

UNDERSTANDING EL SALVADOR'S SPORTS MEDICINE SERVICES
FOR ELITE AMATEUR ATHLETES THROUGH
A QUALITY ASSESSMENT MODEL

by

Gabriela M. Bodewig, B.S., ATC, LAT, CES

A thesis submitted to the Graduate Council of
Texas State University in partial fulfillment
of the requirements for the degree of
Master of Science
With a Major in Athletic Training
August 2014

Committee members:

Luzita I. Vela, Chair

Cristian Lieneck

Sarah Nelson

COPYRIGHT

by

Gabriela M. Bodewig

2014

FAIR USE AND AUTHOR'S PERMISSION STATEMENT

Fair Use

This work is protected by the Copyright Laws of the United States (Public Law 94-553, section 107). Consistent with fair use as defined in Copyright Laws, brief quotations from this material are allowed with proper acknowledgement. Use of this material for financial gain without the author's express written permission is not allowed.

Duplication Permission

As the copyright holder of this work I, Gabriela Bodewig, authorize duplication of this work, in whole or in part, for educational or scholarly purposes only.

ACKNOWLEDGEMENTS

First, I would like to thank my committee members for their unconditional support and patience throughout this process. Dr. Vela, from our beginning brainstorming meetings to the final meetings about the nitty-gritty details, you were always encouraging and made me want to push myself to complete this thesis document and for that I thank you. Not only for your help thesis-related, since day one, you have been a mentor and someone I strive to emulate on a daily basis. Dr. Lieneck and Dr. Nelson, although I did not spend a lot of time with you, you have no idea how grateful I am that both of you agreed to be part of my committee and gave me the feedback and support I needed from your areas of expertise. Thank you to my fellow athletic training and non-athletic training friends who have given me two wonderful years of friendship and amazing memories in Texas; I will fondly hold on to our times together. Thank you to my family, who although far away, were able to make their love and support feel like they were present. To the Salvadoran participants who donated their time and knowledge to contribute to my study, Gracias! And last but always first, I thank God for allowing me to successfully complete this study, in hopes of helping my country and the Athletic Training profession in the future.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	iv
LIST OF TABLES.....	vii
CHAPTER	
I. INTRODUCTION.....	1
Introduction.....	1
Purpose.....	4
Significance of the Study.....	4
Operational Definitions.....	5
List of Acronyms.....	6
Delimitations.....	6
Limitations.....	7
References.....	8
II. LITERATURE REVIEW.....	9
Introduction.....	9
Quality Assurance.....	9
Healthcare Organization Analysis.....	11
The Healthcare Organization of Sports Medicine Services.....	15
References.....	17
III. METHODS.....	18
Research Design.....	18
Context.....	20

Participants.....	22
Data Collection	24
Data Analysis	29
References.....	32
 IV. MANUSCRIPT.....	 33
Introduction.....	33
Methods.....	36
Results.....	45
Discussion.....	64
Limitations	68
Conclusions.....	68
References.....	70
 APPENDIX SECTION.....	 75

LIST OF TABLES

Table	Page
1. Sensitizing Concepts.....	25
2. Focus Points	26
3. Participant Descriptions	41
4. Donabedian’s Quality Assurance model.....	71
5. Typologies.....	72

CHAPTER I

INTRODUCTION

Introduction

Multiple recent studies demonstrate that injuries are common in Olympic events. Despite the preventative sports medicine services provided for elite amateur athletes, these studies provide data on injury types and causes during the 2004 and 2008 Olympic games and provide insight on the volume of injuries that occur in competition.^{2,4} These data guides injury prevention activities as well as helps monitor and set sports safety policies. During the 2004 Olympic Games, overuse injuries were the leading cause of injury, followed by acute and chronic injuries, respectively.² Most of these injuries occurred during training followed by injuries that occurred during competition, non-athletic activities, or during warm-ups.² During the 2008 Olympic Games, 1055 injuries were reported; a rate that represented 96.1 injuries per 1000 registered athletes.⁴ The most prevalent diagnoses were acute ankle sprains and thigh strains.⁴ In the 2008 games the majority of injuries reported occurred in competition, then during warm-up for competition, and lastly during training.⁴ These data alone, which only represents competition injuries and doesn't account for injuries that occur during training outside of the Olympic games, helps to support the need for adequate sports medicine services for athletes before and during competition.

Typically, countries that have elite amateur athletes who participate in international events maintain an injury surveillance system in order to understand injuries as well as to have statistics regarding participation. El Salvador does not have an injury

surveillance system in place for their elite amateur athletic program. Injury reports are completed, yet not dispersed to healthcare providers who work with the team during events. We can extrapolate the findings from the studies completed at the 2004 and 2008 games to elite athletes from El Salvador because of their participation in both events and assume that similar injury rates occur.

Countries that obtain medals in Olympic competitions are usually those that have a comprehensive sports medicine model in place, which could indicate that there is a positive relationship between an athlete's care as provided by sports medicine specialists and their success in their sport. For example, the USA Olympic team, or Team USA, has a team of sports medicine specialists who work together to prevent, evaluate, manage, treat, and rehabilitate injuries and illnesses for all of the amateur athletes who are part of the Olympic team. Team USA's sports medicine staff includes physicians, chiropractors, physical therapists, dieticians, and certified athletic trainers.⁵ There is a national network that has partnership with top tier providers available for these athletes to receive medical care year round.⁵ Most of these national and regional providers are found in Colorado, New York, and California in three clinics specifically designed for the United States Olympic Committee (USOC). Although not all athletes reside in USOC grounds, athletes are able to continue to receive care even when they are away from the main training centers because the USOC has established sports medicine networks throughout the country.⁵ Therefore, those athletes that do receive care on USOC grounds have continuity in their care that is unique to them, but is also different from the care that they would receive at home.

Sports medicine has been defined by the American College of Sports Medicine as a multidisciplinary umbrella that includes physiological, biomechanical, psychological, and pathological phenomena associated with exercise and sports.¹ A typical sports medicine team that focuses on the injury care and management aspect of exercise and sports includes physicians, dieticians, sports physical therapists, sports massage therapists, dentists, sports chiropractors, and certified athletic trainers.¹ These personnel are designed to work together to make the best decision for the athlete, providing the best care possible. When important personnel are missing from this multi-faceted group, problems could arise and non-optimal decisions could be made, hindering the athlete and perhaps exposing them to danger.

For example, when any athlete presents with concussion-like symptoms in an NCAA sanctioned athletic event, athletic trainers remove the athlete from play, follow the proper immediate care protocol and conduct the necessary steps to confirm a concussion. The diagnosis usually begins on the sideline during a game or practice or in the athletic training room and is confirmed with further special evaluation tools such as an MRI, ImPACT test, SCAT2 or SCAT3 tests, among others.⁶ Athletes with a confirmed concussion are held out of practice until they are symptom-free and are then able to begin a gradual return to play protocol. With the skyrocketing number of concussions being diagnosed, it is important to note that there are various clinicians (sports medicine team members) who specialize in the recognition, diagnosis, and management of head injuries. What happens when such a comprehensive sports medicine team that includes sideline care is not available? Not only does the injury potentially go unrecognized, but depending on the severity the injury, the injury could be potentially life threatening for this athlete.

Athletes then do not follow the proper course of action and may have decreased performance in their sport or changes in quality of life.

Purpose

The purpose of this exploratory qualitative study is to describe the structure, process, and outcomes of sports medicine services to elite amateur Salvadoran athletes. The Donabedian model of Quality Assurance will be used to provide the framework for the description while the perspectives of members of the El Salvador Olympic team, administration, player development, and sports medicine team will be used to assess the quality of care provided daily to elite athletes during the peak of an athlete's athletic career.³

Significance of the Study

This study is important because it provides a description of the structure, process, and outcomes of sports medicine services to elite amateur Salvadoran athletes, which has never been completed. Using a common quality assurance model for healthcare organizations helps give the readers some perspective on the quality of care provided and illustrates how the structure, process, and outcomes of El Salvador sports medicine services potentially affect quality of patient care. More importantly, since the Salvadoran Olympic committee (Comite Olimpico de El Salvador- COES) has voiced their desire to develop and improve their sports medicine services, this study provides vital information about the quality of the sports medicine services provided now, as well as provides insight about the structure, process, and outcomes of the healthcare organization for elite athletes of El Salvador. It also highlights potential changes that could be implemented to

the existing entity in search for amelioration of the sports medicine care given to Salvadoran Olympic athletes.

Operational Definitions

Elite amateur Salvadoran athletes- Salvadoran athletes who are of a higher competition level and are amateurs; meaning they dedicate their life to sport (sometimes have other occupations as well), but does not exclude professional athletes, there are more amateur athletes in the country versus professional ones who compete for El Salvador

Federated athletes- athletes who participate/practice in a particular venue for their sport and represent their country

Sports medicine services- The healthcare services provided to athletes by those who comprise the sports medicine team

Sports medicine training- Training that is specific to working with musculoskeletal and orthopedic injuries in order to provide services to athletes received by any ESOC member in this study

Sensitizing concepts- an initial guide to research, where the researcher has no definite ideas but uses these as starting points to think about the class of data being collected. For this study, under the structure category, leadership roles and their interactions as well as culture and workflow processes, physical structure for the use of facilities and resources available will be used as sensitizing concepts whereas interactions, reasons, purposes and goals of treatment as well as patient satisfaction evaluation methods will be used as sensitizing concepts under the process category.

Focus points- Specific ideas that help funnel what is actually being looked for. For this study the leadership roles played out in context of events and practices, the use of the

facilities and resources available, the interaction between the sports medicine providers and the athletes, the interaction of the sports medicine providers, the reason, purpose, and goals of any treatment delivered and the methods that sports medicine providers use to evaluate patient satisfaction will be used as focus points within the broader sensitizing concepts.

Typology- a predetermined way that will analyze the categories comprised by the components used to assess the structure and process of an organization.

List of Acronyms

MSPAS- Ministry of Public Health and Social Assistance

ISSS- Salvadoran Institute of Social Insurance

ISRI- Salvadoran Institute of Rehabilitation for the Disabled

Sanidad Militar- Military Health

ISBM- Salvadoran Institute for the Magisterial Well-being

FOSALUD- Health Solidarity Fund

FESFUT- Federacion Salvadorena de Futbol; National soccer teams, professional athletes of major and minor leagues

INDES- Instituto Nacional de los Deportes de El Salvador

COES/ESOC- Comité Olimpico de El Salvador/ El Salvador Olympic Committee/

Delimitations

1. This study is delimited by the recruitment of physicians, physiatrist, physical therapy assistants, administrators, coaches, and athletes who are part of COES and INDES as of 2013-2014.
2. This study is delimited by having a single participant observer.

Limitations

1. This study is limited in the quality aspect because although there are no accredited standards that are used to benchmark externally, levels of quality/ best practices are based on who El Salvador sports medicine providers believe do it best; other countries who provide better services are the assumed standards in this study.
2. This study is limited to assessing sports medicine services through observations from a single examiner's observations.

References

- 1 Arnheim DD, Prentice WE. *Principles of athletic training*. Boston, Mass: McGraw-Hill, 2000; 10th ed.
- 2 Athanasopoulos S, Kapreli E, Tsakoniti A, et al. The 2004 Olympic games: Physiotherapy services in the olympic village polyclinic. *Br J Sports Med*. 2007; 41(9): 603-609.
- 3 Glickman SW, Baggett KA, Krubert CG, Peterson ED, Schulman KA. Promoting quality: The health-care organization from a management perspective. *Inter J Qual Healthcare*. 2007; 19(6): 341-348.
- 4 Junge A, Engebretsen L, Mountjoy ML, et al. Sports injuries during the summer olympic games 2008. *Am J Sports Med*. 2009; 37(11): 2165-2172.
- 5 Medical Services for Team USA. United States Olympic Committee Web site. <http://www.teamusa.org/For-Athletes/Medical-Services>. Accessed November 11, 2013.
- 6 McCrory P, Meeuwse WH, Aubry M, et al. Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport held in Zurich, November 2012. *Br J Sports Med*. 2013 47: 250-258.

