POST-ORTHOPEDIC SURGERY PHYSICAL ACTIVITY COUNSELING AND ASSOCIATED FACTORS AMONG PRIMARY CARE PHYSICIANS OF SELECTED PUBLIC HOSPITALS IN HARAR CITY, EASTERN ETHIOPIA

MSc THESIS

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Post-Orthopedic Surgery Physical Activity Counseling and Associated Factors among Primary Care Physicians of Selected Public Hospitals in Harar City, Eastern Ethiopia

A Thesis submitted to the Department of Sport Sciences,

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I hereby certify that I have read and evaluated the thesis entitled **"Post-Orthopedic Surgery Physical Activity Counseling and Associated Factors among Primary Care Physicians of Selected Public Hospitals in Harar City, Eastern Ethiopia"**; prepared by Azeb Gebru. I recommend that it be submitted as fulfilling the thesis requirement.

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DEDICATION

I dedicate this thesis manuscript in memory of my Father Gebru Bireda (Rest in Peace), for his unconditional love, affection and believing in me when no one was there. I dedicated this thesis, with gratitude, in honor of your ownership in the success of my life.

STATEMENT OF THE AUTHOR

By my signature below, I declare and affirm that this Thesis is my own work. I have followed all the ethical and technical principles of scholarship in the preparation, data collection, data analysis and compilation of this thesis. Any scholarly matter that is included in the Thesis has been given recognition through citation.

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BIOGRAPHICALSKETCH

The author Azeb Gebru Bireda was born in West Wollega, Nejo town from mother Elfinesh Tadesse and her father Gebru Bireda, in Oromia Regional State on November, 1992. She attended her primary school education in Nejo at Lieutenant Colonel Abdisa Aga Elementary School and her Secondary and preparatory School in Nejo Senior Secondary and Preparatory School, Nejo. After successfully passing the Ethiopian Higher Education Entrance Examination (EHEEE), she joined Haramaya University, College of Natural and Computational Sciences in 2010/11 and received a Bachelor of Science Degree in Sport Sciences in July 2013.

Soon after her graduation, she worked in Mehur and Aklil Woreda in Gurage Zone, SNNPR and Harari Regional State Sport Commission as an Sport expert for one and half year. Then she joined Haramaya University again on February 2015 to pursue her Master of Science Degree in Sport Medicine.

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ACRONYM AND ABBREVIATIONS

CSA	Central Statistical Agency
HFSUH	Hiwot Fana Specialized University Hospital
JH	Jegol Hospital
PA	Physical activity
PCP	Primary Care Physician
SPSS	Statistical Package for Social Sciences

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Post-Orthopedic Surgery Physical Activity Counseling and Associated Factors Among Primary Care Physicians of Selected Public Hospitals in Harar City, Eastern Ethiopia

ABSTRACT

The study was assessed post-orthopedic surgery physical activity counseling and associated factors among primary care physicians of selected public hospitals in Harar city. The objective of the study was investigating the post-orthopedic surgery physical activity counseling and its associated factors among primary care physicians in Hiwot Fana Specialized University Hospital and Jegol Hospital of Harar city. Quantitative hospital based cross sectional research design was used on 50 respondents who fulfilled the selection criteria were selected for the study (39 from Hiwot Fana Specialized University Hospital and 11 from Jegol Hospital). Both primary and secondary data was used. The investigator was engaged in data collection process with one medical doctor. The data were entered to Epidata version 3.1 and exported and analyzed by using SPSS version 20. The major output of the study indicates that most of PCPs have counseled their clients with the case of orthopedic post-operative and the associated factors like counseling experience and PA knowledge of the PCPs were non- significant. The constraints that hold back PCPs to do not counsel PA were lack of separate place for counseling, lack of linkage between PCP, lack of training, no habit of counseling about physical activity after orthopedic surgery and low human resource. In conclusion, PCP and hospital management should give emphasis to resolve such constraints, which will ultimately increase post-orthopedic surgery PA counseling.

Key words*:* Post-orthopedic surgery, physical activity, primary care physicians, physical activity counseling.

1. INTRODUCTION

This chapter will discuss on the background of the study, statement of the problem, scope, significance and objectives of the study.

1.1. Background of the Study

Physical inactivity is the fourth leading cause of death worldwide and it is an important contributor to non-communicable diseases in countries of high income, and increasingly so in those of low and middle income (Harold *et al.,* 2012; Andrian *et al*., 2012). Promotion of physical activity is a priority for health agencies. Thus, many approaches lead to acceptable increases in physical activity among people of various ages, and from different social groups, countries, and communities (Gregory *et al.,* 2012).

Sedentary lifestyles and low physical activity have led to rising health concerns and increasing mortality risks. It is important that physical activity be promoted to prevent disease and reduce health risks (Hechanova *et al.,* 2017). Physical activity impacts health and disease in multiple body tissues including the intervertebral discs (Bowden *et al*., 2017). Injury may occur in our day-to-day activity; either by accident or in sports field. Globally, in 2001 injuries killed 5.1 million people. 1.2 million Deaths a year or an average of 3,242 every day and disables between 20 million to 50 million people each year. From this population 90% of road traffic deaths occur in low and middle income countries (Gabriel and Richard, 2007).

In America, An average annual estimate of 8.6 million sports and recreation related injury episodes was reported in 2011-2014 (Yahtyng *et al.,* 2016). Incidence of injury in football accounts for 30-56% of all sport related injuries in some European countries. Its rates for adult male players in different studies vary between 11.9 and 35.3 injuries (1000 match hours and 1.5-7.6 injuries)1000 training hours (Arni, 2004).

Exercise participation after diagnosis also has been associated with a number of positive outcomes, including enhanced quality of life, reduced risk of recurrence, and improved survival

times (Gjerset *et al*., 2011; Kristina *et al*., 2011). The goal of post-operative care is to prevent complications such as infection, to promote healing of the surgical incision, and to return the patient to a state of health (http://www.surgeryencyclopedia.com). The implementation of guideline recommendations about exercise as a core management strategy for CKP (chronic knee pain) may be influenced by the attitudes and beliefs of GPs regarding the use of exercise for this patient population (Elizabeth *et al*., 2012). However, the nature of such attitudes/beliefs and the extent to which GPs recommend or use exercise for CKP is uncertain. Additionally, bariatric surgery candidates frequently have co-morbid psychiatric problems like anxiety and depression (Martina *et al*., 2011).

To prevent or diminish post-operative complications, post-operative physical therapy treatment is often prescribed to operative patients during the hospital stay. These physical therapy treatment consists of early mobilization, range of motion exercises, and breathing exercises that can help to overcome the stiffness of joints, immobilization and regain to the previous functioning (Constantina and Elisabeth, 2013)

1.2. Statement of the Problem

From the very beginning Sports medicine is concerned with injuries sustained in athletic endeavors including their prevention, diagnosis and treatment of an injured athlete or person (ACSM, 2003). In a developed country like Canada, Exercise counseling has been started by family physicians 14 years ago. From this article we can perceive that exercise counseling is very developed area of investigation as a family counselor/physician rather than at hospital based (Maureen and Meeuwisse, 2003).

Counseling adults in the primary care setting to increase physical activity is effective (Karen *et al.,* 2002). From this point of view, this study will be more valuable to increase physical activity awareness through counseling the clients on my study area. Twenty years ago, Pinto's study reveals that modifying patients' sedentary lifestyle, a risk factor for many chronic diseases, is a challenge to health professionals in promoting physical activity among sedentary patients, the prevalence of physician-based exercise counseling is low (Bernardine *et al.*, 1998).

To my knowledge, there is no published study presenting the results of neither post orthopedic neither surgery exercise counseling nor exercise counseling practice conducted prior to my study, our country Ethiopia and our continent Africa. Finally, PCPs; Clinicians have a great role in promoting the well being of an individual and as well as the ones' society with counseling appropriate PA (Goldstein *et al.*, 1999; Yahtyng *et al.*, 2016).

Therefore, this study tried to answer the following research questions:

1. Does the PCP counsel physical activity for their clients?
2. What are the main constraints that affect PA counseling?

1.3. Scope of the Study

The study was conducted at Harar city with the aim of assessing the orthopedic post-operative physical activity counseling practice and associated factors among primary care physicians of Harar city's selected public hospitals, namely: Hiwot Fana Specialized University Hospital and Jegol Hospital. More than six months of work experience as PCPs in the respected hospital were the respondent for the purpose of the study.

1.4. Significance of the Study

The results of this study will have a lot of significant for the subject of the study by giving a new information regarding to the physical activity counseling on post-orthopedic surgery and other related diseases.

The primary beneficiaries of the study will be Harar city public hospitals, Haramaya University Sport Academy, Hiwot Fana Specialized Hospital and Harari Regional State Health bureau. These offices and organizations may use the study findings as baseline evidence in supporting the health professionals with adequate awareness about post-operative PA counseling.

