

Studying relation between sitting position and knee osteoarthritis

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Abstract: Osteoarthritis (OA) of the knee is the most common form of arthritis and leads to more activity limitations (e.g., disability in walking and stair climbing) than any other disease, especially in the elderly. The aim of this study was to clarify the relationship between the sitting position and knee osteoarthritis. The study involved fat males of knee pain and clinical diagnosis of early knee osteoarthritis this research is applied and the research method is "descriptive-correlative". In order to collecting data was used questionnaire tool. Also, in order to analyzing data was used statistical method such as Pierson coefficient and Chi-squared test. Data is analyzed from both descriptive and inferential statistics. Descriptive statistics and graphs on the table will describe the characteristics of the study sample. The researcher to analyze the hypotheses used Chi-square method. The statistical society is Osteoarthritis disease males.

Key word: Osteoarthritis, male, sitting position

I. Introduction

Osteoarthritis (OA) is the most common form of arthritis, presenting as a clinical syndrome which affects joints, resulting in pain, functional limitation and reduced quality of life (NCCC, 2008). The condition has a greater affect on mobility than any other medical condition in people aged over 65, particularly in the actions of walking and climbing stairs (Guccione et al., 1994, Felson et al., 2000). The prevalence of this condition is increasing dramatically, reflecting an aging population and a rise in the prevalence of obesity (Hunter, 2007). The prevalence of osteoarthritis is expected to double by 2020 (CDC, 1994; Bradley and DesMeules, 2003) Despite a wealth of research, mainly into pharmacological and surgical therapies (Hunter, 2009), osteoarthritis is not well understood as a disease (Hunter, 2007). The condition was traditionally thought to be a disease of articular cartilage resulting in erosion of tissue that was purely mechanical in origin. However, the condition is now thought to be much more complex, with suggestions that the disease could originate from a variety of causes including metabolic factors, genetic factors, trauma or injury, bone and joint malfunctions or a combination of these factors (Oben et al, 2009, Hunter, 2009). Presentation of this condition is extremely varied, dependent on the individual and the site of the disease, but it is thought to affect nearly 100% of the population in at least one site by the eighth decade of life, although in many of these cases the condition is asymptomatic and only recognizable radio graphically (Scott, 2009). It is present in every population worldwide although geographic differences do occur.

There is no widely accepted definition of osteoarthritis, but it may be regarded as a disorder of synovial joints involving degeneration of articular cartilage with involvement of the subchondral bone. The suffix, "-itis", is a misnomer as it implies an inflammatory component, which is not a necessary aspect of the condition. Osteoarthritis can occur in any joint, but in Europeans the most commonly affected sites are the knees, hips, and the small joints of the hands. Osteoarthritis of the spinal apophyseal joints is also not uncommon. Diagnosis of the condition is made through assessment of clinical features in many individuals, and a working diagnosis can be formed without radiological confirmation. This is because there is poor correlation between symptom logy and radio graphically detectable changes in joint structure (NCCC, 2008). Recent studies involving magnetic resonance imaging (MRI) _have suggested this is due to the fact that radiographic images may only indicate osteoarthritis disease once it has reached an advanced stage (Hunter et al, 2004, Reichenbach et al. 2008).

There is no universally recognized definition for osteoarthritis (Dawson et al, 2004). The National Institute for Health and Clinical Excellence (NICE) defines osteoarthritis as a synovial joints disorder that results in focal areas of damage and loss to the articular cartilage accompanied by bone remodeling and formation of osteophytes (new bone at the joint margins) (NCCCC - National Collaborating Centre for Chronic Conditions, 2008). This is suggested to occur due to a process of synovial joint repair as a result of trauma of one form or another. This process usually occurs in an effective manner to compensate for the original trauma, but in osteoarthritis does not occur correctly, either due to a compromised repair process, or because the original trauma continues to occur (for example in osteoarthritis due to load such as obesity, where the joint continues to support a heavy load) (NCCC, 2008). An alternative definition is provided by Eyre (2004) who defines osteoarthritis as a process which 'occurs when the dynamic equilibrium between the breakdown and repair of joint tissues become unbalanced'.

