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## The prospects and challenges of bringing physical therapy to the physically disabled population in developing countries

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# Reaching the Hurt

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## The prospects and Challenges of Bringing Physical Therapy to the Physically Disabled Population in Developing Countries

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**Abstract:**

Through a literature review, this capstone will reveal the barriers and current circumstances of physical therapy being distributed for individuals with physical disabilities in developing countries. This research also attempts to identify who the primary physically disabled populations are, if physical therapy can help them, what the consequences of not receiving any physical treatment are, what can be done to improve physical therapy interventions, and what are the prospects to making physical therapy accessible to individuals with disabilities in developing countries.

**Title: Reaching the Hurt: The Prospects and Challenges of Bringing Physical Therapy to the Physically Disabled Population in Developing Countries**

**Introduction and Background**

Everyone experiences physical pain and most of us can take a mild pain reliever and in fifteen minutes to a half hour that pain is gone. Or we have access to physicians, physical therapists, specialists, etc. But what happens to the individuals who are born with a disability or develop later in life in a country that doesn't present the incredible developments in health care that seemingly Western societies have vast access to? What if they can't get the care they need because of social pretenses and lack of resources? These are all issues that affect individuals with disabilities in developing nations.

One of the subjects that I have really focused here at CSU Monterey Bay has been on Human Movement and Adapted P.E. I have seen the resources available to these amazing individuals with disabilities and have worked with some of them one-on-one in order to help them expand their range of movement in each of my Adapted P.E. classes. But one of the issues that does not get discussed often is the link between impoverished nations and physical disability. This notion is what stimulated my interest in health care in developing nations. Also, because I want to be a physical therapist, my research on physical therapy options for the physically disabled in developing countries will be extremely valuable for my career in working with individuals in developing nations. My interest in physical therapy and having a desire to serve others in an effective and relevant way is what ultimately made me choose this topic for my capstone.

The Major Learning Outcomes (MLO) that were the most cohesive in this research project were MLO #3 Cross-cultural Competence, MLO #9 Physical Development and Health, MLO #10 Area of Emphasis/Minor, more specifically minor learning outcome #1 Knowledge and Perspectives in Adapted Physical Activity. MLO#3 Cross-Cultural Competence allows me to see the differences and diversity between these different developing nations and how these nations treat and view the disabled population. MLO#9 Physical Development and Health serves as an appropriate tool because there is a need to know what is normal for the physical body and what is not in order to determine what would be an impairment/disability for this project. And finally, MLO#10 Area of Emphasis/Minor (mLO #1 Knowledge and Perspectives in Adapted Physical Activity) serves as an extremely helpful tool because it focuses on the services available for individuals with disabilities as well as grasping a firm knowledge on beneficial physical activity for the physically disabled population.

The primary research question that this paper will focus on overall is what the prospects and challenges are in bringing physical therapy to individuals with physical disabilities in developing nations. The secondary research questions that I aim to answer through this literature review are: Who are primarily the physically disabled in developing countries? To what extent does physical therapy help them? What does current literature say about the recent conditions of the physically disabled in developing countries? Are there prospects for bringing physical therapy to the physically disabled population in those regions? If so, who and what are making these prospects possible? What are the factors contributing to the challenges of physical therapy not being administered to the physically disabled population in these hard to reach regions? What

are the consequences of not having physical therapy for the individuals with disabilities? And finally what can be done to improve the condition of physically disabled population in these developing nations?

It is my hope that this research will further inspire me as well as others to serve people that don't have the opportunities to seek physical alleviations, prevent an onslaught of other ailments burdening these individuals with disabilities and overall improve their quality of life.

### **Literary Review**

In the research that was conducted, I was able to obtain seventeen sources that were relevant to the challenges and prospects of physical therapy in developing nations to individuals with physical therapy. Some sources focus on physical therapy and disability, just disability, prevalence of disability in developing nations, and the frameworks in which these treatments are distributed. The following is a literature review that will elaborate on these focuses and the information they provided.