CHAPTER II

LITERATURE REVIEW

Introduction

As aforementioned, the purpose of this exploratory qualitative study is to describe the structure, process, and outcomes of sports medicine services to elite amateur Salvadoran athletes on a daily basis during the peak of their athletic career using a well-accepted and proven quality assurance model for healthcare organizations. Concepts and models used to define and describe quality are explored first in this literature review. Methods for healthcare organization analysis are expanded upon next, to explain the ways in which an organization works and its components that are subject to analysis. Understanding the components of a healthcare organization is fundamental for the next topic: the healthcare organization for sports medicine services. Thus, the final portion of this literature review describes the ways in which sports medicine services are typically provided for elite amateur athletes in the USA, the external organization used as benchmark for this study.

Quality Assurance

Quality assurance in health care is the “administrative and procedural activities implemented in a quality system so that requirements and goals for a product, service, or activity will be fulfilled.”⁷ Quality assurance, then, is an important aspect of the healthcare system and imperative for setting standards. In some cases the survival of a patient is the measure of the quality of health care services, whereas for others, the successful completion of a procedure is an indicator of quality.¹⁰ Avedis Donabedian, the

originator of quality assurance in healthcare, states that quality cannot be guaranteed or assured.² Rather, quality assurance procedures can increase the probability that the healthcare services being delivered will be good or of better quality. His definition describes that healthcare providers should strive to establish, protect, promote, and improve the quality of health care.² Donabedian suggests that the term continuous improvement is more relevant in describing efforts to uphold quality assurance because quality assurance does not always express ultimate satisfaction.¹⁰

Quality, according to Donabedian, is the product of two factors; one factor is the science and technology of healthcare and the other is the application of that science and technology in practice.¹⁰ Quality is then characterized by several attributes, or components of quality. Monitoring activity is essential to identifying the times or situations where quality of care falls below what is expected or desired. One way to do so is “trouble shooting”¹⁰, where the problem is identified from a previously set standard and a person with enough skill and knowledge is assigned to address the issue. For example, a clinician such as an athletic trainer could find a significant variation in the outcome measures used to assess patient outcomes, such as the SF-36 scale which focuses on quality of life, or an extremity specific scale such as the LEFS (Lower Extremity Functional Scale), so a physician or the team physician would be able to identify, address, and ultimately correct the situation. The second way of identifying such an event is “planned reconnaissance”¹⁰, where steps are taken to find issues that were not obvious or may be suspected and continuously addressed. Outcome or process variations may become apparent in this continuous monitoring of performance and quality; for example, determining priorities, selecting the most appropriate approach to assess

performance, and determining the criteria and standards against which to judge performance. These are all initiatives in establishing a quality assessment program.

Donabedian also suggests that behavior change is linked to structure and process, and that individual competence does not dictate poor performance, but has to do with the context “process” of the performance, meaning that the improvement of quality comes from the context in which healthcare is being delivered.¹⁰ Also, to bring improvement to any health care service, “we must change the way in which we currently approach the tasks, because if we always do what we always did, then we will always achieve what we always have.”¹⁰ Following Donabedian’s insight we know that quality can be monitored and measured against a standard; adjustments can then be made and so quality can be “assured”. Expectations of healthcare stakeholders such as patients, health care professionals, government, and society will not ease and so the quality of healthcare should not only meet a minimum standard but in reality, also be improving.

Healthcare Organization Analysis

Recently, extensive deficiencies in the quality of healthcare have challenged those in the medical field to implement quality-improvement programs.³ The Institute of Medicine defined quality of medical care as ‘the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.’⁸ But how does one improve the quality of health care service without first knowing the basic framework through which quality is established? To help answer this question, Donabedian defined the health care triad of quality improvement efforts from an organization standpoint: structure, process, and outcome.⁸

Structure

Healthcare structure, according to Donabedian, is the most important of the three components given that it is the driving force for processes and ultimately, for outcomes.⁶ Structure, according to Cole et al., are the elements of the delivery system of healthcare that either facilitate or inhibit access to and provision of services both within a team and the whole organization.⁴ Structure includes physical structures, facilities, and healthcare provider qualifications. Essential structural elements of quality improvement include leadership, human capital, information management systems, and group dynamics.⁸ Organizational attributes such as executive management, culture, organizational design, incentive structures, and information and technology are key elements from a management perspective of structure that serve as primary catalysts for process change. For example, in sports medicine, this would be organizational leadership, staff, and athletes, as well as the ease of access to facilities in which services are provided.

Process

Process relates to how the team accomplishes its task as well as how the team works together effectively and efficiently. In a sports medicine context, this would include a detailed role description and a workflow relationship as to who is in charge throughout the patient care experience, providing an established “continuity of care.” Following Donabedian’s model, once these organizational attributes or structures are in place, then the process, including diagnosis and treatment procedures can improve.

Outcomes

The third component of the triad is outcome, results of the process. Only if structure and process are correct, not only will outcomes of morbidity and mortality improve, but quality of service improvement will occur as well.¹⁰ Outcomes as we know them now, are not limited to morbidity or mortality; outcome measurement scales as well as disablement models provide a lot of information about the results or outcomes of the structure and/ or processes of the actual healthcare organization. Through a sports medicine viewpoint, this would include outcome measures taken for the athletes throughout treatment, patient satisfaction surveys, and data on re-injury.

Already mentioned is the concept that if the structure of an organization is improved, the process will improve, therefore it is proposed that outcomes will improve as well (morbidity, mortality, outcome measurement scales, disablement, and, service quality). The adapted figure that was used is the version of Glickman's framework for quality improvement and can be found in Appendix A. While there are other quality of care frameworks, including the World Health Organization's (WHO) Recommended Quality of Care Framework, the Donabedian Model continues to be the dominant paradigm for assessing the quality of healthcare.⁹

Having defined Donabedian's healthcare organization triad helps us understand that there are subcategories, which support each of these. Specifically, there are four ways that the structure of a healthcare organization can be assessed: organizational leadership, culture, physical characteristics and workflow processes. This analysis is not solely for quality assessment purposes; healthcare services in general may be analyzed using this

model. Organizational leadership is the first category for analysis and includes persons in management positions, this being the Team Physician and/or the Athletic Director in sports medicine. Organizational leadership is crucial for the structure of an organization, in that without organization or leadership, there would be no organization because they design the actual processes. Organization is one aspect and leadership is another, and in combination they are an essential component. Culture, which includes patients, clients, and customers, in the sports medicine setting would encompass the athletes and their behavior and inherent beliefs. The culture of an organization is their people; athletes create that culture in the sports medicine context. Physical characteristics refer to the actual infrastructure as well as the physically active members such as administrators and physicians. Infrastructure has more involvement in the structure of an organization than imagined. The actual space that the organization is able to work with as well as the safe and inviting environment affects the structural aspect of the organization. Lastly, the workflow processes are helpful in the healthcare organization because help understand the relationship between the different components of how care is delivered, from initial stages of injury to the release and return to play of an athlete, for example.⁸

Evaluation

Reliable and valid measures through which quality of health care is evaluated have come a long way. For more than quarter of a century, experts have been working on creating such measures for a myriad of health and medical problems.³ In some healthcare fields, there is an immense amount of measurement tools available to be put to use immediately, whereas for others, quality measurement tools are still in their early development stage.³ This is solely regarding the healthcare system in the United States

and not considering other countries. As the Consensus Statement of the Journal of American Medicine Association suggests, quality improvement efforts are inconsistent due to the fact that they are usually limited to single, large institutions- mainly hospitals.³ It is rare to find regional attempts to improve quality across a whole system, let alone long-term multi-institutional improvement programs. As a result of this fragmented system, most of the current literature on quality assessment of healthcare organizations and their management are related to hospital settings. Since there is no quality assurance model for the sports medicine role, the most similar healthcare provider for whom there is a model to follow is the nursing profession within a hospital setting.⁵ Crilly, Chaboyer, and Wallis have adapted the Hospital in the Nursing Home (HINH) model and used this to describe and evaluate the structures and processes involved in this program.⁵ Their design established structural elements of resources for the program to operate such as patients, staff, and organization. Process elements included role and relationship requirements for the program to operate; outcomes elements then were nursing specific.⁵ Their design was based on the structure, process, outcome first developed by Donabedian in 1966.⁵ Using this nursing evaluative model in a qualitative study of healthcare services is appropriate because data were collected through interviews of key stakeholders in the organization.⁵

The Healthcare Organization of Sports Medicine Services

A very broad term, sports medicine refers to the medical practice related to physical activity and sport. The term sports medicine has been defined by the American College of Sports Medicine as “multidisciplinary; including physiological, biomechanical, psychological, and pathological phenomena associated with exercise and

sports.”¹ Under the sports medicine umbrella are found aspects of the physically active, either geared toward performance enhancement or injury care and management. Areas of specialization under the performance enhancement category include exercise physiology, biomechanics, sport psychology, sports nutrition, strength and conditioning, coaching, and personal fitness trainers.¹ On the injury care and management category, practice of medicine, athletic training, sports physical therapy, sports massage therapy, sports dentistry, osteopathic medicine, orthotists/prosthetics, sports chiropractics, and sports podiatry are found.¹ Under this large spectrum of disciplines, the common goal is to work to improve and maintain an individual’s functional capacities for sports, exercise, physical labor, and activities of daily living as well as prevention and treatment of diseases and injuries related to exercise and sports.

References

- 1 Arnheim DD, Prentice WE. *Principles of athletic training*. Boston, Mass: McGraw-Hill, 2000; 10th ed.
- 2 Block DJ. *Healthcare outcomes management: Strategies for planning and evaluation*. Boston, MA US: Jones and Bartlett Publishers; 2006.
- 3 Chassin MRG, Robert W. The urgent need to improve health care quality. *JAMA*. 1998; 280(11):1000.
- 4 Cole KD, Waite M, Nichols LO. Organizational structure, team process, and future directions of interprofessional health care teams. *Gerontol Geriatr Educ*. 2003; 24(2):35-49.
- 5 Crilly J, Chaboyer W, Wallis M. A structure and process evaluation of an Australian hospital admission avoidance programme for aged care facility residents. *J Adv Nurs*. 2012; 68(2):322-334.
- 6 Donabedian A. Evaluating the quality of medical care. *Milbank Q*. 2005; 83(4):691-729.
- 7 Feldman S. Quality Assurance: Much More than Testing. *ACM Queue*. 2005; 3(1): 26-29.
- 8 Glickman SW, Baggett KA, Krubert CG, Peterson ED, Schulman KA. Promoting quality: The health-care organization from a management perspective. *Inter J Qual Healthcare*. 2007; 19(6):341-348.
- 9 McQuestion, MJ. Presentation: Quality of Care. Johns Hopkins Bloomberg School of Public Health. 2006.
- 10 Petrides M. An Introduction to Quality Assurance in Health Care: Book Review. *Int J Qual Health Care*. 2003; 15(4): 357-358.

CHAPTER III

METHODS

Research Design

This project is an exploratory qualitative study that describes the structure, process, and outcomes of sports medicine services for elite amateur Salvadoran athletes using Donabedian's seminal work in quality assurance as a framework. Social exploratory research "seeks to find out how people get along in the setting under question, what meanings they give to their actions, and what issues concern them. The goal is to learn 'what is going on here?' and to investigate social phenomena without explicit expectations." ⁸ An exploratory descriptive approach is used to describe the context in which sports medicine services are provided as well as to understand the key informants' perspectives of the quality of care for those athletes that sustain injuries while training and competing for El Salvador's national team during late 2013 and early 2014.