In addition, findings of this study will provide the basic framework for further future studies in assessing and comparing the further performance of interventions.

1.5. Objectives of the Study

1.5.1. General Objective

- The overall objective of this study was to examine the post-orthopedic surgery physical activity counseling and its associated factors among Primary-care physicians in selected public hospitals of Harar City.

1.5.2. Specific Objectives

The specific objectives of the study were:-

- To assess the practice of post-orthopedic surgery physical activity counseling among primary-care physicians.
- To identify factors associated with post-orthopedic surgery physical activity counseling among PCPs.

2. LITERATURE REVIEW

This chapter will discuss on related literatures review on the topic of post-orthopedic surgery physical activity counseling and its associated factors among primary care physicians. The literature review includes Anatomical Structure of Orthopedics, an overview of post-orthopedic surgery and early mobilization, the magnitude of PA counseling and associated factors.

2.1. Anatomical Structure of Orthopedics

Figure 1: Human skeleton

Source: https://www.humanskeletonimage.com

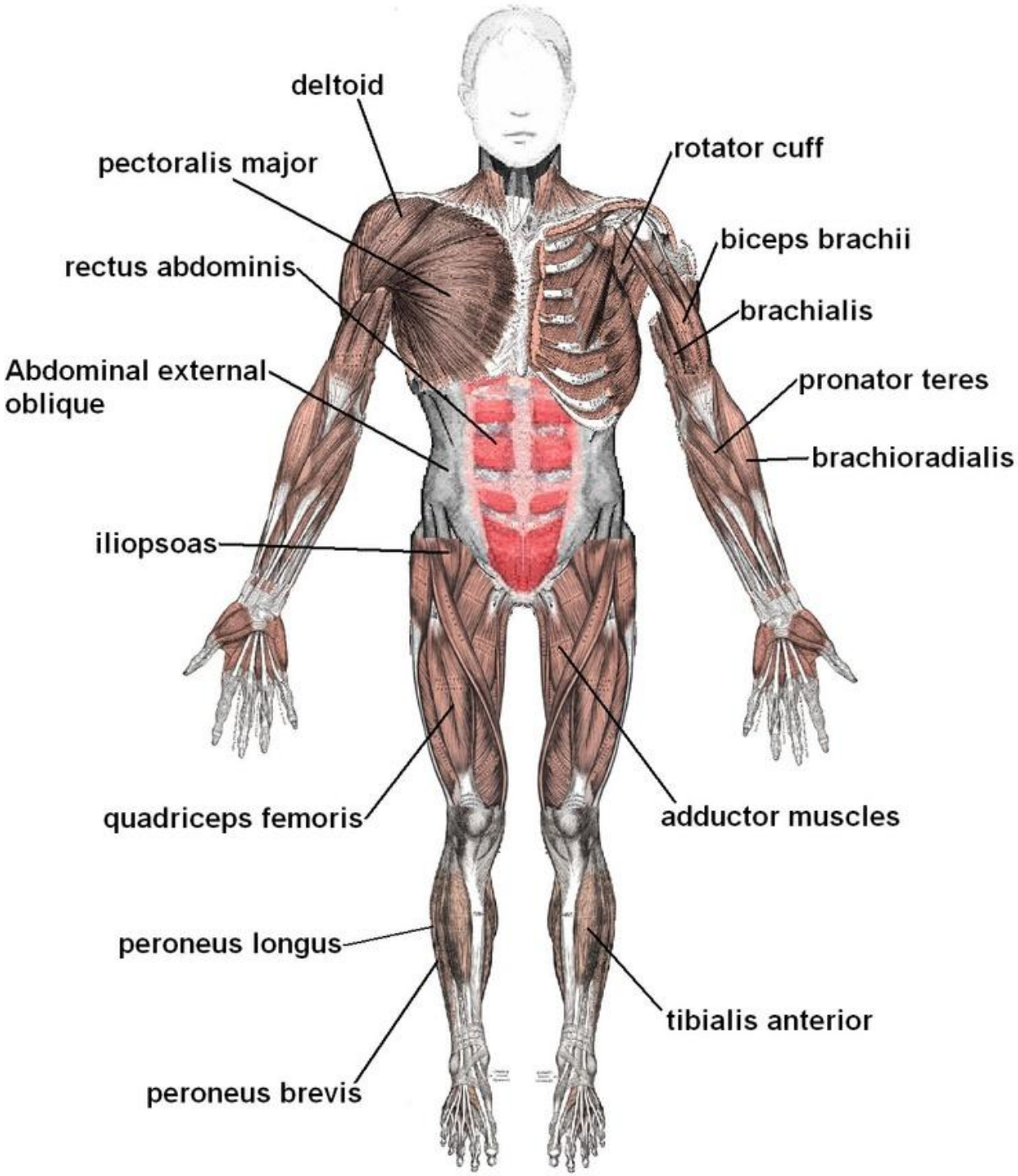


Figure 2: Major human muscles

Source: https://www.majorhumanmuscles.com.

2.2. An Overview of Post-Orthopedic Surgery

The word Orthopedia was used for the first time as the title of a book published in 1741 by Nicholas Andry, Professor of Medicine at the University of Paris. Andry formed the word *Orthopedia* out of two Greek words, *Orthos* meaning straight, free from deformity and *Paidios*, a child. Professor Andry writes out of these two words compounded that of *Orthopedia*, to express in one term the design, which is to teach the different methods of preventing and correcting the deformities of children (Ignacio, 1991).

Orthopedic injuries often occur as a result of accidents and frequently involve young, otherwise healthy, working individuals (Joel and Dan, 2013). A variety of orthopedic conditions can lead to pain and disability. As the American population ages, the prevalence of musculoskeletal disability will increase due to conditions such as osteoporosis, osteoarthritis, and trauma from falls. Recent data show that one million total hip and knee replacements are performed annually in the United States, typically because of osteoarthritis (Jon, 2013). An arterial complication is one of the most dreaded complications that can occur performing an orthopedic surgical procedure (Karin, 2016).

2.3. Early Mobilization on Post-Orthopedic Surgery

Early mobilization is considered an important element of post-operative care (Tanya *et al.*, 2015). Prolonged immobilization can result in functional decline and heighten the risk for hospital-associated complications such as falls and pressure ulcers. Early mobilization, on the other hand, has been shown to prevent functional decline and hospital-associated complications. However, currently no evidence-based guidelines exist with regard to an early mobilization protocol for the medical-surgical inpatient population (Lavanya and Diane, 2012). Additionally, early rehabilitation after arthroscopic cuff repair is associated with some initial improvements in ROM (range of motion) and function. Ultimately, similar clinical and anatomical outcomes between groups existed at 1 year. While there was no significant difference between groups in

anatomic failure of the repaired cuff, there may be a trend towards increased re-tear with larger tears (Gallagher *et al.*, 2015).

Mark *et al*. (2014) also stated that early mobilization post hip or knee joint replacement surgery can result in a reduced length of stay of about 1.8 days and reported these positive results showed that early mobilization can be achieved within 24 hours of operation. This positive gain was achieved without an increase in negative outcomes.

2.4. Magnitude of the Physical Activity Counseling

The physical health benefits of physical activity are clear. It include lower blood pressure, cholesterol, maintenance of a health weight improved mental health and wellbeing, social engagement, enhanced sleep and reduced risk of fractures. Several studies reveal that, sports and regular physical activities have beneficial effects on physical, well-being, mental health and social affections of humans (Elizabeth *et al*., (2008); Laiz *et al.,* (2008); Jochanan *et al.,* (2009).

As stated by Sarah *et al.,* (2008) regular physical activity plays a significant role in improving moods and subsequent meant health has been shown to relieve symptoms of depression. These benefits can be experienced by those with a diagnosed mental illness as well as the general population. The mental health benefits of physical activity frequently motivate those who are already physical activity to maintain their routines.

Social engagement is another key benefit of physical activity; this often motivates continued participation in physical activity (Elizabeth *et al.,* 2008). Regular group exercise is found to be a means of social support, especially for older people (Jules *et al*., 2006). Improved quality of sleep is related to people's participation in physical activity and it is an important marker of quality of life. Lynnette *et al.* (2008) reported that, people who are physically fit fall asleep faster sleep better and are less tired during the day. Furthermore, a study conducted by Laiz *et al.,* (2008) showed that, person who participate in regular physical activity sleep more and experience a better quality of sleep than who are sedentary (Katia *et al.*, 2017)

Physical activity is an essential component of a healthy life. The importance of physical activity in preventing a number of chronic diseases has great improvement (Caroline *et al.,* 2003).Low levels of physical activity are common in developed and developing countries. Therefore, regular exercise counseling in family practice is potentially important (Ulle *et al*., 2012). Physician counseling on exercise increased over the decade. Yet, a vast majority, two-thirds of respondents, reported that they had not received exercise counseling (Nasar *et al.,* 2017). The study done among family physicians in Canada revealed that, the proportion of family physicians who provided written physical activity prescriptions was 40% (Johann *et al.,* 2015) and other study done in Scotland showed that the prevalence of physical activity counseling by physicians was 62% (Flora *et al.,* 2006). Additionally, the study done among physicians in Estonia showed that the provision of physical activity counseling was 94% (Kadri *et al.,* 2010).