There were three books that contributed to this literature review. *Disabled People in International Development* (Driedger, 1991), *Disabled Children & Developing Countries* (McConachie & Zinkin, 1995), and *Education in Palliative Care* (Chowns, Eva, & Percy, 2007) were the three books that added numerous amounts of data to this review. *Disabled People in International Development* (Driedger, 1991) was an online book that focuses on all aspects of disability and the development of the country where these individuals reside. This book, the oldest resource in this review dating in 1991, discusses the attitudinal barriers that are involved with disabilities and the society that

they live in. Society commonly regards the disabled as being the “bottom of the barrel” and this affects the treatment and services they obtain. This book also discusses the empowerment of individuals with disability, women and disability, the quest for education, refugees, initiatives to bring programs to the disabled, and the international view/treatment of individuals with disabilities. Whereas, *Disabled Children & Developing Countries* (McConachie & Zinkin, 1995) specifically focused on children in developing nations. The main idea of this book was to provide information on how to best meet the needs of children with disabilities who are primarily found in developing countries. Each chapter is written by a different author that covers a specific subject about disabled children in both developed countries and developing countries. Not only does it discuss the needs of awareness, understanding, and providing for children, but it also discusses intervention strategies in order to secure or initiate the rights of these children. *Education in Palliative Care* (Chowns, Eva, & Percy, 2007) was the last book to contribute to this literature review. I mainly focused on chapter four of this book. Chapter four was basically an informative chapter that discusses the use of physiotherapy (physical therapy) and the education that goes behind it. This education is explained and is compared to occupational therapy and social work as well. This overview of physical therapy and palliative care also discusses the relevancy of this practice with pain care and with other infirmities that may need assistance.

“The World Report on Disability and Rehabilitation” from the World Health Organization (WHO, n.d.) greatly contributed to this paper. In this very brief two page report, the WHO emphasized the prevalence disability in developing countries, the number of children in these countries, the most common occurrences behind these

disabilities and the need for more research to get a more firm idea of how to address these issues in an effective and germane manner. While WHO is the UN's effort to address global health issues, another article discusses the role of non-governmental interventions. In the scholarly article, "Non-Governmental Organizations in Musculoskeletal Care" (Berry, Coughlin, & Kelly, 2008) the authors discuss Health Volunteers Overseas' (HVO) efforts in trying to provide orthopedic care along with other types of health care like physical therapy, dentistry, and general physicians. This article goes into detail through a study they did in Uganda regarding their strategies in Orthopedics Overseas and the goals they are trying to accomplish through these efforts. This article also discusses the disparity of resources between Africa and developed nations. These burdens of injury and disease are not being met currently by health-care workers. However, HVO states their goals improving the education of professionals in the medical field in developing countries along with providing a coordination of improvement efforts of all types of health care worker volunteers. HVO regards musculoskeletal injury as being very serious and widespread among developing countries, but very much overlooked which causes a very high mortality rate if these injuries and traumas aren't treated seriously.

One of the developing countries that had quite a bit of information available was the developing country of Cambodia located in Asia. The article "Physical Therapy Education and Provision in Cambodia: A framework for choice of systems for development projects" (Dunleavy, 2007) describes the pros and cons of different types of frameworks that are being experimented in the midst of recovering from a recent war. The article states University based education for rehabilitation workers is actually given

as the most qualified and valid of the options, however, because of the location of these universities and the fact that many of the physical therapists reside in the cities after their education, there is little resources given to the individuals who need this rehabilitation therapy in rural areas. Another type of framework was hospital based which is basically on-the-job training for physiotherapist assistants and rehabilitation workers. While this framework is affective in bringing care for the masses, it doesn't give the assistant enough training to do what a medical professional can and must do in order to diagnose and treat pathologies. And the last one is the Community Based Rehabilitation (CBR). This is where non-governmental agencies come in and train community members in physiotherapy curriculums in hopes of alleviating some of the burden on the more rural societies. Like the hospital based framework, the CBR framework is effective to an extent, but there are some illnesses and disabilities that need a professional with more training and experience that can further the health progress of certain individuals. This article concludes in that different frameworks work for different countries and different needs however, it may be helpful if all of the frameworks combined would help as well.

The next article that focused on Cambodia was "Measuring the Impact of Rehabilitation Services on the Quality of Life of Disabled People in Cambodia" (Harte & Powell, 2002). This article did a scientific study on the measuring the quality of life (QOL) with or without rehabilitation and what other factors contributed to this QOL. They used three different rehabilitations: physical rehabilitation (a.k.a physiotherapy), CBR, and labor market assistance. This measurement of QOL was also adjusted to whether the person was single, divorced, married, young, old, widowed, etc., in order to determine different factors that could eventually affect the QOL. The QOL was shown to

be in higher in those individuals that received at least one rehabilitation service compared to those who didn't have any services. And the individuals who received all three rehabilitation services had the highest QOL.