Donabedian's work focused on the assurance of quality through the analysis of an organization's structure, process, and outcomes. Observations and interviews are two sources of data that were used to describe the structure, process, and outcomes of the sports medicine services for elite amateur Salvadoran athletes while a focus group was used to share overall or key themes and findings that emerged from the individual interviews and assess perceived outcomes. These key themes and findings were presented to the group for confirmation, elaboration, or modification. Observations were conducted in two instances where the researcher acted as a participant observer: 1) during a 15-day international games competition that occurred in Peru where the researcher

worked as an athletic trainer (AT) providing sports medicine services to athletes in golf, shooting, wall ball, gymnastics (rhythmic and artistic), surf, bowling, rock climbing, sail-boating, and softball and 2) in El Salvador between December 2013-January 2014 where the researcher was a sports medicine intern as an athletic trainer while in-house day to day sports medicine services were provided to athletes. In this study, the researcher observed particular focus points within sensitizing concepts while making observations using Glickman's adaptation of Donabedian's model of quality assurance, found in Appendix A, to provide the framework for the focus points.⁵ During both instances (Peru and El Salvador) the sensitizing concepts derived from Donabedian's work of understanding structure and process in quality assurance. The structure of the sports medicine team was observed through leadership roles and their interactions as well as through culture and workflow processes. The focus points were:

- The leadership roles played out in context of events and practices
- The use of the facilities and resources available
- The interaction between the sports medicine providers and the athletes
- The interaction of the sports medicine providers
- The reason, purpose, and goals of any treatment delivered
- The methods that sports medicine providers use to evaluate patient satisfaction

Face to face interviews were conducted over a one-month period while the researcher was in El Salvador. The researchers completed a typological analysis after interviews were conducted with pre-established typologies. Hatch describes a typological

analysis as an analysis made after everything is divided into groups or categories on the basis of separating the whole.⁶ These categories or groups are based on predetermined typologies. For this study, typologies are those that are generated by the research objectives. Namely, the framework that Donabedian used to describe the components to assess the structure, process, and outcomes of an organization served as the categories for the typology analysis. Lastly, a focus group was utilized to edit, modify, or confirm the themes developed from the field observations and individual interviews for accuracy and serves as a method to establish trustworthiness.⁷

Context

With a population of 6,196,000, El Salvador is the country with the highest population density in Latin America.² It is also the third country ranked highest for migration to countries such as the United States, in hopes for a better quality of life.² Although El Salvador continues to recover from a 12 year civil war that ended in 1992, it has become one of the most economically developed in Central America.² Regardless of their economic improvement, there continues to be hindrance in housing, drinkable water, sanitary services, health, and nutrition.² Before analyzing the current process of health care services provided for amateur athletes in El Salvador, it is imperative to have an understanding of the Salvadoran healthcare system as a whole.

There are two major subdivisions in the healthcare system, a public sector and a private sector. The public sector is governmentally funded and includes 6 entities: Ministerio de Salud Publica y Asistencia Social (MSPAS), Instituto Salvadoreno del Seguro Social (ISSS), Instituto Salvadoreno de Rehabilitacion a los Invalidos (ISRI), Sanidad Militar, Instituto Salvadoreno de Bienestar Magisterial (ISBM), and Fondo

Solidario para la Salud (FOSALUD) whereas the private sector is composed of private lucrative organizations as well as non-profit organizations.² The government-funded ISSS and MSPAS cover most of the Salvadoran population and are the two entities that play a role in the health care for amateur athletes in the country. The ISSS is an autonomous entity and insures those who work and contribute to the economy. MSPAS offers health care to those who do not have social security as well as serves as a regulator of the public sector.² There is a separate entity which is also governmentally funded (socialized) that focuses on health care for federated athletes, professional athletes, and Olympic athletes and this is the department of Sports Medicine under the Instituto Nacional de los Deportes de El Salvador (INDES). There is no difference at the federation level between federated athletes, professional athletes, or Olympic athletes in regards to health care services. There are a series of sport scholarships where athletes are awarded monthly monetary assistance but none of the recipients have special access to health insurance. It is important to note that the only professional athletes in El Salvador are male soccer players, because they receive a salary through Federacion Salvadorena de Futbol (FESFUT).

As mentioned previously, INDES is the National Institute of Salvadoran Sports that provides health care for Salvadoran athletes through their Sports Medicine branch. They offer general medicine services, orthopedic care, and physical therapy to all federated athletes. This sports medicine branch is located in the “Villa Centroamericana” in Ayutuxtepeque where they have three sports medicine physicians, one orthopedic surgeon, one nutritionist, one psychologist, and various physical therapy technicians. There are also two other clinics, one in Palacio de los Deportes, and one in Estadio

Magico Gonzalez where track and field federation practices. Both of these clinics have only one physical therapist. There is one venue, Polideportivo, where federated sports of tennis, swimming, archery, and gymnastics practice and have no medical services available. Hospital Zacamil is the hospital where special attention services such as imaging, blood tests, hospitalizations or surgeries take place. This is due to the fact that INDES and Hospital Zacamil have an agreement. Also, the INDES has an agreement with the ISSS to provide care for specific elite athletes in ISSS venues, in case of emergencies that cannot be treated in the INDES' 3 clinics. There are only a few athletes that are in this agreement, so if they do not have insurance through ISSS or private medical insurance, they receive care in the national health network, through MSPAS.

The last option for Salvadoran athletes, federated or not, to receive care is through the private sector. Any medical attention in regards to diagnosis, pharmaceutical treatment and physical therapy is attainable through one clinic that specializes in athletes. There is one physiatrist, one orthopaedic surgeon and four physical therapy technicians there.

In regards to Olympic athletes, COES does not have a clinic for health care services for any athletes. The upcoming project of the Olympic committee is to build a clinic for federations that are part of this Olympic committee and provide care for Olympic athletes.

Participants

The participants in this study were purposively selected using a criterion sampling strategy.⁷ This strategy was used to ensure that we included the key informants that could provide descriptive information on the structure and process and perspectives of

outcomes of sports medicine services provided to elite amateur Salvadoran athletes. Only participants who have been part of elite sports in El Salvador for at least 3 years were chosen for this study because it insured that there was inherent long-term experience with the organization. A total of nine key informants were selected for observation as well as for interviews; one team physician, one physiatrist, two physical therapy assistants, two administrators, one coach, and two athletes. Each type of key informant was chosen because they could provide a unique perspective of the structure and process of El Salvador's sports medicine services. The physician had sports medicine training and was chosen based on the participant's previous experience working with elite Salvadoran athletes by serving as the source of primary care after an injury. The physiatrist was chosen based on his/her orthopedic background, sports medicine specialization, and experiences in providing care to elite athletes in El Salvador. Physical therapy assistants were chosen based having multiple opportunities to work with elite athletes during their orthopedic rehabilitation experience. The administrators were chosen based on their position in the El Salvador sports medicine organization and their work experience with COES. One coach was chosen based on their coaching experience and being part of the elite athlete coaching staff as well as being able to give a perspective of the impact of the current sports medicine services on athlete performance. Lastly, two athletes were selected to participate if they were native to El Salvador, had been participating in the elite category for at least 3 years and had been previously injured. Previously injured athletes were chosen because they have experience with the Salvadoran sports medicine system. Furthermore, one of the athletes experienced a short-term injury also known as an acute injury, defined as "an injury with sudden onset and short duration."¹ The second

athlete experienced a long-term injury, or chronic injury, defined as “an injury with long onset and long duration.”¹ Both of these types of participants were chosen to give their perspective on the structure, process, and outcomes perspective of the sports medicine services taking into account the element of time that they were exposed to the sports medicine team due to the nature of their injury. Participants for each role were selected depending if there was one or more who fit the criteria. If there was one or more person who fit the criteria, then all who fit the criteria were invited to participate and the first to respond were selected.

Data Collection

Observations

Although fieldnotes and observations are not interchangeable concepts but are generally two separate data collection processes, fieldnotes are ways of documenting observations in a less structured way. An observation is a purposeful (usually structured) data gathering technique in which the researcher uses her senses to note what is happening in the context and documents this in a systematic way. A fieldnote is a technique for the researcher to document his/her thoughts and perspectives before or after the observation; fieldnotes are generally not highly structured.⁷ For this study, we refer to the fieldwork documentation as Observations. Although ideal to observe everything as open-ended naturalistic observation, it is not feasible to attain. To orient fieldwork, observers use “sensitizing concepts.” A sensitizing concept is an initial guide to research, where the researcher has not definite idea but uses these as starting points to think about the class of data being collected, paying special attention to the words and meaning that

are prevalent in the people being studied. ⁷ This provides the researcher an observation guideline with specific focus points that help funnel what is actually being looked for. Sensitizing concepts also focus on how a concept is given meaning in a particular place. For perception itself to be understood, any researcher should have some way of organizing the complexity of the experience. ⁶ Sensitizing concepts can be categorized from the program evaluation standpoint, such as program theory, goals, implementation, process, output, outcomes, and impacts. The sensitizing concepts for this study derive from Donabedian’s work of understanding structure and process in quality assurance; the structure of the sports medicine team was observed through leadership roles and their interactions as well as through culture and workflow processes. Physical structure was also observed for the use of facilities and resources available. Observations on processes were noted, through interactions, reasons, purposes and goals of treatment as well as patient satisfaction evaluation methods. For this study, sensitizing concepts include specific focus points: leadership roles played out in context of events and practices, the use of facilities and resources available, the interaction between sports medicine providers and athletes, the interaction of sports medicine providers, the reason, purpose, and goals of any treatment delivered, and the methods that sports medicine providers use to evaluate patient satisfaction.

Table 1- Sensitizing Concepts

SENSITIZING CONCEPTS⁷	
STRUCTURE	PROCESS
LEADERSHIP ROLES AND INTERACTIONS	INTERACTIONS OF ESOC
CULTURE	REASONS, PURPOSES, GOALS OF

	TREATMENT
WORKFLOW PROCESSES	PATIENT SATISFACTION EVALUATION METHOD
PHYSICAL STRUCTURE- USE OF FACILITIES AND RESOURCES	

Table 2- Focus Points

FOCUS POINTS ⁷
1- Leadership roles played out in context of events and practices
2- Use of facilities and resources available
3- Interaction between sports medicine providers and athletes
4- Interactions of sports medicine providers
5- Reason, purpose, and goal of any treatment delivered
6- Methods that sports medicine providers use to evaluate patient satisfactions

Observations were recorded by the researcher who was a participant observer onto a hand-held recorder in two different ways, as condensed accounts or expanded accounts during two weeks in Peru and three weeks in El Salvador. Condensed accounts are those observations that are short sentences or phrases, recorded when there is limited time to record what was observed. ⁴ The expanded account observations were taken soon after the period of time of immersed in the setting, ideally the same day, to ensure that most details are recorded. Expanded accounts include more details of the space,

interactions, and events. Lastly, a fieldwork diary was used to document and look for commonalities during the two periods of time for observation, jotting down recurring events or themes, and anything that happens differently as well.⁴ Sensitizing concepts are a way to organize and provide some guide to the observations, which will also follow an organizational guide. A useful way to organize observations is to have four sections: 1) Preliminaries: a careful description of the setting, who was present, description of interviewee and/or persons observed, and diagrams of the settings and of any movements that may have occurred among the participants in the setting, when this is relevant to the research questions. 2) Descriptive text: a section on descriptions of what happened, who said what, the non-verbal, the tones of voice, and any other relevant detail. 3) Observer comments (O.C.): a place for researchers to record their emotional reactions, their doubts, fears, and concerns. These can be placed in the midst of the text of the descriptions and labeled “Comments.” Some reflections and quick thoughts about applications, comparisons to what you’ve found in other interviews/settings/observations, and linkages to related research and theory can be made here. 4) Memos: a section at the end of the observations where researchers record their reflections in a more leisurely way. They can reflect on what they observed in their interviews/observations, think about what else they might want to know, think about research and theory that is relevant to what they are learning, the scholarship that the findings might contribute to, and comparisons across cases, among many other topics. Often in memos, researchers reflect upon emerging ideas and concepts that are of interest to them and/or seem important to understand the phenomena.³

Interviews

Qualitative interviewing allows us to enter the person's perspective. In this study, individual interviews with key informants were conducted in order to understand their perspectives on the structure, process, and outcomes of sports medicine services for elite amateur Salvadoran athletes. A semi-structured interview guide that derives questions from Donabedian's structure, process, and outcomes framework and focus points within sensitizing concepts previously established and observed during fieldwork were used for this study. The interview guide used for this study is found in Appendix B. Although somewhat structured, this approach keeps the interactions focused on basic lines of inquiry yet allows individuals to express their perspectives and experiences. Donabedian's framework on structure, process, and outcomes as outlined by Glickman were used to derive interview questions. Concepts such as organizational leadership, culture, physical structure, workflow processes, diagnosis, and treatment were investigated. Probes were incorporated when necessary to encourage conversation. Eight interviews were conducted, each interview lasting between 30-45 minutes. Each interview was recorded and then transcribed verbatim with all personal identifiers removed. Member-checking was done after individual interviews to see whether the participant agrees with the researcher's interpretation of the participant's interview data. The researcher shared the interview transcript and any notes/interpretations that were made from the transcript and the participants then confirmed or clarified anything said in the interview and the interpretations. This is an important step in establishing trustworthiness and validity and not the only way to establish trustworthiness, but a common way of doing so.