Despite the strong evidence linking higher levels of physical fitness with improved health and functional outcomes, helping patients change their physical activity behaviors is a difficult task for health providers. Primary care physicians represent a large pool of professionals who have credibility with their patients and patients list their primary care physician as the desired source for preventive care information (Robert *et al.,* 2008). A population-based epidemiological survey of an adult urban population in Southern Brazil showed that the prevalence of physical activity counseling done by physicians was 92.5% (Pedro *et al.,* 2012) and a study done in the United States of America, revealed that 30-50 % of PCPs provide Physical Activity Counseling (Patricia and Charlotte, 2012).

Physical activity has an effect of risk reductions both for pre-diagnosis and post-diagnosis (Gunn *et al*., 2016). Approximately 25% of adults aged over 45 years have previously experienced knee pain lasting over a month or had an episode of knee pain in the last year and prevalence increases with age. More than 90% of GPs manage at least one patient with severe knee pain over a two-week period (Elizabeth *et al*, 2010; Agnes *et al.,* 2013), whereas Kristina *et al*. (2007) recommended that bladder cancer survivors are interested in receiving exercise counseling and have some consistent programming preferences including exercising at home, walking and moderate intensity exercise.

A study done in Brazil showed that the prevalence of regular physical activity counseling for at least six months was 81.2 % among physicians. Physicians reporting recommendation of physical activity sometimes, but not at regular basis was 12.2% and finalized physical activity counseling for patients in primary care settings is an important component of health promotion. It represents a brief intervention that can be used by health professionals with patients, ranging from basic conversation to more personalized discussion focusing on behavioral changes (Alex *et al.,* 2013).

A number of pharmacological therapies are available that have been shown to reduce fracture risk in individuals with osteoporosis and are recommended for individuals at risk, along with ensuring calcium and vitamin D sufficiency (L. M. *et al.,* 2014). But Physical activity has both health promoting and disease prevention properties. An increase in physical activity is one of the measures that would have the greatest positive impact on the health of the population. If everyone followed the recommendation of being physically active on a daily basis, the health of the population would improve considerably and healthcare costs would drop dramatically (Swedish National Institute of Public Health, 2010). Low back pain (LBP) is highly prevalent and presents an enormous cost both through direct health care and indirectly through significant work and production loss. Exercise is often prescribed for LBP and effectively reduces pain and disability. However, whether specific loading through exercise might plausibly heal or regenerate the intervertebral discs is unknown (James *et al.*, 2015).

In the same manner, the principles of exercise prescription and counseling for person with chronic disease and/or disability should place more emphasis on the patient's clinical status as a result; the exercise mode, intensity, frequency and duration are usually modified according to their clinical conditions (J. Larry *et al.,* 2012). Generally, Physicians in a primary care setting can play an important role in promoting physical activity adoption among their older patients and the intervention practices received training in the delivery of brief physical activity counseling.

2.5. Associated Factors with Physical Activity Counseling

Physicians from both Scotland and South Africa cited lack of time as a barrier to providing advice on physical activity and similar results were obtained in a recent systematic review of perceptions of physical activity counseling in clinical settings (Emily *et al.,* 2012). The most common barrier to physical activity prescription was lack of time, with 76% of physicians reporting it. The next important barriers were lack of tools, lack of education (Johann *et al.,* 2015). A study done in Brazil showed that different factors are significantly associated with the provision of physical activity counseling by PCPs include conducting physical activity assessment on patients, feeling prepared to advise about physical activity, reporting lack of time as a barrier, and working on units offering physical activity programs for patients and factors found to be consistently associated with physical activity counseling include feeling prepared to advise patients on physical activity, having sufficient time during consultation to provide counseling and the presence of physical inactivity related co-morbidities among patients (Alex *et al.,* 2013).

2.5.1. Counseling Practice

The well known quotes that many people said is ‘‘practice makes perfect.’’ In counseling also physicians can influence patients to significantly improve their health through proactive advising on the positive health impacts of PA during an office visit (Elizabeth *et al*., 2012). They also stated the enormous potential of physical activity for the prevention and management of most chronic non-communicable diseases and as they call it the ethical and legal obligation of physicians to encourage and help their patients to be more physically active.

Lars *et al.* (2015) revealed that patients usually the first and most preferred contact person on health issues is still the doctor and most persons see their doctor at least once a year. Therefore, physical activity counseling strategies delivered by a physician seem to be a promising approach for physical activity improvement. Jean *et al.* (2017) also examined that patient's health behaviors and the related practices of their primary care physicians to determine whether

physicians' actions might help to reduce the social inequalities in health behaviors among their patients. What do seem to be important counselor contributions to effective counseling are a level of skillfulness (defined as competence rather than experience), cognitive complexity (ability to think diversely and complexly about cases), and ability to relate and relationally match with the clients with whom they are working (Thomas, 1999).

2.5.2. Knowledge towards Exercise of the PCPs

Numerous group benefits result from participation in physical activity; Families, industries and community also benefit if their members are active. Recommendations from the Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) advise all adults to accumulate at least 30 minutes of moderate intensity physical activity on most, if not all, days of the week, but many adults engage in no leisure-time physical activity (Judith *et al*., 1999).

The benefits regular physical activity includes improved physical and mental health, as well as an enhanced quality of life. As such, PA has a role, in many cases comparable or superior to pharmaceutical interventions, in the prevention and treatment of non-communicable diseases (Katia *et al.,* 2016). Physical inactivity has been identified as the fourth leading risk factor for global mortality causing an estimated 3.2 million deaths globally (Kasimir *et al.,* 2013). Physicians play an important role in the dissemination of PA recommendations to a broad segment of the population (Jane *et al.,* 2016).

Available evidence suggests that, despite positive attitudes toward regular exercise in promoting a healthy lifestyle, few physicians actually prescribe exercise for their patients. Because of primary care physicians have regular contact with a large proportion of the population, the impact of preventive health interventions may be great (Robert *et al.,* 2008).

People used physician as their primary source of information regarding healthy lifestyle decisions. Scott *et al*. (2000) confirmed that Physicians who perform aerobic exercise regularly

are more likely to counsel their patients on the benefits of these exercises which they are engaged in and are more likely to counsel their patients to exercise. Finally, Yoshiyuki *et al.* (2014) also investigated the associations of primary care physicians' own exercise habits with their exercise counseling, as well as major barriers for exercise counseling for the patients.

