The Quality of Life of Knee Osteoarthritis Patients and the Impact of Treatment

Thesis

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Ahmed Tantawy

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List of Abbreviations

ACR	American College of Rheumatology
ANOVA	Analysis of Variance
ADAMTS	A-Disintegrin and Metalloproteinase with Thrombospondin motifs (Family of Extracellular Matrix Proteases).
AGEs	Advanced Glycation End Products
ANKH	Ankylosis Protein Homolog
BMI	Body Mass Index
BML	Bone Marrow Lesion
BMP	Bone Morphogenic Protein
CD	Cluster of Differentiation
ChemR	Chemoattractive Receptor
COL2A1	Collagen Type II Alpha 1
COX-2	Cyclooxygenase-2
DMOADS	Disease-Modifying Osteoarthritis Drugs
ECM	Extracellular Matrix
ER	Endoplasmic Reticulum
ESR	Erythrocyte Sedimentation Rate
FDA	Food and Drug Administration
GBD	Global Burden of Disease
HRQOL	Health Related Quality of Life
IL-1	Interleukin-1
IL-1b	Interleukin-1b

IL-6	Interleukin-6
LK	Likert
MAC	Membrane Attack Complex
miRNA	Micro RNA
MMP	Matrix Metalloproteinase
MRI	Magnetic Resonance Imaging
NK	Natural Killer
NO	Nitric Oxide
iNOS	Nitric Oxide Synthase
NSAIDS	Non-Steroidal Anti-Inflammatory Drugs
PA	Plasminogen Activator
PGE2	Prostaglandin E2
OA	Osteoarthritis
OARSI	Osteoarthritis Research Society International
OMERACT	Outcome Measures in Rheumatology Clinical Trials
PF	Physical Function
PRP	Platelet Rich Plasma
QOL	Quality of Life
RA	Rheumatoid Arthritis
ROM	Range of Motion
ROS	Reactive Oxygen Species
SF	Synovial Fluid
SF-36	Short Form 36 Questionnaire

SNP	Sodium Nitroprusside
SOD	Superoxide Dismutase
SPSS	Statistical Package for Social Sciences
TENS	Transcutaneous Electrical Nerve Stimulation
TGF	Transforming Growth Factor
TIMP	Tissue Inhibitor of Metalloproteinase
TNF	Tumor Necrosis Factor
TNFα	Tumor Necrosis Factor Alpha
TRAIL	TNF-Related Apoptosis Inducing Ligand
UPR	Unfolded Protein Response
USA	United States of America
VAS	Visual Analogue Scale
WHO	World Health Organization
WOMAC	Western Ontario and McMaster Universities Arthritis Index

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Abstract

The Quality of Life of Knee Osteoarthritis Patients and The Impact of Treatment.

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Abstract

Background: Knee osteoarthritis (OA) is a common chronic joint disorder. It results in pain, deformities and leads to chronic disability. The burden of knee OA on individuals and health care systems is severe. Difficulties in walking, squatting and stair climbing are common complaints by patients with knee OA. These difficulties greatly interfere with the daily life activities and markedly affect the knee OA patients' quality of life (QOL). The QOL of the patients can be assessed by different tools and surveys such as Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and 36-Item Short Form Survey (SF-36). **Objective** was to compare the QOL between newly diagnosed knee OA patients and patients under treatment among primary knee OA patients attending the outpatient clinic of the Physical Medicine, Rheumatology and Rehabilitation in Ain Shams University Hospitals. **Methods**: A Cross sectional study was carried out on 88 patients divided into two groups (newly diagnosed group of patients, and under treatment group of patients), each group had 44 knee OA patients, attending the outpatient clinic of the Physical Medicine, Rheumatology and Rehabilitation in Ain Shams University Hospitals. Data was collected using a clinical sheet, SF-36 survey and WOMAC index. **Results**: The mean of SF-36 Score in the under treatment group was statistically significantly higher than the mean in the new cases group. (2280 vs. 984.32 respectively). The mean of (Pain) scale, (Social Functioning) scale, (Role Limitations Due To Emotional Problems) scale of SF-36 were statistically significantly higher in the under treatment group. The WOMAC index stiffness scale was statistically significantly higher in the new cases group. The new cases group had lower education level than the under treatment group. Patients under platelet-rich plasma (PRP) therapy, intra-articular steroid injection therapy, physiotherapy and combined non-steroidal anti-inflammatory drugs (NSAIDs) therapy had higher levels of QOL. **Conclusion**: Poor QOL was evident among the newly diagnosed knee OA patients in the outpatient clinic of physical medicine, rheumatology and rehabilitation. Treatment should start at once according to the severity of the Knee OA. Treatment should include physiotherapy, combined NSAIDs, steroid and PRP injections. The new cases group had lower education level. So, health educational program targeting knee OA patients are strongly recommended.