Focus group

The last data collection component of our study was done using a focus group, which included one physician, one physical therapy assistant, one athlete, and one administrator. Completing a focus group interview assisted in sharing categories and themes with the group and determining if what we found and analyzed from the set of interviews is the information that each key informant intended to provide. This allowed our key informants an opportunity to better explain, modify, elaborate, or confirm anything that researchers had not quite fully grasped. This interview was done via Skype calls, at the end of April.

Data Analysis

All interviews were transcribed verbatim and checked for accuracy and all personal identifiers were removed to maintain confidentiality. Analyzing data is a systematic way of searching for meaning; qualitative data is processed and what has been learned is then communicated. Synthesis, evaluation, interpretation, categorization, hypothesizing, comparison, and pattern finding are many of the things that data analysis is composed of; organizing interrogated data helps researchers see patterns, identify themes, discover relationships, develop explanations, make interpretations, mount critiques, or generate theories.⁶ A typological analysis, which is the chosen method for data analysis in this study due to its efficiency, consists of dividing everything that is observed into groups and categories on the basis of disaggregating the whole. Based on predetermined categories, the data is then divided into elements. As Hatch has mentioned, studies that rely on interviewing as primary data collection will already have a fairly focused purpose and well-structured data set in regards to consistent guiding questions, and so the topics that the researcher has in mind will be logical places to start

looking for typologies and provide places to anchor further analysis.⁶ Each of the eight steps of this process will be detailed in the next section and an abbreviated list of the steps can be found in Appendix C.

The first step in a typological analysis is to come up with an initial set of typologies. Then, the data should be read with just one typology in mind and then find and mark where evidence supporting that typology is found. Then, data is read doing the same for the rest of the typologies. Next, data within the typology of interest is read and researchers create a summary sheet where one brief statement of the main idea of the excerpt is recorded. This is done to obtain a summary of a large amount of data. Following the summary process, it is time to look for meaning within the data from the typology. This is where guided questions become important; since the researchers were seeking particular information, they should have a good idea on what patterns, themes, or relationships are found in the data. Patterns are defined as regularities, which include similarity, difference, frequency, sequence, correspondence, and causation. Relationships are defined as links, which could be strict inclusions, rationale, cause-effect, means-end. Themes are defined as integrating concepts or statements of meaning that encompass all or most pertinent data. From this, hypothetical patterns, themes, and relationships emerge. Next, for each typology under investigation, the data marked for inclusion in the marked protocols is re-read. The researcher then reads the data highlighted for that category and code each entry using the patterns identified. All data is then re-read and coded. After these steps, a set of patterns, themes, and relationships are established and analyzed separately. The next step is to then search for connections across the individual analyses. Visual representations of the categories can be helpful for further analyzing

what relationships exist between or among the categories. Then, patterns are written in one-sentence generalizations to help synthesize and provide closure to the analyses. A generalization typically expresses a relationship between two or more concepts. Lastly, researchers select powerful examples to exalt the generalizations made. If too many good examples are found, it is a sign that the findings are well supported.⁶

Trustworthiness was established through member checks and analyst triangulation. Member checking was conducted with a final focus group and served as an opportunity to check the model developed from the field observations and individual interviews for accuracy. Analyst triangulation, another method to establish trustworthiness, was completed between two analysts separately using the framework analysis. The two analysts then came together to discuss the categories and themes that emerged and came to a consensus regarding the model. Analyst triangulation also reduces the potential bias that comes from one person's analysis and provides ways to assess more directly the reliability and validity of the data obtained.⁷

References

- 1 Arnheim DD, Prentice WE. *Principles of athletic training*. Boston, Mass. McGraw-Hill, 2000; 10th ed.
- 2 Acosta M, Saenz MR, Gutierrez B, Bermudez JL. Sistema de salud de El Salvador. *Salud Publica de Mexico*. 2011; 53 (2): 188-196.
- 3 Bogdan R, Biklen SK. *Qualitative research for education: An introduction to theory and method*. Boston: Pearson/Allyn and Bacon. 2007; 5th ed.
- 4 Clarke DJ. Using qualitative observational methods in rehabilitation research: Part two. *Int J Ther & Rehab*. 2009;16(8):413-419.
- 5 Glickman SW, Baggett KA, Krubert CG, Peterson ED, Schulman KA. Promoting quality: The health-care organization from a management perspective. *Int J Qual Healthcare*. 2007;19(6):341-348.
- 6 Hatch JA. *Doing qualitative research in education settings*. Albany:State University of New York Press. 2002.
- 7 Patton MQ, Patton MQ. *Qualitative research & evaluation methods*. Thousand Oaks, Calif.: Sage Publications, 2002; 3rd. ed.
- 8 Schutt RK. *Investigating the social world: The process and practice of research*. Thousand Oaks, Calif.: Pine Forge Press. 2004

CHAPTER IV

MANUSCRIPT

Introduction

Multiple recent studies demonstrate that injuries are common in Olympic events. Despite the preventative sports medicine services provided for elite amateur athletes, these studies provide data on injury types and causes during the 2004 and 2008 Olympic games and provide insight on the volume of injuries that occur in competition.^{2,4} These data guides injury prevention activities as well as helps monitor and set sports safety policies. During the 2004 Olympic Games, overuse injuries were the leading cause of injury, followed by acute and chronic injuries, respectively. Most of these injuries occurred during training followed by injuries that occurred during competition, non-athletic activities, or during warm-ups.² During the 2008 Olympic Games, 1055 injuries were reported; a rate that represented 96.1 injuries per 1000 registered athletes.⁴ The most prevalent diagnoses were acute ankle sprains and thigh strains.⁴ In the 2008 games the majority of injuries reported occurred in competition, then during warm-up for competition, and lastly during training.⁴ These data alone, which only represents competition injuries and doesn't account for injuries that occur during training outside of the Olympic games, helps to support the need for adequate sports medicine services for athletes before and during competition.

Typically, countries that have elite amateur athletes who participate in international events maintain an injury surveillance system in order to understand injuries as well as to have statistics regarding participation. El Salvador does not have an injury surveillance system in place for their elite amateur athletic program. Injury reports are

completed, yet not dispersed to healthcare providers who work with the team during events. We can extrapolate the findings from the studies completed at the 2004 and 2008 games to elite athletes from El Salvador because of their participation in both events and assume that similar injury rates occur.

Countries that obtain medals in Olympic Games are usually those that have a comprehensive sports medicine model in place, which could indicate that there is a positive relationship between an athlete's care as provided by sports medicine specialists and their success in their sport. Sports medicine has been defined by the American College of Sports Medicine as a multidisciplinary umbrella that includes physiological, biomechanical, psychological, and pathological phenomena associated with exercise and sports.¹ A typical sports medicine team that focuses on the injury care and management aspect of exercise and sports includes physicians, dieticians, sports physical therapists, sports massage therapists, dentists, sports chiropractors, and certified athletic trainers.¹ These personnel are designed to work in conjunction to make the best decision for the athlete, providing the best care possible. For example, the USA Olympic team, or Team USA, has a team of sports medicine specialists who work together to prevent, evaluate, manage, treat, and rehabilitate injuries and illnesses for all of the amateur athletes who are part of the Olympic team. Team USA's sports medicine staff includes physicians, chiropractors, physical therapists, dieticians, and certified athletic trainers.⁹ There is a national network that has partnership with top tier providers available for these athletes to receive medical care year round. Most of these national and regional providers are found in Colorado, New York, and California in three clinics specifically for the United States Olympic Committee (USOC). Those athletes that do receive care on USOC grounds have

continuity in their care that is unique to them, but is also different from the care that they would receive at home. Although not all athletes reside in USOC grounds, due to established network throughout the country, athletes are able to continue to receive care even when they are away from the main training centers.⁹

Quality assurance in health care is the “administrative and procedural activities implemented in a quality system so that requirements and goals for a product, service, or activity will be fulfilled.”⁵ Therefore, quality assurance is an important aspect of the health care system and imperative for improvement. In some cases the survival of a patient is the measure of the quality of health care services, whereas for others, the successful completion of a procedure is an indicator of quality. Avedis Donabedian, the originator of quality assurance in health care, states that quality cannot be guaranteed or assured. Rather, quality assurance procedures can increase the probability that the healthcare services being delivered will be good or of better quality. His definition describes that healthcare providers establish, protect, promote, and improve the quality of health care.⁴

Donabedian also suggests that behavior change is linked to structure, process, and outcomes and that individual competence does not dictate performance. Individual competence has to do with the context of the performance, meaning that the improvement of quality comes from the context in which health care is being delivered.¹² Donabedian states that to bring improvement to any health care service, “we must change the way in which we currently approach the tasks, because if we always do what we always did, then we will always achieve what we always have.”¹² Following Donabedian’s insight we know that quality can be monitored and measured against a standard. Adjustments can be

made and so quality can be “assured”. Expectations of healthcare stakeholders such as patients, health care professionals, government, and society will not ease and so the quality of healthcare should not only meet a minimum standard but in reality, also be improving. Since the Salvadoran Olympic committee (Comite Olimpico de El Salvador-COES) has voiced their desire to develop and improve their sports medicine services, this study provides vital information about the quality of the sports medicine services provided now, as well as provides insight about the structure, process, and outcomes of the healthcare organization for elite athletes in El Salvador.

Therefore, the purpose of this exploratory qualitative study was to describe the structure, process, and outcomes of sports medicine services to elite amateur Salvadoran athletes. The Donabedian model of Quality Assurance was used to provide the framework for the description while the perspectives of members of the El Salvador Olympic team, administration, player development, and sports medicine team was used to assess the quality of care provided daily to elite athletes during the peak of an athlete’s athletic career.⁶

Methods

Research Design

This project is an exploratory qualitative study that describes the structure, process, and outcomes of sports medicine services for elite amateur Salvadoran athletes using Donabedian’s seminal work in quality assurance as a framework. An exploratory descriptive approach was used to describe the context in which sports medicine services are provided as well as used to understand the key informants’ perspectives of the quality

of care for those athletes that sustain injuries while training and competing for El Salvador's national team during late 2013 and early 2014. Multiple observations and individual interviews are two sources of data that were used to describe the structure, process, and outcomes of the sports medicine services for elite amateur Salvadoran athletes. After a typological analysis, themes and findings from individual interviews were presented to the group for confirmation, elaboration, or modification.