In the knee joint the ends of the bone are covered in articular cartilage, which reduces friction, promotes smooth movement and acts as a shock absorber. The knee joint lining contains synovial fluid which lubricates the joint and promotes friction free movement of the joint and the structures inside the joint. There are strong ligaments both inside and outside the joint capsules in order to protect the joint and to provide stability during movement. The capsule reinforces joint protection and the ligaments within the joint capsules. There are muscles surrounding the knee joint which help to support, protect and move the knee, helping to dissipate some of the joint load.

Knee proprioception has consistently been reported to be compromised in individuals with knee osteoarthritis. This neuromuscular deficit has been suggested as the major contributing factor to the disease process. However, studies have shown that the impairment of proprioceptive acuity is not exclusively a local result of the disease, and there is a need to study its importance in the development and progression of knee osteoarthritis.

There are several ways of measuring proprioceptive acuity; one of them is the threshold detection of passive movement. However, passive movements do not reflect real life movement or function; proprioceptive functions in healthy and pathological joints are quite variable and there is a lack of correlation between different measurements of proprioception in the knee. Active assessments by asking the patient to replicate limb position, using active movement, with vision occluded or by reproducing lower limb static loads have been suggested. Generally, proprioceptive assessment of the knee is done in sitting position. However, the ideal testing position for proprioceptive assessment of the knee is still debatable. One of the reasons could be that, during assessment, the subject may exhibit an adaptive behavior to compensate for the loss of proprioceptive acuity by using vision or not relaxing the muscles completely before attempting to replicate limb position. The purpose of the present study was to evaluate the influence of 2 testing positions (sitting and prone lying) on proprioceptive acuity scores in the assessment of early knee osteoarthritis.

The effects of osteoarthritis (OA)

The cartilage becomes thin and worn away especially where more weight is borne.

New bone forms at the edge of the joint which can be quite rough (osteophytes).

The joint space becomes narrower allowing less space between the bones for movement.

Cartilage may fragment to give loose pieces causing symptoms of locking or giving way of the knee.

Increased stress/load on the ligaments and muscles and the capsule may lead to inflammation (swelling). The capsule may become thickened.

The inflammation and swelling may cause pain.

Decreased mobility due to pain/ aching and fear of making the knee worse may lead to muscles wasting and weakening, therefore causing more stress and decreased protection to the knee joint.

The knee becomes stiff as it is moved less through its available range of movement

Knee Osteoarthritis Symptoms

Knee pain and stiffness are classic signs of knee osteoarthritis. These symptoms tend to progress gradually and many people initially attribute knee soreness or discomfort to lack of exercise or getting older. Many dismiss their early knee arthritis symptoms as "no big deal" until they worsen and start to interrupt one's ability to enjoy everyday activities.

Below is a list of common signs and symptoms of knee osteoarthritis. Early recognition of symptoms and appropriate treatment can dramatically slow or eliminate progression of osteoarthritis symptoms.



Figure 1: Knee Osteoarthritis

Knee pain. Pain is the most commonly reported symptom of knee osteoarthritis. The description of the pain will depend on the patient's condition and situation. For example, the pain may come and go or there may be a chronic low level of pain with intermittent flare-ups of more intense pain. The pain may be experienced as dull and aching or as sharp and intense, and it is usually worse with certain activities that place additional strain on the joint, such as when bending down or walking up stairs. Typically, the knee pain can be lessened with rest and an ice compress.

Knee stiffness. Bone friction and swelling in the knee joint makes the knee stiff and less flexible. Knee range of motion can become more limited. A person with moderate to advanced knee osteoarthritis may find it is difficult to straighten out his or her knee. Some people may only experience stiffness in the knee in the morning or after sitting for a long period. Stiffness may or may not be accompanied by swelling.