2.6. Conceptual Framework of the Study

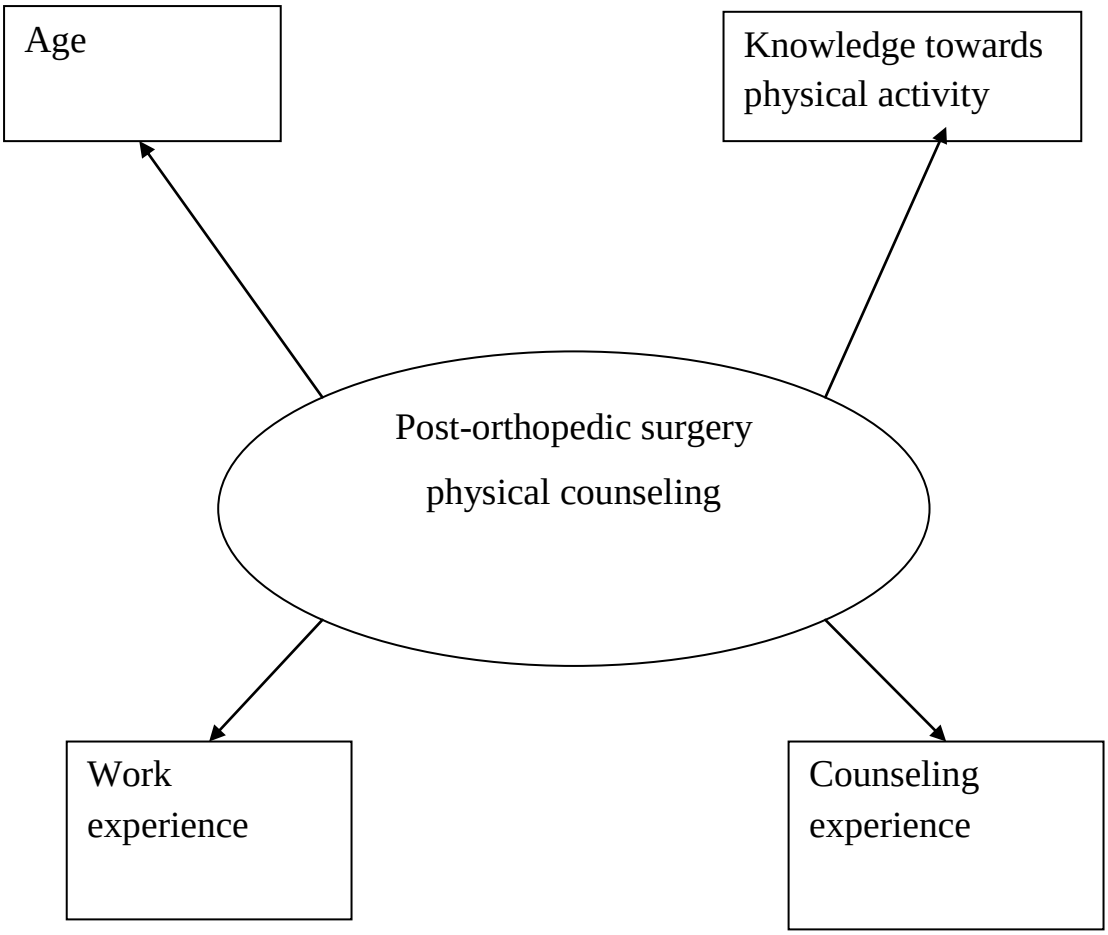


Figure 3- conceptual framework on the associated factors of post-orthopedic surgery physical counseling.

Source: developed by the investigator after reviewing different literatures.

3. MATERIALS AND METHODS

The concern in this chapter is to present details of the research design, source of data source population, inclusion and exclusion criteria, sampling procedure/ technique, data collection methods, procedures and tools, variables, operational definition, data quality control, method of data analysis and research ethics are discussed.

3.1. Description of the Study Area

The survey study was conducted at selected Hospitals of Harar city. Harar city is located in the Eastern part of Ethiopia 527km away from Addis Ababa, the capital city, and found on a hilltop in the eastern extension of the Ethiopian highlands. The study site is located at 42^{o} 07'05'''E longitude and 9^{o} 18'49'' N latitude and at an altitude 1917m above sea level in the Eastern Ethiopia (https://en.wikipedia.org/wiki/Harar). Based on the 2007E.C. Census conducted by the Central Statistical Agency (CSA) of Ethiopia, Harar has a total population of 183,415, of whom 92,316 were men and 91,099 women.

3.2. Source of Data

The investigator used both primary and secondary source of data. The researcher obtain primary source of data by collecting a data through questionnaire from the selected hospitals. From various published sources like journals, books and other relevant documents from various search engines were secondary source of data.

3.3. Operational Definition

Counseling- is the application of mental health, psychological or human development principles, through cognitive, affective, behavioral or systemic intervention strategies, that address wellness, personal growth, or career development, as well as pathology.

Orthopedic- is the medical specialty concerned with correction of deformities or functional impairments of the skeletal system, especially the extremities and the spine, and associated structures, as muscles and ligaments.

Surgery- is a branch of medicine concerned with diseases and conditions requiring or amenable to operative or manual procedures.

Orthopedic Surgery-is the branch of surgery concerned with conditions involving the musculoskeletal system.

Physical Activity- is any bodily movement produced by skeletal muscles that requires energy expenditure.

3.4. Research Design

The research was aimed to assess all types of Post-orthopedic surgery physical activity counseling and associated factors among PCPs of Hiwot Fana Specialized University Hospital and Jegol hospital. To achieve the objective of the study, quantitative hospital based cross-sectional study design was applied. This design is helpful to collect data from the hospital at a single time.

3.5. Source of Population

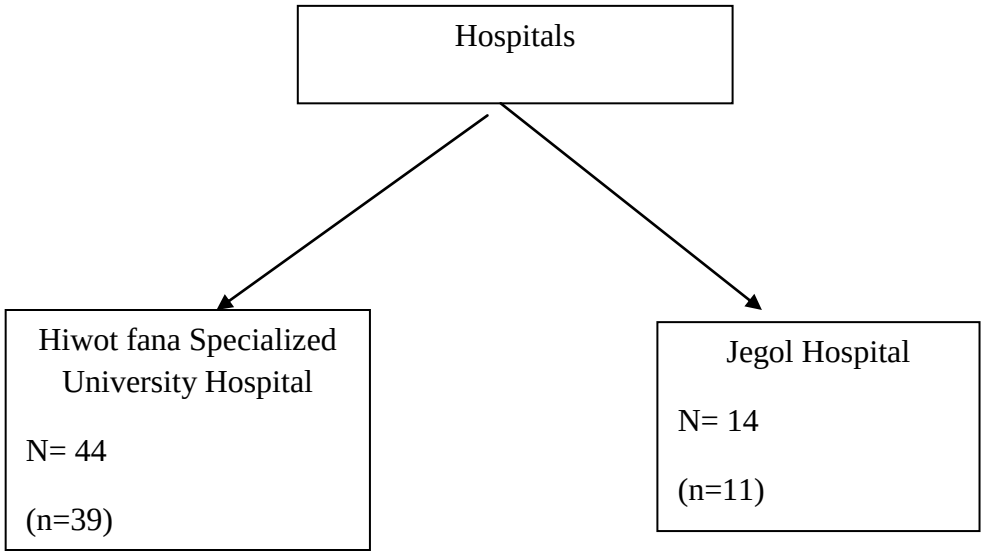
The source of population of the study was all Primary Care Physicians who serving at Hiwot Fana Specialized University Hospital and Jegol hospital during the study period.

3.6. Study Population

The study population was fifty Primary care physicians from Hiwot Fana Specialized University Hospital and Jegol hospital staffs who were employee in these institutions during the study period.

3.7. Sampling Technique

During data collection, there were forty six and twelve PCPs serving at HFSUH and JH respectively. Eight of them were newly recruited PCPs (five from HFSUH and three from JH). Fifty PCPs from both hospitals were selected as a respondent by using all population who fulfills the criteria of the study. The primary care physician with the age of greater than 26 and above, who has an experience of six month and above were recruited for the study. The participants who fulfill the selection criteria were selected as a participant as it is. Approximately around 40 patients were admitted as orthopedic surgery cases per month from both hospitals.



3.8. Inclusion and Exclusion Criteria

Primary care physicians who serve at Hiwot Fana Specialized University Hospital and Jegol Hospital of Harar city for a minimum of six months of service in the area and a person with age of greater than or equal to 26 were selected for the study. The PCPs who did not fulfilled the selection criteria were excluded from the study.

3.9. Definition of the Variables

In this study, the independent variables were knowledge towards physical activity and counseling experience of the Primary Care Physicians. The dependent variable was post orthopedic physical activity counseling of Primary Care Physicians.

3.10. Method of Data Collection

Because of no adapted questionnaire on the title, the questionnaire was modified from U.S. Preventive Services Task Force guidelines for physical activity counseling. By using this guideline as a baseline, the researcher changed the guideline in to questionnaire and adding some preparedquestions regarding to the associated factors PA counseling on post-orthopedic surgery in order to fulfill the objectives of the study. The data collectors were one medical doctor and the investigator for both hospitals. The respondents were contacted by going through hospital visit using the rooms.

3.11. Method of Data Analysis

The data were entered and cleaned using EpiData statistical software version 3.1 and then exported into SPSS statistical software version 20 for analysis. Descriptive statistical analysis such as simple frequencies, measure of central tendency and binary logistic regression were used

to describe the demographic characteristics of participants such as age, sex, work experience, exercise knowledge, exercise counseling practice. Moreover, binary logistic regression was used to identify the factors associated with post-orthopedic surgery physical activity counseling. Then the information was presented using tables. Level of statistical significance was declared at p-value ≤ 0.05.

3.12. Data Quality Control

Two days training was provided to the data collectors on the data collection tool and the data collection procedure. Then the questionnaire was pretested on 5% of the sample size out of the study from Hiwot Fana Specialized University Hospital to ensure its validity; pilot study. Data collectors were supervised closely by the principal investigator. Completeness of each questionnaire was checked by the principal investigator on daily basis of data collection period.

3.13. Research Ethics

Before starting the data collection process, official letter was written from College of Sport Sciences Academy to the respected hospitals to get their cooperation by giving relevant information for data collection from the hospitals to the principal investigator. Informed written consent was obtained from each participant after explaining the purpose and benefits of the study. Confidentiality of the study participants' information was ensured. All data were kept confidential and used for research purposes only. Participation in this study was fully voluntary. The participants had the right to declare to participate or not in this study. Two respondents from Hiwot Fana Specialized University Hospital refused to participate in the study due to shortage of time during data collection. Generally this research was conducted in consideration of research ethics of Haramaya University.

4. RESULT AND DISCUSSION

In this chapter, the results of the study are presented and discussed in detail to address the objectives of the research through the analysis of the data gathered through the questionnaire from Primary Care Physicians of Hiwot Fana Specialized Hospital and Jegol Hospital followed by discussion of the findings. Furthermore, the main findings of the study are presented with the help of tables to give answers to basic questions set in the study.