Context

With a population of 6,196,000, El Salvador is the country with the highest population density in Latin America.² It is also the third country ranked highest for emigration to countries such as the United States, in hopes for a better quality of life.² Although El Salvador continues to recover from a 12 year civil war that ended in 1992, it has become one of the most economically developed in Central America. Regardless of their economic improvement, there continues to be hindrance in housing, drinkable water, sanitary services, health, and nutrition.² Before analyzing the current process of health care services provided for amateur athletes in El Salvador, it is imperative to have an understanding of the Salvadoran healthcare system as a whole.

There are two major subdivisions in the healthcare system, a public sector and a private sector. The public sector is governmentally funded and includes 6 entities: Ministerio de Salud Publica y Asistencia Social (MSPAS), Instituto Salvadoreno del Seguro Social (ISSS), Instituto Salvadoreno de Rehabilitacion a los Invalidos (ISRI), Sanidad Militar, Instituto Salvadoreno de Bienestar Magisterial (ISBM), and Fondo Solidario para la Salud (FOSALUD) whereas the private sector is composed of private lucrative organizations as well as non-profit organizations.² In regards to elite amateur

Olympic athletes, also governmentally funded is the Comite Olimpico of El Salvador (COES), who acts as a separate entity that seeks volunteers (from the private practice) for sports medicine services for event coverage. The government-funded ISSS and MSPAS cover most of the Salvadoran population and are the two entities that play a role in the health care for amateur athletes in the country. The ISSS is an autonomous entity and insures those who work and contribute to the economy. MSPAS offers health care to those who do not have social security as well as serves as a regulator of the public sector.² There is a separate entity which is also governmentally funded (socialized) that focuses on health care for federated athletes, professional athletes, and Olympic athletes and this is the department of Sports Medicine under the Insituto Nacional de los Deportes de El Salvador (INDES). There is no difference at the federation level between federated athletes, professional athletes, or Olympic athletes in regards to health care services. There are a series of sport scholarships where athletes are awarded monthly monetary assistance but none of the recipients have special access to health insurance. It is important to note that the only professional athletes in El Salvador are male soccer players, because they receive a salary through Federacion Salvadorena de Futbol (FESFUT).

As mentioned previously, INDES is the National Institute of Salvadoran Sports that provides health care for Salvadoran athletes through their Sports Medicine branch. They offer general medicine services, orthopedic care, and physical therapy to all federated athletes. This Sports Medicine branch is located in the “Villa Centroamericana” in Ayutuxtepeque where they have three Sports Medicine physicians, one orthopedic surgeon, one nutritionist, one psychologist, and various physical therapy technicians.

There are also two other clinics, one in Palacio de los Deportes, and one in Estadio Magico Gonzalez where Track and Field Federation practices. Both of these clinics have only one physical therapist. There is one venue, Polideportivo, where federated sports of tennis, swimming, archery, and gymnastics practice and have no medical services available. Hospital Zacamil is the hospital where special attention services such as imaging, blood tests, hospitalizations or surgeries take place. This is due to the fact that INDES and Hospital Zacamil have an agreement. Also, the INDES has an agreement with the ISSS to provide care for specific elite athletes in ISSS venues, in case of emergencies that cannot be treated in the INDES' 3 clinics. There are only a few athletes that are in this agreement, so if they do not have insurance through ISSS or private medical insurance, they receive care in the national health network, through MSPAS.

The last option for Salvadoran athletes, federated or not, to receive care is through the private sector. Olympic athletes who travel in COES funded events may seek any private practice to receive care but have an immediate contact with the Chief Medical Officer's clinic where they can obtain medical attention in regards to diagnosis, pharmaceutical treatment, and physical therapy. There is one psychiatrist, one orthopedic surgeon and four physical therapy technicians there.

In regards to Olympic athletes, COES does not have a clinic for health care services for any athletes. The upcoming project of the Olympic committee is to build a clinic for federations that are part of this Olympic committee and provide care for Olympic athletes.

Participants

The participants in this study were purposively selected using a criterion sampling strategy.¹¹ This strategy was used to insure that we included the key informants that could provide descriptive information on the structure, process, and outcomes of sports medicine services provided to elite amateur Salvadoran athletes. Only participants who have been part of elite sports in El Salvador for at least 3 years were chosen for this study because it insured that there was inherent experience with the organization. A total of nine key informants were selected for observations. For interviews, only eight key informants participated; one team physician, one physiatrist, two physical therapy assistants, one administrator, one coach, and two athletes.

Each category of key informant was chosen because they could provide a unique perspective of the structure and process of El Salvador's sports medicine services. The physician had sports medicine training and was chosen based on the participant's previous experience working with elite Salvadoran athletes serving as the source of primary care after an injury. The physiatrist was chosen based on his/her orthopedic background, sports medicine specialization, and experiences in providing care to elite athletes in El Salvador. Physical therapy assistants were chosen based having multiple opportunities to work with elite athletes during their orthopedic rehabilitation experience. The administrator was chosen based on their position in the El Salvador sports medicine organization and their work experience with COES. One coach was chosen based on their coaching experience and being part of the elite athlete coaching staff as well as being able to give a perspective of the impact of the current sports medicine services on athlete performance. Lastly, two athletes were selected to participate because they were native to El Salvador, have participated in the elite category for at least 3 years and were injured

previously. Only injured athletes were chosen because they have experience with the Salvadoran sports medicine system. Furthermore, one of the athletes experienced a short-term injury also known as an acute injury, defined as “an injury with sudden onset and short duration.”¹ The second athlete experienced a long-term injury, or chronic injury, defined as “an injury with long onset and long duration.”¹ Both of these types of participants were chosen to give their perspective on the structure, process, and outcomes of the sports medicine services taking into account the element of time that they were exposed to the sports medicine team due to the nature of their injury. Participants for each role were selected depending if there was one or more who fit the criteria. If there was one or more person who fit the criteria, then all who fit the criteria were invited to participate and the first to respond were selected. Participants were assigned a pseudonym and personal identifiers were removed.

Table 3- Participant Descriptions

Key Informant	Criteria	Pseudonym	Organization
Team Physician (1)	<ul style="list-style-type: none"> -Sports medicine training -Previous experience working with elite Salvadoran athletes serving as the source of primary care after an injury 	Vegas	INDES
Physiatrist (1)	<ul style="list-style-type: none"> -Orthopedic background -Sports medicine specialization -Experiences in providing care to elite athletes in El Salvador 	Keith	COES

Physiotherapist (2)	-Multiple opportunities working with elite athletes during their orthopedic rehabilitation experience	Mita Emerald	INDES COES
Administrator (2)	-Position in the El Salvador sports medicine organization -Work experience with COES/INDES	Bolu N/A	COES INDES Admin did not participate
Coach (1)	-Coaching experience -Part of the elite athlete coaching staff	Jay See	N/A
Athletes (3)	-Native to El Salvador -Participating in the elite category for at least 3 years -Injured previously	Gregg Reinski Cris	N/A

Data Collection

Observations were conducted in two instances where the researcher acted as a participant observer: 1) during a 15-day international games competition that occurred in Peru where I worked as an athletic trainer (AT) providing sports medicine services to athletes in golf, shooting, wall ball, gymnastics (rhythmic and artistic), surf, bowling, rock climbing, sail-boating, and softball and 2) in El Salvador between December 2013-January 2014 where the researcher was a sports medicine intern as an athletic trainer while in-house day to day sports medicine services were provided to athletes. The

researcher observed for particular focus points within sensitizing concepts while making observations using Glickman's adaptation of Donabedian's model of quality assurance. During both instances (Peru and El Salvador) the sensitizing concepts derived from Donabedian's work of understanding structure, process, and outcomes in quality assurance. Second, seven face-to-face interviews were conducted over a one-month period while the researcher was in El Salvador. Lastly, a focus group was utilized to edit, modify, or confirm the themes developed from the field observations and individual interviews for accuracy and served to establish trustworthiness. ¹¹

Data Analysis

A typological analysis was completed after the interviews were transcribed verbatim and translated from Spanish to English and the accuracy of the translations was reviewed. In some occasions, the researcher edited the literal translations because the colloquial meaning was not understood. Hatch describes a typological analysis as an analysis made after the data is divided into groups or categories on the basis of separating the whole.⁷ These categories, or groups, are based on predetermined typologies. For this study, typologies are those that are generated by the research objectives. Namely, the framework that Donabedian used to describe the components used to assess the structure, process, and outcomes of an organization served as main categories for the typology analysis. Each main category had characteristic subcategories that described components of each category (see Table 1 on page 71). For example, the category structure has 4 sub-categories: organizational leadership, culture, physical characteristics and workflow processes. These categories and subcategories served as basis for the analysis of all of the data. As Hatch has mentioned, studies that rely on interviewing as primary data

collection will already have a fairly focused purpose and well-structured data set in regards to consistent guiding questions, and so the topics that the researcher has in mind will be logical places to start looking for typologies and provide places to anchor further analysis.⁷

The first step in this typological analysis was to come up with an initial set of typologies. In this case, Donabedian's categories and subcategories of Quality Assurance served as the typologies. Then, the data was read with just one typology in mind and then the researcher marked where evidence supporting that typology was found. Then, the data was read doing the same for the rest of the typologies. Next, the data within the typology of interest was read and researchers created a summary sheet where one brief statement of the main idea of the excerpt was recorded; this was done to obtain a summary of a large amount of data. Following the summary process, researchers looked for meaning within the data from the typology. This is where guided questions became important; since the researchers sought particular information, they had a good idea on what patterns, themes, or relationships were found in the data. Patterns are defined as regularities in the data, which include similarity, difference, frequency, sequence, correspondence, and causation. Relationships are defined as links, which could be strict inclusions, rationale, cause-effect, means-end. Themes are defined as integrating concepts or statements of meaning that encompass all or most pertinent data. From this, hypothetical patterns, themes, and relationships emerged. Next, for each typology under investigation, the data marked for inclusion in the marked protocols was re-read. The researcher then read the data highlighted for that category and coded each entry using the patterns identified. All data was then re-read and coded. After these steps, a set of

patterns, themes, and relationships was established and analyzed separately. The next step was to then search for connections across the individual analyses. Visual representations of the categories were helpful for further analyzing what relationships exist between or among the categories. Then, patterns were written in one-sentence generalizations to help synthesize and provide closure to the analyses; a generalization typically expresses a relationship between two or more concepts. Lastly, researchers selected powerful examples to exalt the generalizations made. Since too many good examples were found, it is a sign that the findings were well supported.⁷

Results

Three overarching categories emerged after analysis of the observations, memos, individual interviews and confirmation interviews. These categories include themes within the Salvadoran sports medicine services regarding the structure, process, and outcomes of the healthcare organizations. First, the category of organizational cohesion is the overarching subject; established organizational cohesion provides the foundation for a unified working entity. The second category that was identified is continuity and quality of care. Continuity and quality of care, although different from organizational cohesion, impact organizational cohesion and the success of the organization. The third and last category is higher standards and expectations. A successful organization or one that is on its way to achieve success should always strive to establish standards and raise them. Even though organizational cohesion is a category in and of itself, the two other categories that were identified feed into and out of organizational cohesion; describing the latter two categories is as important as understanding the conclusions gathered from the first domain. Although not all observations and interviewees agreed with all of the

themes that emerged, the themes that emerged are supported by the majority of key informants and by the observations done by the researcher. Table 2 (page 72) shows the typologies defined by category and supporting themes.

Organizational Cohesion

Under the organizational cohesion category, four themes were identified. The first theme is about having an articulated vision from a combined support of the sports medicine entities, INDES and COES, to optimize patient care by establishing common goals. The second theme is about having defined key players. To have the most apt healthcare providers by proving individual professional preparation that will further enhance professional development as a unit. The third theme is to have an established hierarchy with a designated chain of command, where the positions of healthcare providers and set steps for obtaining healthcare through the chain of command are outlined. In this hierarchy and chain of command, healthcare providers, coaches, athletes, and federations should be included. Last, theme four, consists of shared resources for which INDES and COES combining their physical and human resources will help provide the best medical care possible.