Different diseases can have different consequences on the human body. These differences are highlighted in the next two scholarly articles. "Rehabilitation for cognitive impairments after cerebral malaria in African children: strategies and limitations" (Bangirana, Boivin, Idro, & John, 2006) shows the effects of the rehabilitation and how these can improve the child's physical motor functions and neurological functions. It highlights cognitive rehabilitation therapy as well. However, what was truly beneficial of this article was how it showed that physical therapy can improve motor functioning thus resolving deficits in hemiplegia and speech disorders as well as improve cerebral blood flow and mood.

The next article that focuses on a specific illness in the developing nation of India was "Rehabilitation of cerebral palsy in a developing country: The need for comprehensive assessment" (Bhatia & Joseph, 2001). This article focuses on the study of 100 children that have cerebral palsy (CP) in India. The article shows the need for a more complex and thorough evaluation from primary physicians and for parents to receive information about the disability the child has and what rehabilitation services are available to that family. This study primarily worked with young children with the median age being 6.9 years of age. The overall conclusion of this article was that primary physicians needed to do a more comprehensive evaluation of the children, because many children had more than one disability and these primary physicians failed to diagnose the

other disabilities. Without the diagnosis of the associated disabilities of CP, the child is not able to be rehabilitated effectively.

Some areas around the world are either suffering from war or recovering from the effects of the war. These instances of war cause many deaths and even more disabilities. But it isn't just war that can cause these disabilities. Traffic accidents are also a huge contribution to the amputations and disabilities of people in developing countries. "Landmine Injuries and Rehabilitation for Landmine Survivors" (Meier & Smith, 2002) shows the huge need for rehabilitation services for developing nations, especially ones that are either in a war or recovering from one. This article states that 26,000 people are killed or maimed by landmines each year, however, despite the demand for rehabilitation services for those who are injured these individuals are usually the last to get served. One of the reasons is because there are other primary health concerns of the country. This article gives examples of both Bosnia and Uganda. The main strategies that the author suggests for rehabilitation for the disabled are followed according to conflict. The first stage is conflict, "acute need for surgical and emergency services" however the need for any type of rehabilitation is low at this point. In the second stage "post conflict" the focus for providing services to newly disabled people are great, but there is a low number of rehabilitation workers due to their demoralization. The third stage is the "recovery stage" where rehabilitation services are becoming more accessible by the government and other agencies as well as the increased awareness on disability. And the last two programs "development" and "sustained program activity" focus on building training programs for rehabilitation workers and professionals as well as weaning off of all the federal programs as the country becomes more stable.

The article “Problems of amputation in developing countries” (Ugbeye & Yinusa, 2003) focuses on amputations that occur in Nigeria that primarily occurred from traffic accidents. The whole point of this article was to evaluate the care, the patient, and the patient’s satisfaction with the care they received. In this study there were 34/87 patients suffering from trauma from the whole experience. Gangrene occurred in 9/87 patients, but it was clearly indicated that this incident of infection could have been avoided. There was also a small number of patients getting peripheral visceral disease. There were a couple of aspects that the research stated that could have prevented these onsets of complications. First being that rehabilitation services such as physiotherapy should be immediately administered after surgery. Another being that there is a huge need for a clinic that specializes in amputations. Both of these could have contributed to a higher success rate in amputations. The last article that focuses on injuries, specifically road traffic injuries is “Road traffic injuries in developing countries: a comprehensive review of epidemiological studies” (Garner, Odero, & Zwi, 1997). In this article, the main topic was the reasoning of road traffic accidents involving high mortality and injury rates in developing countries. In this article they tried to come analyze the prevalence of road traffic accidents with age, sex, and behavior (i.e. alcohol) however, this research was not able to come up with a conclusive measurement on the occurrences of road traffic injuries. Although this article did not give a substantial answer as to why the road traffic accidents are so high, it did state that traffic injuries in trauma units provide more obligations and burdens that demand more health care workers like physiotherapists.

Two of the following articles focus on the needs of the physically disabled in Africa. The articles “Health promotion needs of youth with spinal cord injury in South

Africa” (Frantz, Mpofu, & Njoki, 2007) and “Health Promotion needs of physically disabled individuals with lower limb amputation in Rwanda” (Amosun, Frantz, & Mutimura, 2005) show similar studies of how to address the needs of the disabled in their communities. Both of these studies showed that these individuals with disabilities have a high instance of substance and alcohol abuse, sedentary lifestyles, and the feeling of a lost identity. While these are some of the findings for these two different disabilities, both cases showed that these individuals in these studies wanted access to support programs. However, it was in South Africa where the spinal cord injured individuals wanted access to more transportation, employment opportunities, information on alcohol and drug consumption and individualized rehabilitation plans (Frantz, Mpofu, & Njoki, 2007). The Rwanda article states that Community Health Workers should run a physical exercise program in order for these individuals to become more active than their current state (Amosun, Frantz, & Mutimura, 2005). Both of these articles were very similar in the promotional needs of disabled individuals in Africa.

