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Original Research

Clinical evaluation of patients suffering from osteoarthritis along with prevalence, pharmacological and non-pharmacological treatment

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Abstract

Background: Osteoarthritis is a disorder of joints that most often influence the knee, spine, hip and small hands joints. It is one of the common types of arthritis. It can lead to reduced mobility in elder patients. Primary objective: The aim of the project is to evaluate the current etiology, pathogenesis, investigations and management of osteoarthritis. Methods/Design: History of patients suffering from osteoarthritis was collected on a designed questionnaire which includes age, gender, and job status, duration of disease, weight, pain, and current medical history. Setting: Data was taken from different people in the community Participants: Data of 50 patients were taken. Intervention: This work would discuss the challenges of developing good quality outcome measures for use in large scale multicenter clinical trials for new osteoarthritis treatments, especially disease modifying osteoarthritis drugs. Primary Outcome Measures: The evaluation of data showed that this disease is most common in women than men having the weight greater than 50kg. Results: Mostly persons suffering from this disease were unemployed who had limited physical activities and maximum had a complaints of knee pain and shoulders pain. A few patients had complaints of pain in neck, elbow, feet and backbone. Majority were suffering from other concomitant diseases along with osteoarthritis and a few were those who were diagnosed with osteoarthritis only. Conclusion: This study clearly showed the prime factors involving in osteoarthritis which may help the community to avoid those factors in order to increase the quality of life.

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Introduction

Osteoarthritis is a disorder of joints that most often influence the knee, spine, hip, and small hands joints. [1] It is one of the common types of arthritis. It can lead to reduced mobility in elder patient [2]. It can damage spinal as well as peripheral joints that carry weight including hips, knees, distal interphalangeal joints and the shoulder that cannot carry weight [3]. It is categorized into primary and secondary osteoarthritis. Primary is confined mostly in postmenopausal women, by enlargement in Heber den's nodes. Secondary basic reasons are trauma, inflammatory arthritis and obesity [4]. The diagnosis is done by history of ache that intensify by motion. The diagnosis can be done by joint pain history which is worsened by movement. Different risk factors of osteoarthritis consist of age, gender, injury with trauma, obesity, metabolic dysfunction and genetic factors [5]

The usual process of aging is considered to result in tolerance all over the joints, lessen proprioception of joint, cartilage hardening, and decline functionality of chondrocyte all these result in susceptibility for osteoarthritis. According to Framingham study people with a age group 63-70 had knee 27% osteoarthritis and above age 80 it is 40%. Other studies showed that above 65osteoarthritis indication is 80% but its level is less in both men and women below the age of 80. Collateral ligament and meniscal tears also joint fracture lead to raise threat of osteoarthritis. According to Framingham study found that men having knee injury history can be affected 5-6 fold more with osteoarthritis. This can lead to long time infirmity and joblessness in young age people. Meniscectomy after knee injury lead many chances of tibiofemoral osteoarthritis. Osteoarthritis is most common in those who perform physical job, particularly who include in bending of knee and squatting. Dockers and miners have more chances of osteoarthritis as compared to sedentary jobs. The occupational squatting or monotonous use of joints during work can cause osteoarthritis. Best participants who involve in sports have more threat of knee osteoarthritis. Prime quadriceps weakness is threat for osteoarthritis due to lessen in stability of the joint and also less joint tremor absorbing quality of the muscle.

Men have a greater occurrence and incidence then women under the age of 50. Women have greater occurrence and incidence than men over the age of 50. This prevalence is less marked after the age of 80 [1]. Afterwards in women osteoarthritis is generally occur after menopause. Almost 9.6% of men and 18% of women have indicative osteoarthritis. So hormonal factors may be result in expansion of disease. This may also occur due to alteration in the structure of bones and ligament, like power and arrangement and less in volume of cartilage common in women than men [6]. Osteoarthritis is more commonly occur in monozygotic twins as compared to dizygotic twins shows that disease is genetically susceptible. Several genes have been connected to osteoarthritis maximum similarity with chromosomes 2, 4 and 16 [1]. In pathogenesis of osteoarthritis more than 80 gene mutations are involved. Most relevant is a single nucleotide polymorphism (rs143383). It is accountable for the development, care and repair of synovial joints [6]. One of the solid flexible risk factors for osteoarthritis is obesity. About 3-6 times weight of the body is shifted to the joint of knee during walking. According to Chingford study body mass index is almost increase two units' radiography of Knee osteoarthritis rise by ratio of 1:36. More weight will lead more in risk of contralateral osteoarthritis of knee in women. At the age of 36-37 obesity led to threat of knee osteoarthritis. People with restricted disease obesity cause risk of osteoarthritis. People with lower concentration of vitamin C and vitamin D in body had 3-fold increased risk of osteoarthritis. Vitamin C has antioxidant and collagen encouraging qualities and reduces risk of osteoarthritis [1] Vitamin K (phylloquinone), usually adjusts bone and cartilage mineralization. Vitamin C lower concentration is threat for osteophytes and narrowing of joint space in the hand while osteophytes in knee. Certain food like milk and dairy yields, meat and poultry are beneficial for knee osteoarthritis. Metabolic factors like increase in glucose concentration are risk factors for osteoarthritis [6]. Osteoarthritis and bone density have inverse relation rise in subchondral density of bone result in higher loading by weight containing cartilage joint.

Signs and symptoms

It is appeared as inflammation, abnormality, and muscle worsening. It feels like lack of warmness, inflammation, and expression is generally minor and calm if present. It also feels like painfulness in joint line and per- articular. Osteoarthritis results in lessen span of movement. It dull local muscles. In osteoarthritis joint pain grow slowly from months to year. It may be irregular and worsening. It rises by joint usage and influence calmed by rest. Night pain may arise in acute osteoarthritis. Pain has 3 different stages

Stage 1; probable sharp pain which ultimately influence on function

Stage 2; it is mild to moderate pain it usually influences on regular activities.