Articulated Vision and Mission

First, there was a general understanding that there should be an established articulated vision and mission for the sports medicine team, coming from both entities that provide sports medicine services, INDES and COES. A combined support of the sports medicine entities would optimize patient care by establishing common goals. Multiple times, mostly administrators and healthcare providers expressed a hope for an

articulated vision and mission. In a situation where I was the participant observer, after an interview, Bolu and Emerald had a conversation on how the ESOC and INDES should communicate more and have more interactions for the benefit of the athletes. Each person, representing the different sports medicine entity they belonged to, communicated that they would like to see more interactions from both parties, having the athlete's interests in mind.

Likewise, Vegas, the INDES physician, when asked to talk about the organization of sports medicine services commented "there has to be a formal structure and again we go to INDES - COES separation. We can conclude that the sub development is in the mentalities. That is the principal poverty." Vegas speaks about sub development in the mentalities of the two sports medicine services, who could come together and develop an agreement on a mission and vision of sports medicine in which patient care is the concern.

The lack of sharing of athletes' medical files between the two organizations that provide sports medicine services exemplifies the need for an articulated vision and mission in order to achieve some organizational cohesion. COES is the organization who provides international event coverage and without athletes' medical files, it is more difficult to provide optimal healthcare. Regarding sports medicine services and the continuity of care, Keith said, "continuity, most athletes obtain it through the INDES benefits or at a private level" meaning that because there is a lack of organizational cohesion, the continuity of care is split. This magnifies the lack of vision and mission from both organizations in that not only is care split between the two organizations, but athletes and their well-being does not seem to be the primary concern. Although this may

not be true, this is the participants' impression because there is not a shared mission/vision.

Defined Key Players

Another theme within organizational cohesion is that important key players that are needed in the sports medicine team should be identified/defined. Individual professional preparation is a factor that should be considered to define these key players. Coaches, for example, were a common topic of conversation. Specifically, COES administrator Bolu commented on coaches having been around for a long time and that they have no formal education or background in coaching (they are former players who decided to coach). Vegas, the INDES physician, also had something to say about coaches and their lack of professional preparation, "Most of the coaches are empirical. They are people who did that sport, they retired from the competition and now they teach, but they teach the way they were taught that. Maybe they did it with a lot of enthusiasm, with good will but little preparation" confirming that there are no coaching qualifications required to coach elite athletes in the ESOC. Interestingly and with a mixed understanding of the situation, Vegas also commented on adequate professional preparation in regards to those who are part of the medical commission for COES.

He said, "since 2 years ago, when a sports federation is sent by the Olympic committee, nobody from us (INDES) goes. They (COES) have managed that the delegations go with specialists, and that's okay, they are specialists, but I put it this way. Me, at an operating room could only serve as patient; there, I don't know anything, so the same way with our delegations. There have gone pediatric surgeons who have nothing to do in a sports delegation. They are very good in

their thing. Cardiologist, well neither, right? There goes an epidemiologist, that I don't think has much to do either in a sport delegation and there goes therapists but they have sent them to war without anything. That is what I have observed, that a can of "biofreeze" is all their equipment. The thing doesn't go that way. I believe that is something we should correct. The athletes complain about that because, since I was an athlete, I understand. The day of the competition, a man who I don't know will see me "and who is this and what will they do to me?" Instead if there is someone I already know and trust."

Vegas commented on pediatric surgeons, cardiologists, and epidemiologists attending international competitions with Olympic athletes and it is interesting because perhaps in a country with a more comprehensive sports medicine team these professionals would be appropriate, but for El Salvador, these are the only medical professionals who make up the sports medicine team for the ESOC. Interestingly, Vegas also begins his response with a comment about COES excluding INDES from attending Olympic events and so the comments regarding therapists who do attend and all they have is "biofreeze" as well as the comment on athletes complaining about not knowing their healthcare provider could have come from the fact that INDES is not pleased with the COES move on INDES participation. Regardless of a COES or INDES move, this divide is not beneficial for any of the involved, be it INDES, COES, and the athletes who receive the care.

Individual professional preparation is imperative to have a quality sports medicine team. This belief was by Bolu, a COES administrator, who believes that those who are

practicing now need to be funded and allowed to renew and update their knowledge in order to further the quality of care for patients. Bolu said, “I have seen some really good work [regarding the quality of the return to play process] but I think we are lacking on more people who are prepared and updated with treatments because I consider it is too slow sometimes. It is too slow. It just takes too long and we don’t have enough Sports Medicine doctors that can tell you that you have to keep doing exercise and rehab. They just send you to stop the activity.” This clearly depicts that the lack of preparation is detrimental to athletes and their healing process if not provided with the adequate treatment procedures. Many times the physicians who are not sports medicine specialists will be extremely conservative with elite athletes and slow the return to play process rather than progressing their interventions to optimize their return to play.

After these key players are defined, professional development, as a unit, is vital for organizational cohesion. Requiring proof of individual professional preparation will be imperative and will further enhance professional development as a unit. For example, INDES has supported some continuing education for their organization. Mita, the INDES physiotherapist, shared that about 6 or 7 years ago INDES sent two physiotherapists to Spain for about a month to learn and update their schools of thought. She said, “So going to Europe, to Spain, changes what we used to do. I went there to learn and realized what work we had to implement in our country and that helps us incredibly.” COES and INDES sports medicine staff would benefit immensely from attending workshops together or if they each had workshops that multiple sports medicine professionals could attend, that would expose their expertise and help each other for the patients’ interest.

Hierarchy and Chain of Command

Not only should sports medicine key players be defined but also there should be a hierarchy within these healthcare providers in order to establish a chain of command. A “who does what and when” chart is important to have for athletes, coaches, healthcare providers, and administrators, especially because INDES and COES have limited human resources. Positions and their specific expectations should be clearly identified and shared with everyone who is part of the sports medicine team. Communication among healthcare providers, coaches, athletes, and federations within the chain of command is imperative.

Physicians ultimately make the clinical decisions regarding athletes’ participation but there are some instances when physiotherapists may also clear athletes for return to play. Coaches should work closely and have constant communication with physicians and physiotherapists because they should know the athletes limitation to help with ensuring safety during practice and competition. For example, Mita, a physiotherapist at INDES, explained that a select few federations, maybe 5 out of 34, usually ask for a report. In addition, these federations will not consistently ask for an athlete’s monthly report. Though they will email randomly when there is a particular athlete they are concerned about. INDES does compose a monthly report that is sent to the physicians as well as to the INDES president. She also explained that sometimes they get phone calls from federations to ask about an athletes’ progress. If an athlete receives care at INDES or COES, they are sent home with a written paper with a diagnosis, recommendations of care, and a home exercise plan. According to both INDES and COES healthcare providers, athletes often do not comply and both athletes and coaches will ignore recommendations because they do not understand the severity of the injury or the

importance of therapy on recovery. For example, an athlete said to me, “The physiotherapist did not release me. I should have come back but I didn’t” showing that although he was not released, he knew that he needed to go back yet decided to ignore the healthcare provider’s recommendations.

Introducing something new is always difficult, and it seems to be the case with at home event coverage for sports medicine providers. Not only are there not enough personnel to be able to cover every single sporting event, sometimes coaches are weary about having other staff present. Vegas explained both of these concepts very well by saying, “We’re not assisting to practices. That’s the part, that as I told you at the beginning, the one we want to do the most. And assisting to the training, participating with the coaches, clarifying that we’re not going to criticize but we’re going in the function for his work to improve, because there are some [coaches who are] very jealous. There are others that more or less understand, but many don’t. We did it for a time. We went to practices to observe and to provide assistance, but in reality we’re so few that we can’t do it.” Mita agreed with Vegas in that coaches sometimes hamper the healthcare providers’ work. She said, “[coaches] they would send me notes requesting to cancel the exercises. I tell them; look, those are therapeutic exercises and are minimal weights. We’re working with 20 pounds or 30 pounds and you go and pull 200. We’re not doing anything. There are always some that won’t understand.”

It is imperative to have an established chain of command with a hierarchy that is well understood by all who are part of the sports medicine team. Communication between healthcare providers, coaches, athletes, and administrators will aid the process of healthcare as well as support organizational cohesion. Athletes will know who is in

charge, whom to contact, and what happens when those people are not available. Also, this will help healthcare providers to know who they should be in contact with regarding an athlete's participation or playing status, be it the federation, coach, or athlete himself. In Peru, with a whole week of competition left in the Bolivarianos Games, team physicians left and went back to El Salvador to work at their private practice, so the physiotherapists in both locations, unknowingly, were in charge of medical decisions. This only exemplifies what happened during an away event and does not mirror anything that has happened in El Salvador. This also serves as evidence that there is no chain of command or hierarchy established, therefore showing that there is no organizational cohesion. Communication trees could be particularly helpful and could give these key players a plan of action to follow during day-to-day operations, during competitions and in event of an emergency.

Shared Resources

Although not shared, human and physical resources are both available to INDES and COES and so sharing these resources will help organizational cohesion, in that it will aid in providing care at home as well as during away events; INDES and COES combining their physical and human resources will provide the best medical care possible. The biggest setback in the sharing of resources is that the COES-INDES separation is politically related.

After an interview, Bolu and I had a conversation about INDES and COES and the nature of the separation. Within our conversation I found that the respective presidents of the organizations have trouble seeing "eye-to-eye". Also, there are

government related issues and funding issues that do not allow an easy flow and good communication between INDES and COES. The government does not support the athletes with money and funding, and that's where issues develop. He continued to talk about this topic during his interview and said, “[Regarding resources’ impact on quality of care] The problem is that since this is a government institution, the policy changes with the government. So for example, for the last 10 years all of these resources were exclusively for high performance athletes, either juniors or seniors, Olympic athletes that are going to participate in events that are in our Olympic setting. So since the government changed all of these policies, now INDES Sports Medicine has to see everyone who shows up at the clinic, which is no longer exclusive for Olympic athletes and instead welcomes the general public for free.”

INDES provides sports medicine services for all athletes and have all the medical installations and equipment for rehabilitation and therapy. They do not have enough people to provide on-site care for athletic events, though. As pointed out by the rowing coach, “They can’t, it is not that they don’t want to. They have never gone because they are too few [providers], and we have invited them but they did not go” referencing that the sports medicine providers are willing to provide care yet do not have enough time or man-power to be able to attend practices, competitions or events. COES, on the other hand, does not have the infrastructure or nearly the number of staff numbers as INDES to be able to provide on-site care for practices and events. Keith, the team physician said, “COES doesn’t have medical installations, period. As I was telling you the medical attention provided to athletes is through us (PhysioSport) and the medics who are in the ESOC, whether it is in the shape of the medical commission or at a private level.” This

statement shows that care for Olympic athletes is limited because COES does not have medical installations so athletes have to go to the privatized clinics and sometimes don't have time or means to get there.

Not only is there a large gap between the physical resources, the human resources provide greater problems. Keith and Emerald, both COES healthcare providers, agree that COES does not have an established line of communication with INDES sports medicine. When asked about communication among healthcare providers, Keith said, "Many times we have requested for INDES to send us patient's medical records and they never do it. They don't care." Emerald supported this idea by saying that during international event coverage, "there has to be a medical record of each athlete, but because those athletes go to INDES..." COES is not able to have those records since INDES does not share the athletes' files. Bolu, always trying to act as the mediator between COES and INDES, responded to this topic by saying, "They [both] have all of the people, but the problem is that we are not working together with them through political issues, through professional issues so what we need to do is like create a group with them so that we can be informed over what our athletes are doing" meaning that a combination of both entities would be beneficial for athletes' interest.