One of the devices of outreach for individuals with disability come in the form of MAARDEC (Mobility Aid and Appliances Research and Development Center). In the article “Assessing MAARDEC: A comparison with other associative device workshops and disability organization models” (Smith & Winter, 2008) there is a noted effort to create wheelchairs that are robust enough to survive the rough terrain of developing countries. This program is featured in Nigeria where they not only provide wheelchairs, but other needs like physiotherapy and counseling as well as other services. This article also states that 70% of disabled people in developing countries need wheelchairs. Not just

road wheelchairs, but wheelchairs built to last. This article serves as an agent to the developing world on the services that are provided specifically for those rough areas.

The last two articles that contributed to this literature review and search were “Being powerful beyond measure: Lessons from Africa about the global practice of physical therapy in the 21<sup>st</sup> century” (Dean, 2006) and “Discussion Paper: Service learning in physiotherapy taken to a new level; experiences in South Africa” (Krause, 2007). The first, “Beyond measure...” (Dean, 2006), was a synopsis on a doctor’s speech at the University of Nigeria in Enugu. This talk focused on the prospects of physical therapy in the developing world and specifically states what physical therapists do in order to gain health for a patient. The prospects of physical therapy in the developing world were shown as being intricate in the health care system and becoming more visible in society. The second article “Discussion Paper: Service learning in physiotherapy taken to a new level; experiences in South Africa” (Krause, 2007) was also the focus of a college professor. This article narrowed in on the positive attributes of physiotherapy practiced in the community by physiotherapy students. This professor elaborated on the background of this student-centered pedagogy and on a service learning experience where one of the physiotherapy students was able to help a client. In this example the student was able to improve the injured individual’s range of motion and movement. This article was an effort from the professor at the University of Free State to enhance the service learning program by giving actual real life instances that benefited the community and the students.

This literature review served to answer the secondary questions and purpose of this paper. In addition, this information encouraged rehabilitation services for the injured

and disabled and I did not come across any information that was opposed to this form of rehabilitation and health-care.

### **Methods**

The information of this paper was obtained purely off of different literature reviews. The methods in which this literature review was conducted involved many different searches on the Internet. These searches used a variety of search engines through the CSUMB inter loan library online. These searches not only lead me to online scholarly articles and journals, but it also led me to some books that I would either have access to research on the Internet or purchase.

The first method that was used on this literary search was using EBSCO (a.k.a. Academic Search Elite) on the CSUMB inter loan library. While using the EBSCO search engine I used different and similar Boolean/Phrases (keywords) in order to find different sources for research resources. The phrases that I used on EBSCO were: physical therapy and developing countries; physiotherapy and developing countries; physically disabled and South Africa; physiotherapy and Africa. Using these different phrases through EBSCO provided me with seven references that were used to conduct this literary research.

The second method that I utilized through the CSUMB inter loan library system was Google Scholar. Through Google Scholar I used keywords such as: physically disabled in developing nations; physical therapy for disabled in developing countries; physical therapy and developing countries; injuries and physiotherapy treatment in developing countries; bringing physiotherapy to South America; disabled children,

developing nations, and physical therapy. These different phrases and keywords allowed me to obtain eight references.

The last two methods I used were Iliad and searching the World Health Organization website for statistics and numbers on physically disabled individuals in developing nations. These methods along with the ones previously stated all contributed to the information that is presented in this paper. While I found many other resources from these searches, they did not all pertain to my primary or secondary research questions of this paper nor were they reliable/scholarly resources. This irrelevancy as well as authority of some sources that were provided through the searches caused me to really evaluate all the information that would go into this paper.

## **Results**

The burdens that developing countries face are shown in a myriad of things, but it has always been and is continuing to be an escalating concern that health care and illness are some of the most recognized burdens of all individuals around the world. The findings that were discovered through the literature research not only illuminate this burden that many if not all developing nations have, but they also contributed to answering the questions that this paper initially posed.