4.1. Background Information of Respondents'Result and Discussion

Before developed in to an in-depth investigation of the influence of various explanatory variables on dependent variables, the explanatory variables were considered as pertains individuals and respondent characteristics were included in the questionnaire and analyzed by descriptive statistics.

Table below summarizes the basic background characteristics of respondent like age, work experience and hospital of the respondents which they are serving was surveyed by using the questionnaire.

Table 1. Mean and standard deviation values of socio-demographic variables result of the respondents

Variables	Attribute	Percentage	Mean	Standard Deviation
Hospital	HFSUH (39)	78		
	JH (11)	22		
Age	24-32	-	29	1.947
Sex	Male (44)	88		
	Female (6)	12		
Work experience	1-8years	-	2.22	1.694

As the above table shows the number of the respondent from Hiwot Fana Specialized University Hospital and Jugol Hospital were 39 and 11 respectively. The result of the study revealed that male PCPs account for 44 (88%) and female were 6 (12%). Regarding the age of the respondents, 29yearswas the mean. The mean work experience of the respondents was 2.2 (approximately 2years and three months).

4.2. Physical Activity Counseling

Primary care physicians that have counseled their clients about physical activity with the case of orthopedic surgery were 90% and 10% of them did not counsel their clients. Some of the primary care physician reasons why they did not counsel, they did not get the chance to treat orthopedic patients and others lost the will because some of their former patients were unwilling to accept their physical activity counseling before. Even if there is discrepancy between the responses of physician that work in the same hospital, the result of the questionnaires shows that 58% of the PCPs confirm that there is a practice of physical activity counseling at their hospital and the remaining respondents said no.

Table 2. Response of the respondents to the questionnaire of PA counseling

Variables	Frequency		Percentage	
	Yes	No	Yes	No
Counseling PA with the case of orthopedic post-operative	35	15	70	30
practice of PA counseling after orthopedic surgery in the hospital	29	58	21	42

The result of the study revealed that most of Primary care physicians counsel physical activity counseling. The United States Preventive Service Task Force (USPSTF) determined that insufficient evidence to recommend for and against behavioral counseling to promote physical activity in the primary care setting. This guide line encourages the physicians to recommend and encourages formulating their own recommendations independently to their patients (Dawn *et al*., 2005).

Physical inactivity is an important contributor to non-communicable diseases in countries of high income, and increasingly so in those of low and middle income. Understanding why people are physically active or inactive contributes to evidence-based planning of public health interventions, because effective programs will target factors known to cause inactivity (Andrian *et al.*, 2012).

In other study, the prevalence and characteristics of patients who received physical activity counseling from a general practitioner, rates of physical activity advice and characteristics of patients receiving advice are similar to those reported overseas and suggest that while there is room for improvement, general practitioners are targeting their advice to patients most in need (Eakin *et al.*, 2007).

Despite the known health benefits of regular physical activity and exercise, the primary care provider is in an optimal position to provide physical activity and exercise counseling. Houde and Melillo, (2000) introduced and assessed the Physician-based Assessment and Counseling for Exercise (PACE) program, which utilizes the stages of change theory, provides a valuable framework for exercise counseling in primary care. Peterson (2007) study also showed that effectiveness of physical activity counseling in primary care and the importance of an active lifestyle in promoting health and well-being are well known. But most of the patients' do not attain the adequate physical activity counseling.

Physician-based counseling for physical activity is efficacious in producing short-term increases in moderate physical activity among previously sedentary patients (Karen *et al*., 2009). Miek *et al*. (2015) stated that physical activity counseling using telephone calls, with a frequency of three times a week, were used as a means to motivate and stimulate patients in the intervention group to increase their PA level during one month did not result in better improvements in physical activity and clinical outcomes compared to usual care. Motivating the patient is also crucial thing while PA counseling by Primary Care Physicians. This helps them to be physically active (Bess and Leigh, 2009).

In another related study, telephone counseling is a feasible means of delivering lifestyle intervention to primary care patients with chronic conditions for patients whose need for ongoing

support for lifestyle change is often beyond the capacity of primary healthcare practitioners (Eakin *et al.*, 2009).

4.3. Associated Factors with PA Counseling

The associated factors of post- orthopedic surgery physical activity counseling was counseling practice of primary care physicians and physical activity knowledge of primary care physicians.

By using the result of the study, counseling practice and physical activity knowledge of primary care physicians has no significant value with the work experience of the with 0.103 and 0.01 respectively.

Table 3.Associated factors of post-orthopedic surgery physical activity counseling

Variables	**Yes**		**No**	
	No	**%**	**No**	**%**
Time shortage while physical activity counseling	23	46	27	54
Comfortable place for counseling your clients	12	24	38	76
Patient overflow	37	74	13	26
Professional training on counseling taken before	5	10	45	90

As a table above shows, around 54% of the respondents have had a time shortage while counseling their clients on physical activity. This time shortage is usually attributed to a lesser experience of the PCPs in counseling the patients on physical activities. Moreover, the response to the questionnaires shows that most of the PCPs confirm that orthopedic post-operative does not include a comfortable place for physical activity counseling. The result also shows that the hospitals under the study have a congestion of patients which impedes delivery of physical activity counseling service. Ninety percent of the PCPs did not receive a proper training on counseling. This fact brings into question the effectiveness of the counsel delivered by the PCPs.

Finally, promotion of physical activity is a priority for health agencies (Gregory *et al*. 2012).

4.3.1. Knowledge towards Physical Activity

The purpose of questions below was assessed the knowledge towards physical activity of Primary care physicians like incorporating PA during history taking, assessing minimal level of PA of the patients, PA counseling specific to the post-operative surgery and their PA counseling encouragement through their profession.

Table 3. Knowledge towards Physical Activity Counseling

Variables	Yes		No	
	No	%	No	%
Incorporate questions regarding the physical activity level of patients into history taking during routine health care visits of orthopedic postoperative cases before	39	78	11	22
Identify inactive patients who do not appear to meet the minimal level of physical activity	41	82	9	18
Guide the patient in choosing an appropriate type of physical activity that would be efficacious for health	44	88	6	12
Guide the patient in choosing an appropriate level of participation in terms of intensity, duration and frequency before	36	72	14	28
Encouraging physical activity adherence, particularly after major lifestyle transitions depending on your profession	44	88	6	12

As the table above shows, the Primary Care Physician's knowledge towards physical activity affects Physical activity counseling. Seventy-eight percent of the Primary Care Physicians incorporate questions about physical activity level of their patients during routine health care visit. This is one indication that the primary care physicians have an acceptable level of knowledge about physical activities and their impacts on orthopedics patients. The result also

shows that 82% of the primary care physicians were able to identify patients who did not appear to meet the minimum requirement for physical activity. This could be considered as another parameter that the primary care physicians are well fit to deliver physical activity counseling to orthopedic patients.

Doctors are well positioned to provide physical activity (PA) counseling to patients, they are a respected source of health-related information and can provide continuing preventive counseling feedback and follow-up; they may have ethical obligations to prescribe PA (F. Lobelo *et al.*, 2009). In summary of their study, doctors' own PA practices influence their clinical attitudes towards PA and maintaining regular PA habits to increase the rates and quality of future PA counseling delivered by doctors.

The table below shows the percentage of the respondents in regard to the knowledge of physical activity counseling.

Table 5. Response to self-confidence of PCPs

Variables	Response	Frequency	Percentage
Confidence enough while counseling physical activity	Yes	39	78
	No	11	22
Clients acceptance physical activity counseling	Yes	42	84
	No	8	16

Seventy-eight percent of PCPs feel confident enough while counseling physical activity to their clients' (patients) and the remaining 22% (11) of PCPs were not confident to counsel physical activity. The responses from the primary care physicians were most them were counseled Physical activity. Frank *et al.* (2008) study showed that a positive relationship between physicians' personal physical activity levels and physicians' encouraging patients' PA. Promotion of adequate PA habits during medication has an important step to improve the PA preventive counseling that future clinicians provide.

Flora *et al*. (2006) study states that confidence and enthusiasm for giving advice was generally high, but knowledge of current physical activity recommendations was low. Nevertheless, if primary health care staff are to be fully motivated and effective in encouraging and supporting the general population to become more physically active, policymakers and health professionals need to engage in efforts to improve knowledge of current physical activity recommendations, population trends amongst frontline primary care staff and consider the development of tools to support individual assessment and advice giving to suit individual circumstances.

4.3.2. Counseling Experience

The Primary Care Physicians work experience ranges from 1-8 years. 19 PCPs had 1 year work experience, 18 of them had 2 years, 8 of them had 3 years, 2 of them had 4 year and 3 of them had an experience of 8 years of service. Health professionals have a role to play in the promotion of physical activity in order to prevent the ever-increasing burden of diseases associated with physical inactivity (Siyabonga and Nomathemba, 2015).