Continuity/ Quality of Care

Under the continuity category, three themes emerged. First, the need for resources, both physical and human, being a vital component to be able to provide continuous quality care. The second theme was patient focused communication among healthcare providers. In order for the sports medicine team to be on the same page and successfully be able to provide continuous and quality care, communication among

healthcare providers should be concerned with athletes' past medical history, treatment, rehabilitation, and playing status. The third theme is about healthcare provider and patient interactions, where healthcare providers inform their patients about their diagnosis, treatment, and prognosis in order for there to be a continual line of communication and no gaps regarding care.

Resources

For continuity to be achieved, the need for resources, both physical and human, not only has to be met but shared. This need for resources is different to organizational cohesion's in that it will provide continuity for diagnosis and treatment, more of the process versus the structure aspect of the sports medicine services. Physical resources such as infrastructure, therapeutic modalities, rehabilitation tools, and evaluation tools are to be obtained and shared by all sports medicine providers. For instance, Bolu during his interview mentioned that "the problem that we have right now on the Olympic Committee is that we don't own our own facilities" which demonstrates that COES does not even have the preliminary infrastructure to be able to provide quality sports medicine services. Commenting on INDES infrastructure, Bolu said, "the infrastructure is really good. They do have a lot of space to do their job. What they don't have is the equipment I don't think. They don't have weights. They don't have some of other supplies that they could have." If INDES and COES were to obtain a combined area for workspace, they could maximize the use of infrastructure, therapeutic modalities, rehabilitation tools, and evaluation tools for continuous care.

As to human resources, staff numbers will have to increase in order to provide quality and continuity of care. Multiple comments from multiple key informants arose

from the question regarding human resources and event coverage. INDES physiotherapist said, “We need more personnel because the field work we don’t really do it”, and “we need more personnel, because we’re not enough to cover. Ah the ideal would be a therapist in each sport but there is no one available now.” Athletes also talked about the lack of human resources and how it hinders their ability to be evaluated because “the problem of not having a physiotherapist here is having to be going to the “villa” and sometimes it clashes with the trainings because sometimes the schedules are too full.” Not only does this comment refer to the hassle it is to go the “Villa”, but it talks about the inconsiderate schedule of the INDES’ open-clinic that is first come first serve.

Jay see, the rowing coach talked a little more in depth about the problem of not having event coverage saying, “this athlete is usually dealing with the lack of continuity because he doesn’t have the person in the field to guide him to have a proper recovery. Many times this falls on the strength and conditioning coaches, but in federations the strength and conditioning staff doesn’t work on the medical part, he works on the physical preparation of the athlete” meaning that not only does not having enough human resources for event coverage affect the initial stages of evaluation and treatment, but the continuity and sport-specific return to play is not completed due to the lack of personnel. Vegas, INDES physician, talked about how the number of staff members for COES and INDES do not add up, “COES technical part, how many are there? It is just 2 guys for 34 federations. And here [INDES] there are 8 for 34 federations. It's like no, right?” He continued and said, “They should gather together and optimize. It is like the same work but they're doing it separated” making it obvious that there are solutions to the problems in place.

Bolu, the COES administrator, talked about how not having enough personnel affects athletes because there are no healthcare providers at events, “[so] our athlete doesn’t feel confidence about his supporting team and I think it decreases our performance. It decreases our chances to play on a similar basis against other countries and most of all, we are not giving the athlete what he deserves as an Olympic athlete.” Bolu touches on the importance of the sports medicine team and their role in an athletes’ successful performance, which shows that things like having personnel present at events is vital for continuity and quality of care. Event coverage while at home will also provide continuity and quality of care for the elite athletes, since a healthcare provider will be present in case of any emergency and will also allow athletes’ day-to-day needs to be met. Prevention of injuries as well as proper initial management of injuries will be provided by having coverage at home events.

Patient focused communication

For quality of care to be maintained, patient focused communication among healthcare providers should be developed. Past medical histories, treatments, rehabilitation plans, and playing status should be communicated on a consistent basis by those providing care for elite athletes. This comment from the rowing coach clearly depicts the lack of communication between healthcare providers, “Unless the physiotherapist sends the athlete for another medical consultation, the physiotherapist takes care of everything” showing that there is no continuity of care and that treatment plans, rehabilitation plans, and playing status are not shared among healthcare providers or with the federations and coaches.

Healthcare provider-patient interactions

An increase in healthcare provider and patient interaction will allow for continuity to develop; quality of care will likely improve because athletes will be educated regarding their diagnosis and treatment plans as well as having a clear depiction of their injury's prognosis. Mita's comments on healthcare provider-patient interaction showed that physiotherapists go through the usual steps of treatment sessions. She said, "We introduce ourselves, explain what we are going to apply, what they are going to feel with the ice, for example, and the sensation he will feel with the ice. If using currents, what stimulus they are going to feel, what the massage is for, the kinesiotape, the functional dressing works- we always explain them what are the things for". This statement illustrates that there is an established line of communication during treatment sessions but not necessarily regarding the bigger picture of the injury prognosis and treatment plans.

Bolu explained how COES approaches athlete recovery and said, "we put them with the physio and she is the one who recovers the athletes. One of the things is that we do not do physical rehabilitation. It is just based on ice, TENS, and ultrasound and whatever those methods are" showing that COES administrators have knowledge on sports medicine services yet have little understanding due to the fact that there is minimal communication between healthcare provider and patients. Also showing minimal communication between healthcare provider and patient is an observation I made during international event coverage, where the physician prescribed medicine for an immediate result yet did not focus on explaining prognosis or spend much time speaking about future treatment. There is a benefit to having communication between healthcare provider and patient, which is a healthy rapport that allows for patients to feel comfortable and feel

the support from their healthcare providers. This communication provides continuity to the care and makes patients more willing to comply and visit their healthcare provider. For example, when interviewed, the judo athlete said, “at the beginning they told me that I have to stop training for at least a week if not there is not going to be effect in what we’re doing, the therapy with the exercises so I went to therapy every day because I wanted to come back as soon as possible.”

As mentioned in the first domain, establishing communication, a hierarchy, or a set chain of command among healthcare providers, athletes, coaches, and federations will allow for organizational cohesion, which will provide continuity and quality of care to be delivered.

Higher Standards/ Expectations

Under the category of higher standards/expectations, four themes emerged. The first theme is concerned with the preparation of those who have a leadership position and are in charge. Sports medicine organization leaders including federation presidents and coaches are to be optimally prepared to lead both entities in the direction of success. The second theme is concerned with establishing key personnel that is part of the sports medicine team as well as requiring continuing education for their individual preparedness and professional preparation as a unit. The third theme focuses on those who are receiving care, the athletes, in knowing and establishing an understanding that they will comply with instructions from the sports medicine team. Last, the fourth theme talks about support from the leadership; having governmental support for athletic related events and cultural competence and improvement regarding sports and athletes and their healthcare for the success of higher standards and expectations.

Preparation of those in charge

Those in charge, who have an important leadership position, should be prepared and capable, having valuable experience with sports and management. These practitioners are placed in a management role yet they have not been trained in management. Sports medicine organization leaders, individual federation presidents, as well as coaches should all be prepared and capable to fulfill their duties. Minimum requirements for their positions should be established; establishing qualified personnel for every position is imperative for the success of the athletes and the organizations themselves.

Healthcare providers

Those who are providing the care, the healthcare professionals, should also meet certain expectations. Higher standards of their performance should be expected. Individually, these professionals should keep continuing education credits for their profession to insure that they are staying up-to-date with diagnoses and treatments. As a unit, professional development and preparation should be instituted in order to have a homogeneous group who strives to achieve the same goals.

Patients

Those who receive the care, the athletes, should also be held to higher standards and meet certain expectations. Compliance in their responsibilities with themselves and their team will help them achieve this. In Peru, while providing international event coverage, I noted that many of the injuries I was treating were chronic and had never really been taken care of or the athletes had not completed their rehabilitation. Also, there was one instance where a coach asked me to work on a female athlete because she was

stubborn and had stopped going to treatment at INDES. When interviewed, Mita had much to say about the culture of our athletes and how “their injuries are not treated” and that athletes “take care when the competition is coming or because the Olympic committee says they are not up to par.” Also when interviewed, one athlete took responsibility and shared the story that he went to be seen by a doctor at INDES but they did not have time to see him because of their open door policy, so he felt that it was not serious, so he turned around and instead of waiting for the next day or seeking help elsewhere, he returned to practice and pretended he did not need any help.

Leadership support

Support for all sports from leadership will aide in establishing standards and help achieve expectations. Funding athletes’ healthcare as well as athletes’ participation in events will help establish expectations and develop higher standards to be met. Regarding athletes’ healthcare, there is a need for physical resources as well as human resources that needs funding. Rowing coach, Jay See explained, “We work with the resources that have been obtained from the federation development, the Olympic Committee’s support, the support that INDES provides. We do as much as possible by joining the resources and also receive some support from the International Rowing Federation” showing that in order to be successful, the federations have to be smart about how to find resources.

Agreeing with this idea of working with what we have was Keith, the COES team physician who said, “Our athletes, under my point of view, are exemplary because they compete at a great level with poor conditions. Most of them don’t protest, most of them are people with great disposition to work and it is sad that at this time we cannot give them more than they could be given for competing with the rest of countries” hinting that

our resources are limited. He continued by saying, “For what I think, the medical attention provided during the games is an adequate medical attention, it could be better; of course, it should be better, because we should have a medical team; having medical equipment available to be able to provide the most service and having the biggest amplitude to be able to cover all the events that many times is not possible,” agreeing that in order to provide best services and ability to cover all sports, we need more funding and support from governing bodies.

As has been mentioned above, human resources for event coverage will help with our own expectations as well as hopefully help increase the standards of coverage, both for our own teams and others’. Emergency situation resolution as well as day-to-day coverage will set standards for home and away care. As to athlete’s participation, support with funding for the correct and adequate gear will be essential for athletes to be fully prepared to practice and compete. Also, support for their participation will help them continue to get prepared and have experience facing a myriad of opponents. Lastly, communication will be imperative for expectations to be met as well as to set higher standards.

Communication among healthcare providers, coaches, athletes, and federations will increase the standards all around. Communication lines between healthcare providers and athletes regarding the diagnosis, prognosis, treatment, and rehabilitation of their injuries will improve expectations for those who treat as well as for those who receive the care. Also, it will aid in establishing a chain of command among healthcare providers and allow athletes to know what to do when injured and who to contact in case of emergencies.

Discussion

Overall, participants have expressed their desire for a shift in culture to get around bureaucracy in place. This bureaucracy dictates how athlete care is funded, which then dictates how organizations are led, further affecting the workflow processes and the athlete care that is provided. The bureaucracy that is in place helps explain the current situation within the culture regarding organizational cohesion, continuity and quality of care, and higher standards and expectations.

Donabedian's model of healthcare organizations can be attributed to what has emerged from the analysis in this study. The components of structure, process, and outcomes can be associated in parallel with culture, bureaucracy, and perceived outcomes. Although culture and bureaucracy are less tangible than are structure and process, culture is structure in that it frames how an organization or in this case, a population works; bureaucracy is the process by which this organization works, which is set by the culture or the structure in place. As Donabedian has described, the perceived outcomes of an organization are the result of the structure and process, and in El Salvador's sports medicine services, culture and bureaucracy lead to those outcomes.

Culture

Although already found in the description of the categories and their particular themes, it is important to emphasize culture and bureaucracy to understand the results of the findings. Participant observers are the best means by which to understand a culture, population, group, or process. Immersed in the setting, a participant observer not only interacts but also is able to act as an objective observer. Being born and raised in El

Salvador, the researcher is able to understand the culture and has been exposed to this population. The researcher also had had experiences in a different culture, the United States, where trained to work in sports medicine services. Acting as a participant observer in this study was highly beneficial due to the researcher's experiences with both the Salvadoran culture and sports medicine teams.