### *Who are primarily the physically disabled in developing countries?*

First and foremost, the individuals with disabilities in developing countries vary in different regions and what their current situations may be. These situations may be illness, poverty, or war. According to the World Report on Disability and Rehabilitation,

“80% of the world’s population of people with disability live in low-income countries and experience social and economic disadvantages and denial of rights” (WHO, n.d., 1). WHO (n.d.) also estimates that 10% of the world’s population has some sort of disability, around 650 million people (p. 1). So if 80% of 650 million people in the world’s population with a disability live in developing countries then approximately 520 million individuals live in a developing nation with at least one disability. Along to go with this devastatingly high number, “85% of the world’s disabled children under 15 years of age live in developing countries” (Durkin & Khan, 1995, 1). Not only are most of individuals with disabilities from areas of extreme poverty, but they are often the considered to be the poorest among the poor and are attached with a negative stigma (Hassan, 1991, 4).

Another factor that contributes to the physically disabled population in developing countries is education and employment. Hassan (1991) states from Disabled People in International Development that the disabled are refused to be accepted in to some schools as well as having a hard time finding employment because of the inaccessibility or refusal of being hired because of the stigma attached with disability (p. 4-5).

Poverty and lack of education are not the only common features that are common with a person with a disability in a developing country. War-torn nations do contribute a great deal of disabilities to individuals who previously had no physical handicaps. Specifically land mines can cause some of the most horrendous injuries (Meier & Smith, 2002, 2). Many of the individuals with disabilities in developing countries contribute their disability to not only poverty, education, and war (which seems to inter-connect with the following factors) but also to chronic conditions, traffic injuries, malnutrition, violence, falls, infectious diseases along with HIV and AIDS (WHO, n.d., 1). One last

characterization that has been conveyed to be associated with individuals with disabilities is that 70% of these individuals in developing countries live in rural areas (Smith & Winter, 2008, 80). I will elaborate further on the prevalence of individuals with disabilities living in rural areas of developing countries posing as a problem.

These factors do not describe all individuals with disabilities in developing nations, but these issues and characteristics do affect a majority of the population and seem to be the most occurrences of the primary population.

*To what extent does physical therapy help the physically disabled individual?*

In regards to Physical therapy being helpful has been shown to be greatly relevant and true. These treatments may be linked with other health care professionals or just physical therapy by itself. Physical therapists (also known as physiotherapists) help to “promote, maintain and restore physical, psychological, and social well-being... treat a wide range of physical conditions particularly those associated with the neuromuscular, musculoskeletal, cardiovascular, and respiratory systems” (Chowns, Eva, Percy, 2007, 33).

Throughout research, there are many instances where physical therapy was confirmed to improve an individual’s disability. One instance that displayed the efficacy of physical therapy was in the article “Rehabilitation for cognitive impairments after cerebral malaria in African children: strategies and limitations” (Bangirana, Boivin, Idro, & John, 2006). Physical therapy was shown to improve motor deficits in adults with CM (affects both physical and mentally) along with “physiological changes in the brain that enhance cognitive function” (Bangirana, Boivin, Idro, & John, 2006, 1345-1346).

Another example of the benefits of physical therapy for individuals with disabilities was shown in an example of physiotherapy students taking part in a service-learning program at a university in South Africa. As a result from one physiotherapy student working with a woman who had left hemiplegia from CVA (cervical vascular accident) there were significant gains made in the woman's physical state. The treatment she received helped her stand up independently from a sitting position, walk with assistance, transfer weight, exercise more, and the opportunity to continue her rehabilitation by herself (Krause, 2007, 281-282).

One of the things that research has conveyed is the fact that more than physical therapy is needed to truly help individuals with disabilities and illnesses that may cause disabilities. Physical therapists often team up with physicians and surgeons in order to raise health status during an illness or disability, prevent certain illnesses, or cure illnesses and to make their treatment more effective (Dean, 2006, 225 & 227). Physical therapy is shown to be in demand in the depths of injuries that could cause disability resulting from traffic accidents. In fact, physical therapy and other rehabilitation services are being demanded in developing countries to assist in post injury care (Garner, Odera, & Zwi, 1997, 452).

Another aspect that was shown was how the Quality of Life (QOL) in an individual with a disability that received physical therapy was higher than an individuals who didn't receive treatment at all (Harte, Mercer, & Powell, 2002, 186). These results show that physical therapy is indeed helpful and beneficial for the individual with the disability or injury who is receiving the treatment. However, the research shows that

sometimes the individual with the disability may need additional medical care besides physical therapy in order to have the most effective and progressive recovery.