While a growing literature supports the effectiveness of physical activity interventions delivered in the primary care setting and few studies have evaluated efforts to increase physician counseling on physical activity during routine practice (Elizabeth *et al.,* 2004). In contrast, Norris *et al*, (2000) suggested that few primary care physicians routinely counsel for exercise, despite the benefits of physical activity and the high prevalence of inactivity and assessed the effectiveness of Physician-Based Assessment and Counseling for Exercise (PACE), a brief, behavior-based tool for primary care providers counseling healthy adults.

Finally, Physician counseling of patients to increase physical activity has had limited success in changing behavior and suggested providing organizational support to primary care providers and their patients may increase the effectiveness of physical activity levels in primary care setting (Beverly *et al.*, 2002).

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

Under this chapter, the overall summary of the major findings, conclusion and recommendation forwarded by the researcher are presented consecutively.

5.1. Summary

Physical inactivity is the fourth leading cause of death worldwide and it is an important contributor to non-communicable diseases in countries of high income, and increasingly so in those of low and middle income. Injury may occur in our day-to-day activity; either by accident or in sports field. Exercise participation after diagnosis also has been associated with a number of positive outcomes, including enhanced quality of life, reduced risk of recurrence, and improved survival times. To prevent or diminish post-operative complications, post-operative physical therapy treatment is often prescribed to operative patients during the hospital stay for post-operative care patients. Clinicians have a great role in promoting the well being of an individual and as well as the ones' society with counseling appropriate physical activity.

This study assessed the post-orthopedic surgery physical activity counseling and associated factors among primary care physicians of Hiwot Fana Specialized Hospital and Jegol Hospital of Harar city. In the beginning of the sampling, both hospitals were selected purposefully. Due to large PCPs they have and availability of orthopedic surgery room in these hospitals.

The data was collected from all PCPs (fifty in number) who fulfilled the selection criteria of the study through questionnaire. Both qualitative and quantitative types of data were collected from the primary and secondary sources to address the objectives of the study. The primary data was gathered through questionnaire. Secondary data were collected from published and by reviewing the relevant materials such as statistical reports, books, journals and web sites.

A hospital based cross-sectional research design was employed in the process of data collection. Depending on the objectives of a given study and nature of the data available, analysis required different approaches. Quantitative data were collected from the survey respondents and analyzed by using Statistical Packages for Social Science (SPSS) version 20 with significance level of 0.05% after the data had edited, verifies, code and clean on Epidata version 3.1 software. The data were analyzed using descriptive statistics mean, standard deviation, frequency and percentage.

The final result of study summarized that the result of post-orthopedic surgery physical activity counseling showed the physical activity counseling after orthopedic surgery is crucial; counseling physical activity in post orthopedic surgery has a positive effect on the health and the Primary care physicians were exercised. Some factors hinder the primary care physicians like, there is lack of training, no separate room for counseling, lack of linkage between the orthopedic surgery room and physicians, patients' do not want to accept/have lack of interest while PA counseling properly due to lack of awareness and physical activity benefits, No organized place for counseling, poor setup, there is no habit of counseling about physical activity after orthopedic surgery, no facility available and low human resource; only one orthopedician in both hospitals.

Based on this study, the following conclusions and recommendations were suggested for practical action, for future studies concerning the city and for area that have similar situation with the study area (Harar city).

5.2. Conclusion

Regarding the findings of the study the following conclusions were made.

The result of the study indicated that Primary Care Physicians were from Hiwot Fana Specialized University Hospital and Jugol Hospital was 39 and 11 respectively. Male PCPs account for 44 (88%) and female were 6 (12%). Regarding the age of the respondents, 29year were the mean(26-32). The mean work experience of the respondents was 2.2(approximately

around 2 years and 3 months).90% of the Primary care physicians were counseled about physical activity their clients with the case of orthopedic surgery. Only 10% of them did not counsel their clients. Some of the Primary care physician reasons why they did not counsel were, they did not get the chance to treat orthopedic patients and others lost willingness due to some of their patients formerly did not accept their physical activity counseling before.

The primary care physicians work experience ranges from 1-8 years. 19 PCPs had 1 year work experience, 18 of them had 2 years, 8 of them had 3 years, 2 of them had 4 year and 3 of them had an experience of 8 years of service. The questionnaire was assessed the knowledge towards physical activity of Primary care physicians like incorporating PA during history taking, assessing minimal level of PA of the patients, PA counseling specific to the post-operative surgery and their PA counseling encouragement through their profession.

The ranked respondents constraints that hold back on primary care physicians from giving counseling were lack of training, no separate room for counseling, lack of linkage between the orthopedic surgery room and physicians, no organized department for counseling, poor setup while counseling, there is no habit of counseling about physical activity after orthopedic surgery and low human resource; only one orthopedician in Hiwot Fana Specialized University Hospital and no orthopedician in Jegol Hospital were perceived as significant barriers to post-orthopedic surgery physical activity counseling.

5.3. Recommendations

The result of this study indicates that the primary care physicians counseling on post-orthopedic surgery have an important in improving the healing process in orthopedic post-operative. Based on the discussions and the finding of the result, conclusions mentioned above the following recommendation were given as follows.

- It is expected from sport science professionals to give important physical activity awareness and training for health professional. This helps them to guide the patient with physical activity knowledge and feel confident while counseling PA.

- The lack of human resource on orthopedic surgery room should be avoided by educating General Practitioners with the orthopedics specialization.

- Separate OPD (Out Patient Department) for orthopedics counseling, good set up with orthopedic surgery room, giving counseling training, making linkage between orthopedic surgery with other department, fulfilling orthopedic surgery facilities, organizing the place for counseling comfortable places, supporting and giving awareness creation for the health professionals should be the primary homework for the hospitals.

- Physical activity benefits and awareness creation should be done on patients on orthopedic post-operative care.

- The researcher highly recommended the sport and health professionals need to conduct further investigation on post-orthopedic surgery physical activity counseling.

6. REFERENCES

Agnes, J. S., Sita, MA., Joost, D., Thea, PM., Vliet, V., Johannes, WJ., Bart, A., Joke, H. Kortland., Theo, B., Cornelia, HM., and Henk, J. 2013. Agreement of General Practitioners with the guideline-based stepped-care strategy for patients with osteoarthritis of the hip or knee: A cross-sectional study. *Journal of BMC Family Practice***,** 14(33).

Alex, A., Gregore, I., Grace, A., Mario, M., Eduardo, J. and Pedro, C. 2013. Physical activity counseling in primary health care in Brazil: a national study on prevalence and associated factors. *Journal of Biomedical Central of Public Health*.

American College of Sports Medicine. 2003. Careers in sports medicine and exercise sciences.

Andrian, E., Rodrigo, S., James, F., Jonathan, C., Ruth, JF. and Brian, W. 2012. Correlates of physical activity: why are some people physically active and others not?. *Journal of the Lancet*. 380(9838), 258-271.

Arni Arnason. 2004. Injuries in Football Risk factors, injury mechanisms, team performance and prevention. Oslo Sports Trauma Research Center, Norwegian University of Sport and Physical Education,Oslo, Norway

Bernardine, M., Michael, G., and Bess, H. 1998. Activity counseling by Primary Care Physicians. *Journal of Preventive Medicine*. 27(4), 506-513.

Bess H. Marcus and Leigh Ann Forsyth. 2009. Motivating People to Be Physically Active-2nd Edition. Human Kinetics.

Beverly, B., Timothy, M., Michael, H., Linda, M., Madlen, C., and Diana, B. 2002. Effectiveness of telephone support in increasing physical activity levels in primary care patients. *Journal of Preventive Medicine*. 22(3), 177-183.

Bowden, J., Bowden AE., Wang, H., Hager, RL., LeCheminant, JD., and Mitchell UH. 2018. In vivo correlates between daily physical activity and intervertebral disc health. *Journal of Orthopedic Research*. 36(5), 1313-1323.

Caroline, A., Jennifer, M. and Joseph, E. 2003. Major public health benefits of physical activity. *Journal of Physical Activity and Health.* American College of Rheumatology.

Constantina, Lomi and Elisabeth Westerdah. 2013. Physical Therapy Treatment after Cardiac Surgery: A National Survey of Practice in Greece. *Journal of Clinical and Experimental Cardiology*. P2.

Dawn, M., Lorrie, S., Michael, T., and David, L. 2005. Physical activity counseling in the adult primary care setting. *American College of Preventive Medicine.*

Eakin, E., Brown, W., Schofield, G., Mummery, K. and Reeves, M. 2007. General Practitioner advice on physical activity: who gets it?. *American Journal of Health Promotion*. 21(4), 225-228.

Elizabeth, J., Steven, N., and Patrick, M., Robert S. 2012. Physical activity counseling in sports medicine: A call to action. *British Journal of Sports Medicine*. P49.