Inactivity makes it worse. Knees can become stiff after sleeping or sitting for a long period of time. People with knee osteoarthritis often find stiffness and pain are most noticeable when they try to get out of bed in the morning or out of a chair after a long period of sitting.

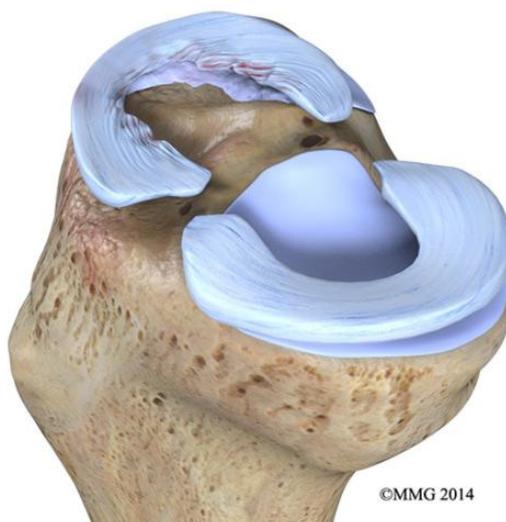


Figure 2: Inactivity makes it worse

Knee swelling. When knee cartilage wears away, the femur and tibia (and sometimes patella) bones can rub together, resulting in irritation and swelling of the knee (i.e. fluid in the knee). A swollen knee may be accompanied by a sensation of warmth, which can range from warm to burning. The knee may even be red and warm to the touch.

Causes of osteoarthritis

There are many factors that can increase the risk of osteoarthritis, and it's often a combination of these that leads to the condition (Figure 3).

Age – Osteoarthritis usually starts from the late 40s onwards. We don't fully understand why it's more common in older people, but it might be due to factors like weakening of the muscles, the body being less able to heal itself or gradual wearing out of the joint with time.

Gender – Osteoarthritis of the knee is twice as common in women as in men. It's most common in women over the age of 50, although there's no strong evidence that it's directly linked to the menopause. It's often associated with mild arthritis of the joints at the ends of the fingers (nodal osteoarthritis), which is also more common in women.

Obesity – Being overweight is an important factor in causing osteoarthritis, especially in the knee. It also increases the chances of osteoarthritis becoming progressively worse.

Joint injury – Normal activity and exercise don't cause osteoarthritis, but very hard, repetitive activity or physically demanding jobs can increase the risk. Injuries to the knee often lead to osteoarthritis in later life. A common cause is a torn meniscus or ligament, which can result from a twisting injury.

A torn meniscus is a common injury in footballers, and an operation to remove the damaged cartilage (meniscectomy) or repair cruciate ligaments also increases the risk of osteoarthritis in later life.

Genetic factors – Genetic factors play a major part in osteoarthritis of the knee. If you have a parent, brother or sister with knee osteoarthritis then you'll have a greater chance of developing it yourself. We don't know a lot about the genes that cause the increased risk, but we do know that a number of genes will have a small effect rather than one particular gene being responsible.

Other types of joint disease – Sometimes osteoarthritis is a result of damage from different kinds of rarer joint disease, such as gout, that occurred in earlier years.



Figure 3: risk factor for osteoarthritis

II. Research method

The study involved fat males of knee pain and clinical diagnosis of early knee osteoarthritis This research is applied and the research method is "descriptive-correlative". In order to collecting data was used questionnaire tool. Also, in order to analyzing data was used statistical method such as Pierson coefficient and Chi-squared test. Data is analyzed from both descriptive and inferential statistics. Descriptive statistics and graphs on the table will describe the characteristics of the study sample. The researcher to analyze the hypotheses used Chi-square method. The statistical society is Osteoarthritis disease males.

III. Results

Descriptive data

According to table 1 there is average age 45/36, weight is 109/16 and BMI IS 36/33.