*What does current literature say about the recent conditions of the physically disabled population?*

The recent conditions for individuals with physical disabilities that has been described by different research studies as being somewhat grim. These studies show how the environment along with the person's own lifestyle choices affect the way their lives are lived: either in a healthy way or a very sedentary and non-healthy way.

As a result from the war in Rwanda in recent years, many of its citizens were left physically altered and traumatized (Amosun, Frantz & Mutimura, 2005, 838). But according to research, a little more than half of the individuals who had physical disabilities and lower limb amputations in this study in Rwanda did not participate in exercises that would improve their overall health. 10% of the individuals in this study also participated in drug abuse behavior and used recreational drugs. A higher percentage of these individuals drank alcohol and smoked as well. These behaviors along with the sedentary lifestyle do little to improve the conditions of the physical disabled when it's already difficult for them to be healthy in an impoverished nation as it is. Some of the reasons for the occurrences of drug abuse and lifestyles are attributed to a combination of poverty, isolation, frustration, low self-esteem and were given little to no help by persons that weren't disabled (Amosun, Frantz, & Mutimura, 838-840). It is clearly shown that the individuals that do have physical disabilities are pushed into the margins and are not valued in Rwanda (Amosun, Frantz, & Mutimura, 843).

These types of lifestyle behaviors and societal effects weren't limited to Rwanda. Individuals with disabilities, specifically individuals with spinal cord injuries, in South Africa also had similar barriers. These individuals, similar to the ones in Rwanda, struggled with drug and alcohol consumption and abuse as well as sedentary lifestyles. The same issues like poverty, frustration and low self-esteem affected these individuals, but they also struggled with their self-image after their injury (Frantz, Njoki, Mpofu, 2007, 465 & 470).

The conditions of individuals with disabilities are also a result of the fact that any people without disabilities struggle just to live as well. The book *Disabled People in International Development* (Miles, 1991) states that because of the struggle for the average individual to try to survive, it is often times thought of as unrealistic goal and worthless to try to implement the rehabilitation of an individual with a disability. Due to this attitude, the individual with the disability is considered "weak, low-status, and practically voiceless" as well as not contributing to the rise of their families (pp. 23).

In a developing country, such as Cambodia, individuals with disabilities typically have a quality of life (QOL) that is substantially lower compared to individuals who did not have any disabilities even while they were receiving rehabilitation services, in fact these individuals who were also widowed or divorced/separated showed through research an even lower state of QOL (while receiving rehabilitation services) (Harte, Mercer, & Powell, 2002, 175 & 184).

While these studies focused on different countries, each country had similar issues relating to individuals with disabilities and how those individuals are perceived in their communities and the conditions they face.

*Are there prospects for bringing physical therapy to the physically disabled in developing countries? If so, who and what are making these prospects possible?*

In regards to prospects of bringing physical therapy to the physically disabled individuals in developing countries there are many different studies and agencies that are making physical therapy more of an option for those who do have physical barriers.

One of the prospects in bringing physical therapy and rehabilitation to individuals with disabilities in Cambodia is through providing more training and teaching in universities, training and teaching for physiotherapist assistants in hospitals, and community based rehabilitation (CBR) (which focuses on the people and their needs of that community) (Dunleavy, 2007, 904-905). While these are options for physiotherapists to bring physical therapy to those in need, some of these options like physiotherapist assistants and CBR aren't trained to meet some of the more severe needs of the patients and their certain pathologies (Dunleavy, 2007, 904-905). Also, CBR is often questioned for its validity and claims of improvement for the individual with the disability or illness due to the fact that many of them may not have the sufficient amount of training nor do they tend to back up their claims (Dunleavy, 2007, 915). However, different developing countries have different needs and only have access to the care that is available to them, this may be insufficient for the needs of the individual with the disability, but it may be sufficient for the person with the lesser extremity (Dunleavy, 2007, 918).

According to research, non-governmental services are often times offered to individuals with disabilities. One of these services known as MAARDEC (Mobility Aid and Appliances Research and Development Center) provides physiotherapy along with

wheelchairs and counseling in developing countries like Kenya (Smith & Winter, 2002, 80). Another instance of non-governmental interference is Health Volunteers Overseas. This organization provides training, education, and health services of physical therapists along with other health care professionals (Berry, Coughlin & Kelly, 2008, 2442). It's not only in Africa where the non-governmental organizations are bringing physical therapy. There is a program in Mexico where health care workers with disabilities actually provide rehabilitation services to children with disabilities and their families. This program is known as Project Projimo (Werner, 1991, 26).