Key words: Knee Osteoarthritis (OA) – Quality of life (QOL) – Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) – 36-Item Short Form Survey (SF-36).

Introduction

Osteoarthritis (OA) is the most common chronic joint disorder. It results in pain, deformities and ultimately leads to chronic disability. It is rapidly becoming a significant medical and economic burden in a world whose population is ageing. It is defined by focal lesions of the articular cartilage, combined with hypertrophic reaction in the subchondral bone and new bone formation (osteophytes) at the joint margins. OA has been relabeled as a whole organ disease, because pathological abnormalities such as periarticular muscle weakness, lax ligaments, low grade synovitis and neurosensory system alteration are often present in these patients. **(Liu, Kloppenburg and Berenbaum, 2013)**

Several factors are involved in the process of OA such as mechanical stress, biochemical and genetic factors. Chondrocytes respond to injuries by producing degradative enzymes and by developing inappropriate repair responses. Pro-degradative agents such as proteinases and pro-inflammatory cytokines result in the development of cartilage breakdown. **(Liu, Kloppenburg and Berenbaum, 2013)**

The burden of knee OA on individuals, health care systems and social care systems is considered a public health crisis. **(White and Waterman, 2012)**

The prevalence of OA depends on the precise definition used. For example, criteria of the American College of Rheumatology (ACR) have been rarely used in epidemiological studies. One limitation of epidemiological studies of OA is that individuals differ in their threshold for reporting pain. Other conditions such as bursitis and tendonitis may mimic OA pain. The knee is the most clinically significant site affected by OA. Knee OA became more common with age and more women are affected than men after age 50. The prevalence of knee OA is higher in women than in men. In the USA, the prevalence of clinical OA has grown nearly 27 million, up from 1995 estimate of 21 million. **(Liu, Kloppenburg and Berenbaum, 2013)**

In the United States, the prevalence of knee OA is 18.7% among women aging 45 years and older. **(Jordan 2007)**

By 2025, the prevalence of knee OA is expected to increase by 40% due to the aging population and increased obesity rates. **(Woolf and Pfleger, 2003)**

In a survey of 5894 Saudi adults, it was found that clinical knee OA was present in 13% of adults above the age of sixteen. This prevalence amplified with the increase in age reaching 30.8% in age groups between 46-55 years and 60.6% in the age groups between 66-75 years. **(Al-Arfaj, et al., 2003)**

In Egypt, there are more than 5 million people suffering from knee OA. **(Hassan, 2013)**

Management of OA needs to be individualized and patient centered. This is possible after a holistic assessment and a competent examination of the patient. Many OA related factors influence treatment selection, such as whether more than one joint is affected, the degree of structural damage, the level of pain intensity and person specific factors, such as age, required daily activities, patient expectations and perceptions that modify the approach taken in treatment. Successful management requires the use of multiple components both non-pharmacological and pharmacological rather than monotherapeutic approach. **(Doherty, Abhishek and Leeb, 2013)**

Difficulties in walking, squatting and stair climbing are usually the most common complaints by patients with knee osteoarthritis. These difficulties greatly interfere with