Elizabeth, A., Mi-Suk, Shim., and Allison, G. 2004. Linking obesity and activity level with children's television and video game use. *Journal of Adolescence.* 27, P 71-85.

Elizabeth, C., Edward, R.and Nadine, E. 2010.The attitudes, beliefs and behaviors of GPs regarding exercise for chronic knee pain: a systematic review. *BMC Family Practice*.

Elizabeth, E., Marina, R., Sheleigh, L., Nick, G., Brian, O., Christ, D., Elizabeth, W., and Adrian, B. 2009. Telephone counseling for physical activity and diet in primary care patients. *American Journal of Preventive Medicine*. 36(2), 142-149.

Elizabeth, J., Michael, S., and Meghan, C. 2008. A preliminary analysis of barriers, intentions, and attitudes towards moderate physical activity in women who are overweight. *Journal of Science and Medicine in Sport*. 11(6), 558-561.

Emily, T., Margaret, O., and Kerem, Shuval. 2012. Primary care providers' perceptions of physical activity counseling in a clinical setting: a systematic review. *British Journal of Sport Medicine*. 46(9).

F, Lobelo., J, Duperly., and E, Frank. 2009. Physical activity habits of doctors and medical students influence their counseling practices. *British Journal of Sports Medicine*, 43(2).

Flora, D., Nicola, T., Edwin, V., Serena, M., and Ann, K. 2006. Primary care staff's views and experiences related to routinely advising patients about physical activity: A questionnaire survey. *Journal of Biomed Central of Public Health.* P 2-10.

Frank, E., Tong, E., Lobelo, F., Carrera, J. and Duperly, J. 2008. Physical activity levels and counseling practices of U.S. medical students. *Journal of Medicine and Sciences in Sports and Exercise*. 40(3),413-421.

Gabriel, J., and Richard, C. 2007. Global Orthopaedics and Burden of Musculoskeletal Injury. Global Health Education Consortium and collaborating partners. Stanford University School of Medicine, UCSF/SFGH Orthopaedic Surgery Trauma Center.

Gallagher, BP., Bishop, ME., Tjoumakaris, FP. and Freedman KB. 2015. Early versus delayed rehabilitation following arthroscopic rotator cuff repair: A systematic review. *Journal of the Physician and Sports Medicine.* 43(2),178-87.

Gjerset, G.M., Fossa,C., Skovlund, E., Jacobsen, A. and Thorsen, L. 2011. Interest and preferences for exercise counselling and programming among Norwegian cancer survivors. *European Journal of Cancer Care.* P 96–105

Goldstein, MG., Pinto, BM., Marcus, BM., Lynn, H., Jette, AM., Rakowski, W., McDermott, S., De, JD., Milan, FB., Dube, C. and Tennstedt S. 1999. Physician-based physical activity counseling for middle-aged and older adults: a randomized trial. *Journal of Annals Behavioral Medicine.*

Gregory, W., Diana, C., Olga, L., Sarmiento, L., Neville, Owen., Shifalika, G., and Ross, C. 2012. Evidence-based intervention in physical activity: lessons from around the world. *Journal of the Lancet* .380(9828), 272-281.

Gunn, A., Karen, S., Randi, V., Anne, T., Christoffer, J., Kirsten, F., and PernilleBidstrup. 2016. Physical activity and survival in breast cancer. *European Journal of Cancer*. P 67-74.

Harold, W., Cora, Lynn., Craig, E., Shigeru, L., Jasem, R., Alkandari, G. and Sonja, K. 2012. The pandemic of physical inactivity: Global action for public health. *Journal of the Lancet*, 380(9838), 294-305.

Hechanova, R., Wegler, J., and Forest, C. 2017. Exercise: A vitally important prescription. *Journal of the American Academy of Physician Assistants*. 30(4), 17–22.

Houde, SC. and Melillo, KD. 2000. Physical activity and exercise counseling in primary care. *Journal of the Nurse Practitioners.*

http://www.surgeryencyclopedia.com/Pa-St/Postoperative-Care.html. Accessed at 31/8/2017

https://en.wikipedia.org/wiki/Harar.

https://www.humanskeletonimage.com

https://www.majorhumanmuscles.com.

Ignacio V. Ponseti. 1991. History of orthopedic surgery.

J, Larry., Patricia, P., Barry, A., Don, M., Kenneth, H., and Scott, O. 2012. Physical activity for the chronically ill and disabled. *Journal of Sports Medicine.*

James, S., Stewart, B., Dave, S., Neil, O. and Arvid, T. 2015. Can specific loading through exercise impart healing or regeneration of the intervertebral disc? *Journal of Sport Medicine.* 15(10), 2117–2121.

Jane, S., Pierre, F., Karim, K., Paul, P., Jonathon, F., Greg, D., and Renata, J. 2016. Physical activity prescription: a critical opportunityto address a modifiable risk factor for the prevention and management of chronic disease: A position statement by the Canadian Academy of Sport and Exercise Medicine. *British Journal of Sports Medicine.* P1-6.

Jean, L., Virginie, R., Geraldine, B., Isabelle, P., Sylvain, P., Henri, P., Raphaelle, D., Sophie, B., Fanny, C., Hector, F. and Laurent, R. 2017. Are Primary-Care Physician Practices Related to Health Behaviors Likely to Reduce Social Inequalities in Health?.*Journal of Preventive Medicine*. P21-28.

Jochanan, S., Robert, H., Eliana, E., and Jeremy, M. 2009. Physical Activity, Function and Longevity among the Very Old. *Journal of JAMA Internal Medicine.* 169(16),1476-1483.

Joel, M. and Dan, Katz. 2013. General principles of orthopedic injuries.Orthopedic Lesions.

Johann, W., Adriaan, W., Jennifer, D., Robert, P., and Karim, K. 2015. Can a 3-hour educational workshop and the provision of practical tools encourage family physicians to prescribe physical activity as medicine? A pre-post study. *BMJ Journals.* P 1-2.

John, C. 1999. Individual Counseling to Promote Physical Activity. Faculty of Physical Education and Recreation. University of Alberta. Canada.

Jon, M. 2013. Orthopedics & Rehabilitation. *Rhode Island Medical Journal.*

Judith, M., Daniel M., Thomas, D. and Stephen J. 1999. Exercise Counseling by Primary CarePhysicians in the Era of Managed Care.*American Journal of Preventive Medicine.* P307–313.

Jules, P. Jo, P., Martin, S., and Murray, G. 2006. The mental and physical health outcomes of green exercise. *International Journal of Environmental Health Research.* P 319-337

Kadri, S., Ulle, P., Jaak, M., Ruth, K., Anneli, R., Marje, O. and Heidi, M. 2010. Physical activity of Estonian family doctors and their counselling for a healthy lifestyle: a cross-sectional study. *BMC Family Practice.*

Karen, B., Tracy, O., Cynthia, D., Nola, J., and Steven, M. 2002. Does Counseling by Clinicians Improve Physical Activity? A Summary of the Evidence for the U.S. Preventive Services Task Force. *Journal ofAnnals Internal Medicine.*

Karen, J., Barbara, J., James, F., Wilma, J., Michael, P., and Kelvin, P. 2009. A controlled trial of physician counseling to promote the adoption of physical activity. *Journal of Preventive Medicine*. 25, P225-233.

Karin, B. 2016. Orthopaedic Patients with lower limb vascular injuries. Uppsala University, Sweden.

Kasimir, S. 2013. Stress and physical activity during a 1-year counseling intervention. Master's thesis. Exercise Physiology Department of Biology of Physical Activity. University of Jyvaskyla.

Katia, G., Carmen, G., Jorge, S., Nelly, S., Felipe, L. 2017. Brief Counseling and Exercise Referral Scheme: A Pragmatic Trial in Mexico. *American Journal of Preventive Medicine*. P249–259.

Kristina, H., Kerry, S., Peter, V., and Scott, N. 2007. Exercise programming and counseling preferences in bladder cancer survivors: a population-based study. *Journal of Cancer Survivorship*. University of Alberta, Van Vliet Center, Edmonton, AB, Canada.

Kristina, K.,Thomas, D., Hyder, A., and Ron, R. 2011. Exercise programming and counseling preferences of breast cancer survivors during or after radiation therapy. Oncology Nursing Forum. 38(5).

L, Giangregorio., A, Papaioannou., N. MacIntyre, M. C. Ashe, A. Heinonen, K. Shipp, J. Wark, S. McGill, H. Keller, R. Jain, J. Laprade and A. M. Cheung .2014. Too Fit To Fracture: exercise recommendations for individuals with osteoporosis or osteoporotic vertebral fracture. *Journal of Osteoporosis International*. 25(3), 821–835.

Laiz, H., Luciane, B., Gianni, Y., Gilmar, F., and Fernandes, D. 2008. Physically active elderly women sleep more and better than sedentary women. *Journal of Sleep Medicine.* 9(5), 488-493.