Among these projects and non-governmental agencies, bringing physical therapy to individuals in developing countries are physiotherapy students in universities contributing to this need in their own surrounding communities. In South Africa, University of Free State has its physiotherapy students participate in service learning opportunities that provides the individuals with disabilities the appropriate treatment. This program also increases the students training, has a more student-centered pedagogic technique, and makes the effort to reach individuals in rural and distant areas (Krause, 2007, 279-280).

These are just some of the documented efforts in scholarly journals and books that are shown to be prospects of bringing physical therapy to developing countries. Most of these efforts are conveyed to be non-governmental agencies like Project Projimo, University of Free State (privately funded), and HVO (Werner, 1991, 26) (Krause, 2007, 280).

*What are the factors contributing to the challenges of physical therapy not being administered to the physically disabled in these regions?*

The challenges of distributing physical therapy and other types of health care to the individuals with disabilities in developing nations are seemingly great and overwhelming. Berry, Coughlin and Kelly (2008) states that in “developing countries, where adequate treatment is often unavailable and complications are high, there is a tremendous and growing backlog of untreated surgical disease” (p. 2441). Not only does the lack of adequate treatment effect these developing nations, but also the lack of adequate physical resources, the inadequate infrastructure, and a lack of qualified and trained health care workers affect the country’s people as well (Berry, Coughlin & Kelly, 2438).

These inadequacies continue to climb when you take into account all the barriers that face a war-torn nation or are recovering from a war. Research in rehabilitation in Bosnia shows that the barriers are the “lack of systems of rehabilitation services in delivery services; lack of trained rehabilitation professionals; lack of financial resources; lack of technical resources; other primary health priorities; demoralized people – sense of hopelessness and disempowerment; lack of societal awareness of disabled person’s capabilities; architectural barriers; lack of sanitation; damaged infrastructure for government and community; high unemployment; no vocational rehabilitation system” (Meier & Smith, 2002, 182). Another stated challenge is that different needs require different services, and the training for physical therapy in Bosnia is simply a high school diploma which is insufficient for the needs of extreme cases of disabilities (Meier & Smith, 2002, 182-183).

According to research, because the awareness on available rehabilitation services such as physical therapy are often times unknown to the parents of children with disabilities, it becomes the primary physician's responsibility to give information to the parent. But this doesn't often happen just because of the lack of awareness, but because the lack of physical therapists being in rural areas of developing nations (Bhatia & Joseph, 2001, 85).

Access to physical therapy is a huge barrier for individuals with disabilities. According to Dunleavy (2007), physical therapy is only available in one-third of the developing nations at a local level where citizens can receive treatment (p. 903-904). These issues are what make physical therapy and getting treatment for physical disabilities extremely difficult to live with let alone deal with.

*What are the consequences of not having physical therapy for the individuals with disabilities?*

Not having physical therapy for individuals with disabilities has more consequences than just avoiding pain and embarrassment. Relevancy in life and being active is extremely important regarding that individuals' livelihood and transportation. In an example from Uganda, many people needed therapy that would help them continue in their regular mode of transportation, which was by bicycles (Meier & Smith, 2002, 186).

Without this relevancy in their treatment that they weren't provided, the opportunity to live a full life in their culture wasn't given. Meier and Smith also gives examples of how people who use wheelchairs due to spinal cord injury with no access to physical therapy (or any type of rehabilitation for that matter) would not have adequate

access to use the hut ( the bathroom which is outside the main house) (Meir & Smith, 2002, 182). Not only does the lack of physical therapy make it difficult for the individual to do necessary things like get to the bathroom, but it also makes employment opportunities practically impossible which often times results in poverty (Meier & Smith, 2002, 181-182). These examples show that the lack of physical therapy or the lack of appropriate treatment the individual receives/doesn't receive can make it to where the person can't even do the most essential things in life, let alone be able to support themselves or their families.

*What can be done to improve the conditions of the physically disabled population in these developing countries?*

Research has provided many different examples on how the conditions of the physically disabled population can be improved in developing nations. Some of the ways that are suggested to improve these conditions (for children specifically) are by intervention strategies that meet the needs of the individual. These needs will show that “focus has to be on the whole child and not just one aspect of her/his development; the involvement of the child's parents is critical to the success of the intervention; poverty and the family's social context often render ineffective simple attempts at early intervention; intervention services must be ongoing throughout childhood” (McConkey, 1995, 64).