Background information on the culture of Salvadoran athletes and the system in place is helpful to have a more clear understanding of the circumstances with which they live. Athletes do not seek help because they think it is not necessary. For some admitting injury is equated to being weak. The "macho" mindset that is present in most Salvadorans prevails in that their thought process is one where it is not necessary to seek for help if it is not an "emergency". Further, this "macho" mindset mainly comes from male athletes, which are the majority of the elite Salvadoran athletes. It is interesting that in this study, the majority of observed athletes were male and only male athletes were interviewed. Athletes also do not seek help until the COES starts looking for athletes to qualify for international events. Coaches also play a big part in athletes' decisions on not seeking help because they are opposed to it and frown upon those who do seek help. Many times coaches are opposed to their athletes seeking help due to the mere fact that they do not have an understanding of how it works or what they are doing that helps. Most of the elite athletes' coaches are male as well.

Athletes many times are also discouraged to seek help by the bureaucracy that they encounter when they attend public services. Hours of operation that sports medicine services are offered for elite athletes are regular business hours, which do not match up with practice and/or event schedules. Many of these athletes also have a full time job and

work all day and then attend practice in the afternoons. Not only are their schedules not matching up but the hassle of getting to the clinics is increased because of the distance from the training facilities to the clinics as well as the cost of getting from place to place. Many of these athletes also think that it is not worth it to seek care because they are more scared of not playing or participating if they do.

Those who provide care for these elite athletes are physiotherapists. Most of the physiotherapists have earned a bachelor's degree in physical therapy but have not been exposed to the sports specific areas of expertise. The physiotherapists like to think that they can focus on prevention yet the only time they work with athletes is when the athletes come in for physical therapy. Also, most of what they do is pain management and initial strengthening. When athletes are re-evaluated and are pain free, they are released from therapy, not necessarily completely ready to return to play. Coaches who are not really trained to be coaches usually do the sport-specific work; they are former players who continue to be passionate about the sport. Many times the return to play exercises and workouts are done by the coaches with assistance from the strength and conditioning coach, who have no background in sports medicine and do not know what is safe progression for the athlete.

The institution discrepancies between INDES and COES are part of the culture. There has been separation, coming from governmental issues since the 1980s. These entities have been struggling to make a statement about themselves versus trying to provide patients' best care. They are both more concerned about having power and being in charge of the athletes than actually caring for the athletes in the right way.

Bureaucracy of institutional entities

Both entities that provide sports medicine services are governmentally funded- INDES and COES. INDES focuses on the majority of elite Salvadoran athletes versus COES who provides services for those athletes who are considered Olympic athletes. COES does not usually provide care on a day-to-day basis while at home; yet they provide the sports medicine services while at international events. INDES is upset because they are no longer included in COES events. The INDES and COES separation is very apparent since both sides do not speak positively about each other. In both of these organizations not all members are sports medicine specialists and have not been trained to care for the athletic population.

INDES provides healthcare services for both elite amateur athletes as well as the general population. They function in a first come first serve basis. INDES does not have all the physical resources that are appropriate for examination tools and so send patients to public services for testing and diagnostics. INDES' clinic hours do not work with the athlete's schedules given that practices are either early morning or late evenings as well as during the weekends, but INDES sports medicine providers work Monday-Friday from 8-4:30pm.

COES provides healthcare services just for elite amateur athletes. Leadership and sports medicine services for COES are privatized. COES sports medicine services are not open to all athletes- only some are evaluated (typically in away events) and treated in privatized clinics from the volunteer healthcare providers who are part of COES.

Limitations

This study had several limitations, which can be taken into consideration for future improvement in further analyses of sports medicine organizations. This study is limited in the quality aspect because although there are no accredited standards that are used to benchmark externally, levels of quality or best practices are based on who El Salvador sports medicine providers believe do it best; other countries who provide better services are the assumed standards in this study.

Another limitation to this study is that out of the nine key informants selected for observations, only eight were interviewed; this could have added some information regarding INDES administration. In addition, the focus group interview was intended to occur in a group setting with one physician, one physical therapy assistant, one athlete, and one administrator, so as to provide a different setting to obtain data in a social context. Due to technical difficulties and scheduling hindrances, focus group interviews were conducted individually yet still served to give interviewees an opportunity to hear overall or key themes and findings found and analyzed from observations and individual interviews as well as allowed our key informants an opportunity to better explain, modify, elaborate, or confirm anything that researchers had not quite fully grasped.

Conclusions

The purpose of this exploratory qualitative study was to describe the structure, process, and outcomes of sports medicine services to elite amateur Salvadoran athletes. We used the Donabedian model of Quality Assurance to provide the framework for the description while the perspectives of members of the El Salvador Olympic team, administration, player development, and sports medicine team was used to assess the

quality of care provided daily to elite athletes during the peak of an athlete's athletic career.⁶ After conducting a typological analysis to understand the data, we described three overarching categories: organizational cohesion, continuity and quality of care, and higher standards and expectations.

Future research regarding healthcare organizations should focus more on the outcomes that the structure and process provide in order to more clearly identify the success of the organization. In addition, El Salvador's sports medicine services' success will be achieved when government issues are resolved and organizations work together for the well being of the patients.

References

- 1 Arnheim DD, Prentice WE. *Principles of athletic training*. Boston, Mass: McGraw-Hill, 2000; 10th ed.
- 2 Acosta M, Saenz MR, Gutierrez B, Bermudez JL. Sistema de salud de El Salvador. *Salud Publica de Mexico*. 2011; 53 (2): 188-196.
- 3 Athanasopoulos S, Kapreli E, Tsakoniti A, et al. The 2004 Olympic games: Physiotherapy services in the olympic village polyclinic. *Br J Sports Med*. 2007; 41(9): 603-609.
- 4 Block DJ. *Healthcare outcomes management: Strategies for planning and evaluation*. Boston, MA US: Jones and Bartlett Publishers; 2006.
- 5 Feldman S. Quality Assurance: Much More than *Testing*. *ACM Queue*. 2005; 3(1): 26-29.
- 6 Glickman SW, Baggett KA, Krubert CG, Peterson ED, Schulman KA. Promoting quality: The health-care organization from a management perspective. *Int J Qual Healthcare*. 2007; 19(6): 341-348.
- 7 Hatch JA. *Doing qualitative research in education settings*. Albany: State University of New York Press, 2002.
- 8 Junge A, Engebretsen L, Mountjoy ML, et al. Sports injuries during the summer olympic games 2008. *Am J Sports Med*. 2009; 37 (11): 2165-2172.
- 9 Medical Services for Team USA. United States Olympic Committee Web site. <http://www.teamusa.org/For-Athletes/Medical-Services>. Accessed November 11, 2013.
- 10 McCrory P, Meeuwse WH, Aubry M, et al. Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport held in Zurich, November 2012. *Br J Sports Med*. 2013; 47: 250-258.
- 11 Patton MQ, Patton MQ. *Qualitative research & evaluation methods*. Oaks, Calif.: Sage Publications, 2002; 3rd. ed.
- 12 Petrides M. An Introduction to Quality Assurance in Health Care: Book Review. *Int J Qual Healthcare*. 2003; 5(4): 357-358.

Table 4- Donabedian's Quality Assurance model

<i>Categories</i>	<i>Sub-categories</i>
1-Structure	1-Organizational leadership 2-Culture 3-Physical characteristics 4-Workflow processes
2-Process	1-Diagnosis 2-Treatment
3-Outcomes	1-Morbidity/Mortality 2-Outcome measurement scales 3-Disablement 4-Service Quality

Table 5- Typologies

Category	Themes	Desired characteristics
Organizational cohesion	Articulated vision	A combined support of SM entities, INDES and COES, to optimize patient care by establishing common goals.
	Defined key players	Have the most apt healthcare providers by proving individual professional preparation, further enhancing professional development as a unit.
	Established hierarchy with designated chain of command	Outlined positions of HCP and set steps for obtaining healthcare through the chain of command. Include: healthcare providers, coaches, athletes, and federations.
	Shared resources	INDES and COES combining their physical and human resources to provide the best medical care possible.

Category	Themes	Desired Characteristics
Continuity/ Quality of care	Need for resources	Physical and human resources a vital component to provide continuous quality care.
	Patient focused communication among HCP	Communication among HCP that includes PMH, treatment, rehabilitation, playing status so that all sports medicine team is on the same page regarding athletes.
	HCP- patient interactions	Improved interactions between HCP and patients regarding the diagnosis, treatment and prognosis for patients.

Category	Themes	Desired Characteristics
Higher standards/ expectations	Preparation of those in charge	Sports medicine organization leaders (including Federation presidents and coaches) optimally prepared to lead both entities in the direction of success.
	Those providing care: HCP	Key personnel that is part of the sports medicine team is established, requiring continuing education for their individual preparedness and professional preparation as a unit.
	Those receiving care: athletes	An established understanding from the athletes that they will comply with instructions from the sports medicine team.
	Support for sports from leadership	Governmental support for athletic related events. Cultural competence and improvement regarding sports and athletes and their healthcare.

APPENDIX SECTION

APPENDIX A

Adapted Glickman framework for healthcare organization⁷



APPENDIX B

Interview Guide

Major bulleted questions will be asked while sub-bullets are prompts that may be used to facilitate discussion.

- **(For all interviewees)** Can you state your name and what you do with COES?
- As an XX what do you believe that optimal healthcare should be for athletes? What has shaped your beliefs about healthcare for El Salvadorian athletes?
- Please describe what you understand the term “sports medicine team” to mean? From your experiences, who is part of the sports medicine team? Who do you believe should be part of the sports medicine team and why?
- I am going to give you a piece of paper. Could you draw a chart that shows the organization of the members who provide healthcare to athletes in the ESOC and where you fit in the chart? Please talk me through the chart and give me your perspectives on the organization and how it affects the care of the athlete.

(For healthcare providers and administrators only)

- Please describe the process of care that is delivered from the time of injury to the rehabilitation process to the return to play and give me your impressions on the quality of the process.
 - o What do you imagine the ideal process to be? Does it align with the current process?
 - o Is there a team approach to this care? If so, please describe and elaborate on how it impacts care.
 - o What factors dictate the current process used by the COES?
- In relation to this process of care, what is your perception on the use of the facilities that are available for athlete care and give me your perspective on the quality of the facilities?
 - o What do you think about the infrastructure? If it were different, would care change?
 - o Does the infrastructure in place now get used to its maximal potential?

- Resources are those instruments or tools that are used to deliver sports medicine services in healthcare. In relation to the infrastructure and the facilities for care for athletes, describe the use of resources available and how resources impact the quality of care provided...
 - o If mention lack of resources. Describe how they manage to get things done.
 - o How do you feel about athletes having to spend their income for their care?

(For all interviewees)

- Describe the quality of interactions between sports medicine providers and athletes and how it impacts care.
 - o In different contexts- i.e.: clinic, practice, meal time, game time
- Describe the quality of interactions of sports medicine providers and how do the interactions amongst themselves impact care.
 - o In different contexts- i.e.: clinic, practice, meal time, game time
- In your perspective, what are the reason, purpose, and goals of any treatment delivered? (Is the reason explained to you –if athlete, is the reason spelled out for you- if coach and administrator, do you explain- if therapist and physician?)
 - o From your experience, how are the reason, purpose, and goals of any treatment delivered explained?
 - o And have they met your expectations?
- In your perspective, describe the methods that sports medicine providers use to evaluate patient satisfaction
 - o Does that meet your expectations? Would you do it differently?

APPENDIX C

J Amos Hatch, *Steps in Typological Analysis*⁶

Steps in Typological Analysis

1. Identify typologies to be analyzed
2. Read the data, marking entries related to your typologies
3. Read entries by typology, recording the main ideas in entries on a summary sheet
4. Look for patterns, relationships, themes within typologies
5. Read data, coding entries according to patterns identified and keeping a record of what entries go with which elements of your patterns
6. Decide if your patterns are supported by the data, and search the data for non-examples of your examples
7. Look for relationships among the patterns identified
8. Write your patterns as one-sentence generalizations
9. Select data excerpts that support your generalizations