Lars, G., Susanne, J., and Martin, S. 2015.Prevalence and temporal trends of physical activity counseling in primary health care in Germany from 1997–1999 to 2008–2011. *Journal of Biomedical Central.*

Lavanya, P. and Diane, V. 2012. Impact of early mobilization protocol on the medical-surgical inpatient population: An integrated review of literature. *Journal of Clinical Nurse Specialist.* 26(2), 87–94.

Lynnette, K., Beverly, M., James, W., John, Newell, P., Martin, O., Paul, M., and Victor, M. 2008. The Diagnosis of Cushing's Syndrome: An Endocrine Society Clinical Practice Guideline. *The Journal of Clinical Endocrinology & Metabolism*, 93(5), 1526–1540.

Mark, L., Parminder, J., and Nicholas, F. 2014. Early mobilization of patients who have had a hip or knee joint replacement reduces length of stay in hospital: A systematic review. *Journal of Clinical Rehabilitation*. 29(9), 844–854.

Martina, Z., Janna, E., Sebastian, W., Barbara, M., Beate, D., Olaf, G., James, E., and Astrid, M. 2011. Anxiety and depression in bariatric surgery patients: A prospective,follow-up study using structured clinical interviews. *Journal of Affective Disorders*.

Maureen, F. and W.H. Meeuwisse. 2003. Exercise counseling by family physicians in Canada. University of Calgary, Canada. *Journal of Preventive Medicine. 37, 226–232*

Miek, H., Heleen, D., Carlos, A., Wim, J., and Thierry, T. 2015. The effects of a physical activity counseling program after an exacerbation in patients with Chronic Obstructive Pulmonary Disease: A randomized controlled pilot study. *Journal of BMC Pulmonary Medicine.*

Nasar, U., Michael, D. and Anshul, S. 2017. Trends and disparities in the prevalence of physicians' counseling on exercise among the U.S. adult population, 2000-2010. *American Journal of Preventive Medicine.* P 1-6

Norris, SL., Grothaus, L., Buchner, DM. and Pratt, M. 2000. Effectiveness of physician-based assessment and counseling for exercise in a staff model HMO. *American Journal of Preventive Medicine,* 30(6), 513-23.

Patricia, M., and Charlotte, A. 2012. Trends in Adults Receiving a Recommendation for Exercise or Other Physical Activity from a Physician or Other Health Professional. NCHS Data Brief.

Pedro, C., Lars, B., Fiona, C., Regina, G., William, H. and Ulf, E. 2012. Global physical activity levels: surveillance progress, pitfalls, and prospects. *Journal of Lancet.* 380(9838), 247-257.

Peterson, J. 2007. Get moving: Physical activity counseling in primary care. *Journal of the American Academy of Nurse Practitioners.* 19(7), 349-57.

Robert, J., John, J., David, A., and Donald, H. 2008. Can Primary Care Doctors Prescribe Exercise to Improve Fitness? The Step Test Exercise Prescription (STEP) Project. *American Journal of Preventive Medicine.* 24(4).

Sarah, H., Andrian, T., Martin, B., and Richard, C. 2008 A randomized controlled trial on the effectiveness of a primary health care based counseling intervention on physical activity, diet and CHD risk factors. *Journal of Patient Education and Counseling*. 70(1), 31-39.

Scott, A., Joel, S., Michael, S., Elizabeth, F. and Shannon, R. 2000. Personal Exercise Habits and Counseling Practices of Primary Care Physicians: A National Survey. *Clinical Journal of Sport Medicine.*

Siyabonga, H. and Nomathemba, P. 2015. Level of physical activity of health professionals in a district hospital in KwaZulu-Natal, South Africa. *Journal of Physiotherapy*.

Swedish National Institute of Public Health. 2010. Physical Activity in the Prevention and Treatment of Disease. Professional Associations for Physical Activity. Sweden.

Tanya, C., Julio, F., Petru, N., Tara, L., Berson, A. and Liane, S.. 2015. The effect of early mobilization protocols on post-operative outcomes following abdominal and thoracic surgery: A systematic review. *Journal of Surgery*.

Thomas, L. 1999. Evidence-Based Counseling: Implications for Counseling Practice, Preparation and Professionalism.

Ulle, P., Kadri, S., Tanel, K., Ruth, K., and Heidi, M. 2012. Physical activity and exercise counselling: A cross-sectional study of family practice patients in Estonia. *Journal of Quality in Primary Care.*

Yahtyng Sheu, Li-Hui Chen and Holly Hedegaard. 2016. Sports and Recreation-related injury episodes in the United States, 2011–2014. National Health Statistics Reports. Number 99.

Yoshiyuki, M., Akihiko, N., Atushi, M., Mari, O., Kenichi, I., Fumi, T., Yasuhiro, A., Shigeaki, M., Daisuke, N. and Eiji, K. 2014. Primary care physicians' own exercise habits influence exercise counseling for patients with chronic kidney disease: a cross-sectional study. *Journal of Biomed Central Nephrology.*

7. APPENDICES

Appendix I

Participant Information Sheet and Voluntary Consent Form

My name is Azeb Gebru. I am collecting data for my study in this hospital to pursue my Master degree at Haramaya University, College of Sport sciences Academy. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

The study title: Post-orthopedic surgery physical activity counseling and associated factors among primary care physicians of selected public hospitals of Harar city, Eastern Ethiopia.

Purpose of the study: The findings of this study can be of a paramount importance for Harari Regional State Health Bureau, Hiwot Fana Specialized University Hospital and Jegol Hospital to plan intervention programs to improve physical activity counseling on postoperative treatments. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillment of a Master's program in Sports medicine for the principal investigator.

Procedure and duration: There are some questions to answer by you. You will fill the given questionnaire to provide me with pertinent data that is helpful for the study. The questionnaire will take about five minutes, so I kindly request you to spare me this time for the questionnaire.

Risk and benefits: The risk of being participated in this study is very minimal, but only taking few minutes from your time; maximum of ten minutes. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for Harari Regional State Health Bureau, Hiwot Fana Specialized University Hospital and Jegol Hospital in planning physical activity counseling services.

Confidentiality: The data you will provide us will be confidential. There will be no information that will identify you or your institution in particular. The findings of the study will be general for the study population and will not reflect anything particular of individual person. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

Rights: Participation in this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefit which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Contact address: If there are any questions or enquires any time about the study or the procedures, please contact me:

Azeb Gebru: Mobile number (+251)-921-768379

Email address: gebruazeb@gmail.com

Declaration of informed voluntary consent: I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues to confidentiality, the rights of participating and contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to stop the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent on the behalf of my child to allow this study to be conducted with my initials (signature) as indicated below.

Signature of the participant: _____

Signature of data collector: _____

Date: _____

Appendix II

Personal Information

Dear colleague,

The purpose of this investigation is to study the Post-orthopedic surgery physical activity counseling and associated factors among primary care physicians of selected public hospitals (Hiwot Fana Specialized University Hospital and Jegol Hospital) of Harar city. So you are kindly requested to give the right answer you think, since it contributes for the study. I promise you that this research is made for Health purpose only and all information you provide us will be kept confidential. Thank you in advance for your co-operation!

Instruction: Please fill the blank space and circle the multiple choice questions.

Hospital
Age
Sex
Work experience
Department

Appendix III

Questionnaire

Direction: Please read the following items carefully and Circle the response please!

1. Did you incorporate questions regarding the physical activity level of patients into history taking during routine health care visits of orthopedic postoperative cases before?

   a. yes b. no

2. Did you identify inactive patients who do not appear to meet the minimal level of physical activity?

   a. yes b. no

3. Did you counsel your clients with adequate counseling with specific to their post-operative injury?

a. yes b. no

4. Did you guide the patient in choosing an appropriate type of physical activity that would be efficacious for health?

   a. yes b. no

5. Did you guide the patient in choosing an appropriate level of participation in terms of intensity, duration and frequency before?

   a. yes b. no

6. Are you encouraging physical activity adherence, particularly after major lifestyle transitions depending on your profession?

a. yes b. no

7. Have you counsel your client about the exercise with the case of orthopedic postoperative before?

   a. yes b. no

8. Is there a practice of physical activity counseling after orthopedic surgery in your hospital?

   a. yes b. no

If no explain the reason please…….

If yes how many times?

a. frequently

b. always

c. sometimes

d. never

9. Do you feel confident enough while you counsel physical activity?

   a. Yes b. no

10. Do your clients accept your physical activity counseling on orthopedic post-operative?

a. yes b. no

If no, why_____

11. Have you faced time shortage for physical activity counseling?

a. yes b. no

12. Does the orthopedic post-operative have its own comfortable place for counseling your clients?

a. yes b. no

13. Does your hospital have patient overflow?

a. yes b. no

14. Did you take professional training on counseling before?

a. yes b. no

Appendix IV

Map of Experimental Site

Source: CSA 2014