present study.

Similar to the social health construct, four opinion questions were used to measure the institutional health construct. For the purposes of this study, institutional

health is defined as the relationship the porters have with the land managing agency of Mount Kenya National Park, the Kenyan Wildlife Service. Responses to each of the four questions reflect significant improvement in the relationship between porter and institution by all of the study's participants. The data suggest that the Kenyan Wildlife Service's latest policies with respect to minimum daily wage enforcement and maximum bag weight enforcement are helping to improve porter's health and working conditions in general within Mount Kenya National Park.

Applications

Tourism-based work in outdoor recreational settings can result in physical and emotional stress endured by the human body and mind. When this work takes place at higher altitudes in rugged mountainous environments, the effects of this stress may become more severe. There is a well-documented history of porter populations throughout the mountainous regions of the world that have endured a variety of harsh working conditions. Employment opportunities are frequently very limited for the local populations of these often remote regions; working as a porter therefore serves as one of the primary sources of income.

This dissertation supports the assertion that different health constructs are applicable when defining the overall health of these working porter populations. The four constructs that provide the framework for this research (physical, economic, social, and institutional health) are supported by prior literature and theoretical frameworks as explained throughout the various studies.

This research tracked changes in working conditions over time for each participant specific to the Mount Kenya National Park location. These changes were measured as a positive or negative contributor to the overall health of each participant. Positive improvements in working conditions were measured in all of the performed studies. Both the tour operators and the land managing agency, the Kenyan Wildlife Service, are working positively with the porters to improve their working conditions and thus increase their ability to live a healthy lifestyle.

Data collected during the course of this study support the conclusion that there remains considerable room for further improvements in the working conditions for the porters of Mount Kenya National Park. For example, more consistent load weight management at the park gates is needed to ensure that porters are not carrying too much weight up and down the mountain. Also wages still remain lower than is desired by the working porters despite the recent wage improvements documented in this study.

Key stakeholders involved with the porters of Mount Kenya National Park might benefit from the results of this study. Among the stakeholders are the porters themselves, tour guide operators, and land managing officials. It is also important that the clients of the tour guide operators are made aware of past and current working conditions for this porter population and are encouraged to provide additional and independent feedback.

The information and results of this dissertation could contribute positively to key stakeholder support, which may allow a joint effort towards the continued improvement of working conditions for the porters of Mount Kenya National Park and thus further improvements in their overall health.

Future Research and Innovations

The sample population which was selected for this research was fairly homogeneous in its demographic makeup. Logistical constraints contributed to this as did limited sample participants. Future research specific to the Mount Kenya National Park porter population could be expanded to include a more diverse ethnic representation and larger sample size. It is also recommended that data collection sites be more geographically diverse. This diversity will aid in the ability to reach beyond a single tribal affiliation.

Two additional sample diversifications of the Mount Kenya Porter population could involve the inclusion of women and guides who were originally porters. This gender and hierarchical variance will provide and option for subgroup analyses and a broader base of opinions and data collection trends.

With more available resources and less logistical constraints, the future research of this target population could include more complex forms of experimental design and data collection techniques, including actual randomization of the chosen sample participants. Longer in-depth interviews and a longitudinal type design with a separated pretest, intervention period, and posttest are among numerous options to be considered.

It is recommended that the methodologies affiliated with this research be applied to similar populations outside of Mount Kenya National Park. This will assist in the validation of techniques and instruments used during the data collection procedures specific to this research. It will also provide more comparison opportunities for future literature reviews and the understanding of these designated working populations.

Working in the profession of a mountaineering porter is a difficult source of employment. It can involve severe physical and emotional health issues. With a more educated understanding of the working conditions, it may be possible to improve the lifestyles shared among these individuals. This improvement could correlate to improved work habits, efficiency, and productivity among this working class. Considerable research potential exists concerning outdoor recreation professionals such as porters and their ability to live a healthy lifestyle.

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