Feature	Average	Minimum	Maximum
Age	45/36±7/8	28	62
Weight (kg)	109/16± 5/7	98	122
Length (cm)	173/54± 6/02	161	188
BMI	36/33± 2/6	30/2	43/5

Table 1: feature of statistic society

Table 2 shows, 79/7% believe that their right foot is well. On the other hand 20/3% believes left foot is better than right foot.

	Frequency	Percentage
Right	63	79/7
Left	16	20/3

Table 2: feature of statistic society

Based on table 3 , the most people have knee painful (75/9%) .

	Frequency	Percentage
Knee	60	75/9
Lumbosacral	10	12/7
Neck	9	11/4

Table 3: painful joints

At finally table 4, shows 21/5% of involved persons are Hereditary. So Osteoarthritis don't relation hereditary issue.

	Frequency	Percentage
Yes	17	21/5
No	62	78/5

Table 4: Family history of osteoarthritis

Statistics Analysis

In order to analyzing data, was used Kolmogrov-Smirnov test. According to table () there isn't normal form in statistic society. So was used Spearman correlation.

Hypothesis test

First hypothesis: there isn't oriented relation between sitting and Osteoarthritis.

In order to analyzing hypothesis was used spearman correlation. Table (5) shows the result of mentioned hypothesis.

Sitting position	Frequency	Percentage	Correlation	Meaningful level
Two knee	12	15/2	0/28	0/013
Cross-legged	19	24/1		
Lying	16	20/3		
Sit on one leg	17	21/5		
Sit on the furniture	8	10/1		

Table (5): sitting position

Based on table () the correlation coefficient is 0/28. Also, the meaningful level is 0/13. This result shows there is oriented relation between sitting position and Osteoarthritis.

Second hypothesis: there is oriented relation between Cross-legged position and Osteoarthritis.

In order to testing second hypothesis was used.

	Cross-legged position		Correlation	Meaningful
	Yes	No		
Frequency	19	60	0/26	0/018
Percentage	24/1	75/9		

Table (6): correlation between cross-legged position and Osteoarthritis

Findings in table (6) shows there is cleared relation between mentioned position sitting and Osteoarthritis due to that meaningful level between two indicator is 0/018 . So second hypothesis is true.

Third hypothesis: there isn't cleared relation between lying foot and Osteoarthritis.

In this hypothesis was used spearman correlation test. According to table (7) correlation coefficient is -0/15. On the other hand, the meaningful level is 0/17. Thus was concluded there isn't cleared relation between tow indicator and third hypothesis is true.

	Lying foot position		Correlation	Meaningful
	Yes	No		
Frequency	37	42	-0/15	0/17
Percentage	46/8	53/2		

Table (7)

IV. Conclusion

Osteoarthritis (OA) is the most common disease affecting joints. It is the wear and tear process that occurs in joints in varying degrees, most commonly in weight bearing joints.

This condition involves the gradual roughening of the articular cartilage covering the ends of the bones making up the knee joint. It is associated with changes in the underlying bone, which may ultimately cause pain and impaired function. These changes can be seen on an x-ray, but the changes seen and the amount of pain you feel may not always relate. This condition does not follow the same course in everybody and there are certain things that you can do to help yourself and prevent problems in the future.

The results showed that the occurrence of osteoarthritis in obese men and there was a significant relationship. While sitting cross-legged position, the knee joint to last range (140 degrees) knee bent and caused pressure and pain in the area. The overall objective of a variety of physical and medical therapy in patients with osteoarthritis, slowing the destruction and degeneration of the joints, pain, maintain or improve joint mobility, and improve its performance and, ultimately, improve the quality of life. Life style modification, including proper nutrition, the body's normal activities, such as failing to adhere to the correct position sit, when to eat, watch TV or even parties, including simple and executive orders that could reduce the severity of OA., GH (1388) which continued to sit as, may accelerate joint destruction, and that's why we see young people who, despite their young age with knee pain. Knee like any other joint in the human body have been destroyed and the gradual destruction of the inevitable. He believes long-term causes of knee pain in young children. long time gradually become weak quadriceps and ultimately leads to wear in the area below the kneecap .

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