Research in these developing countries is also very critical in improving the conditions of the physically disabled. CIR (Center for International Rehabilitation) is geared towards “education, marketing, networking, technical development, and research” in developing countries like El Salvador, Nicaragua and other Latin American countries

(Meier & Smith, 2002, 179). The goals of this organization, in order to strengthen rehabilitation services for this region, are to provide training courses for professionals, create a provision of having a community based rehabilitation program, and “promotion of coordination” (Meier & Smith, 2002, 180). However, this programs also states that there is a need to provide “self-sustaining rehabilitation systems” (Meier & Smith, 2002, 180). HVO suggests that intervention needs to be made to meet local needs and that there is a cry for stake holders, both private and public, in order to improve the lives of the disabled in developing countries (Berry, Coughlin & Kelly, 2008, 2442).

Early if not immediate intervention of physical therapy in areas like Nigeria, are suggested in order to prevent patients from going on the streets and beg for a living. Government intervention on the requirements for health care workers, in this case “bone-setters”, is also requested to ensure the optimum treatment of patients (Ugbeye & Yinusa, 2003, 124). These interventions are not the only actions that are required in order to improve the lives of individuals with disabilities in developing countries. These other actions that are desired are support groups, transportation, and individualized health promotion interventions that are significant for the specific disability (Frantz, Njoki & Mpogu, 2007, 470).

But to further the development of improving the conditions of these individuals with disabilities more research is needed. There is more need for scientific research as well as more common agreed upon definitions on disabilities and impairments (WHO, n.d., 1).

### **Problems and Limitations**

Some of the problems and limitations that I faced on this project was how to limit the regions of the different developing nations. Developing nations are on both hemispheres mostly in South America, Africa, and Asia. However, with the lack of information that is distributed among these individual continents concerning physical therapy and the physically disabled individuals in these regions, it was impossible to focus on just one continent. So this may have made the geographical relevancy of this topic a little broad, but each of these regions have the same thing in common: they have developing nations.

Another problem that I seemed to confront a lot during this research project was the amount of relevant journals or books that weren't available except through a high purchasing fee. While I did purchase one book, I could not purchase every single journal that may or may not have the information I needed as well as having a high purchasing price.

Time was another factor contributing to my problems in this research. Even though I was able to obtain a lot of good information and answer all of the secondary questions, more time would have made this literature review more wholly complete. However, I do feel that I was able to represent this information in a scholarly form.

### **Conclusion**

After conducting this literature review it has become exceedingly obvious that health care is a tremendous concern all over the world and if ignored serious repercussions will eventually be brought to light. Unfortunately, these repercussions will be brought onto

the individuals who are seemingly insignificant in their societies. These repercussions include poverty, growing populations of sedentary lifestyles, a lower quality of life, and a risk for more chronic conditions in health. With the research that this paper presented, there are many ways that these individuals can receive necessary physical therapy care that could help prevent these repercussions. This paper showed that physical therapy was shown to have significant increases in motor deficits, quality of life, help prevent further illnesses and progression of illnesses. In addition, to showing what physical therapy can do for a person, this paper also accomplished its test which was to answer the primary question: what are the prospects and challenges in bringing physical therapy to the physically disabled population in developing nations.

Various organizations show that they are trying to reach these individuals in countries that need physical therapy by bringing them equipment like wheelchairs, developing appropriate curriculum for universities to create more physical therapists, using students to learn proper techniques and treat patients at the same time, and creating clinics. But there is so much more that needs to be done. With the challenges of distance, hard to reach areas, war, social scorn associated with disabilities in cultures, the lack of qualified care being available, lack of physical and financial resources, and the lack of awareness for physical therapy rehabilitation programs there are huge growing opportunities to improve the livelihood of individuals with disabilities in developing countries.

While all this information on the challenges for individuals with disabilities in developing countries is seemingly overwhelming and dismal, this paper serves as a step to inform what can and what could be done for these persons and hopefully show how

important the rehabilitation of injuries and disabilities is. Also, this form of health care can seriously alleviate some of the most preventable disabilities and unnecessary burdens that many of these individuals carry around them that shouldn't be neglected because they don't have access to proper care. Caring for these individuals doesn't only help alleviate them of their burdens, but also gives them a chance to really live their lives to the fullest, which is the chance all individuals want to have. It is my desire that I am able to take this information that I have attained and use it to help serve these individuals with disabilities.

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