Stage 3; it is sore pain with periods of irregular intense, that leads to effective functional limits. Several patients have with inflammation and malformation. Stiffness is generally noted in morning also can happen in a day. Normally arise after inactivity episodes. Stiffness during morning is usually for short time (few minutes) it may be due to lack of activity. In osteoarthritis patient stiffness can be lessen by joint use but joint pain aggravates with constant use [7].

Healthy joints have 2 bones that are coherent with each other divided by shock gripping cartilage. Cartilage and bone are essential in scattering the load placed over joints daily. Cartilage and bone can be injured by heavy loads. Normal function restores by restoration occur in subchondral bone and cartilage. If the repair speed is less worsening of the bone and cartilage proceed and joint fails to disperse load. When shock absorbing cartilage is ruined, and bone is broken. This result in cartilage deprivation, joint space is thin and bone development. This leads to solid lumps round joints. Erosion of joints leads to aching and swelling of the synovial covering of the joint and inflammation of the joint. Cartilage, bone and synovial covering are vital tissues bur also include in pathogenesis [4]. Composition of cartilage is 70% water and type II collagen outline by glycosaminoglycan's and proteoglycans formed through chondrocytes. Proteoglycans stick to hyaluronate that become stable the large molecules.

Chondrocytes receive nutrition from synovium and synovial fluid is circulated by joint movement. When joint

stops moving lack of nutrition in chondrocytes they move to shock and cartilage repair ceases. Metalloproteinases are formed that bring collagen and proteoglycan deterioration. The synovium has shown to be swollen unevenly it increase in concentration of interleukin-1 (IL-1) and tumor necrosis factor alpha (TNF-a). Cytokines bring about nitric oxide and metalloproteinase creation. Interlukin-6 and automatic filling of the joint bring catabolic cytokine receptors. These bind IL-1 and TNF- alpha in cartilage producing extra damage. [1]

Diagnosis

Diagnosis of osteoarthritis is based on two things one is type and other is number of joint affected. Following are diagnostic tools

Some changings seen on plain radiographs are bone cysts, Osteophytes, Thinning of joint space and Subchondral sclerosis. Radiographs are economical; offer permanent record and effortlessly accessible. This is not best measure of disease because it measures thinning of joint space which is <0.1 mm per year and it is tough to measure [1]. MRI is used for imaging of soft tissues. MRI helps in morphological taxation of Cartilage and meniscus, Intra-articular and peri-articular soft tissues, Fluctuations observe in bone marrow subchondral bone attrition. MRI involve volumetric measurement and physiological. A development in MRI involves development of 3 dimensional sequences like double-echo steady state and fast low-angle shot. Sequences help to identify volume and thickness of cartilage. Knee cartilage thickness harms <1% above one year detected in longitudinal volumetric assessments of 3T double-echo steady-state data attained from threat matters with pre-radiographic osteoarthritis [8]. Computed tomography showing some advantage on plain radiographs when axial joint view is required. Ultrasound is worthy for evaluating cartilage uprightness and damage, however mostly in weight containing joints, cartilage is not approachable. Molecular markers are capable to identify osteoarthritis at early stages these markers have qualities like delicate to change, trustworthy, and quantifiable. Cartilage oligomeric matrix protein (COMP) perhaps a marker of cartilage damage. C-reactive protein, hyaluronan and metalloproteases are synovial swelling markers Pyridinoline and bone sialoprotein are markers of bone turnover. These markers should be authenticated to differentiate between healthy and osteoarthritis patient. Current studies presented that 90% cases distinguished by use of three markers (THF receptors, COMP, and epitope 846) [1]. Arthroscopy allows direct imaging and tactual of intra-articular structures. In 1970s and 1980s arthroscopy broadly use for direct imaging, investigation, and cure of intra-articular soft tissues. Radiographically unseen pathologies like meniscal tears, lesions of articular cartilage and cruciate ligament tears simply feel through arthroscopy. Optical coherence tomography is a novel high resolution visualization technology allowing microscopic fragmentary visualization of soft tissue. OCT has no threat exposure of radiation. OCT can identify beneath the surface cartilage deterioration it is beneficial scientific experimentation tool [8].

Treatment

Nonpharmacological treatment of osteoarthritis management includes patient education**,** weight loss**,** exercise and mechanical aids**.** Patient must be educated concerning osteoarthritis by different sources like paper social media, pamphlets and seminars. They also inspired by their families and friends to relief osteoarthritis pain [9].

Pharmacological treatment

Analgesics

Paracetamol is used initially with dose of 1gram 4 times daily. In elder patients can bear and harmless. Paracetamol can be used in combination of coproxamol. If not necessary, tougher opiates should not be us [1].

Its mechanism of action is to stop cyclooxygenase (COX-1 and COX-2). Its risk factors are liver damage, bleeding in gastrointestinal track and effect cardiovascular system. Due to its side effects FDA, has recommended its dose should not increase from 4325 mg in any prescription and less from 4000 to 3000 mg/day so acetaminophen should be less than 3g/per day [9].

NSAIDs

NSAIDs are more effective in patients have inflammation. NSAIDs are thought to have same pain discharging effects lessening of pain is about 30% and development is about 15%. Side effects include renal and G.I.T disturbances.

The VIGOR trials showed that 8000 patients having rheumatoid arthritis using rofecoxib or naproxen. Gastrointestinal complication was reduced by 50% in the rofecoxib group however increase in myocardial group. This is due to loss of antiplatelet activity in aged patient and cardiovascular complications increases. Coxib would not be used as initial treatment when patient use aspirin [10].

NSAIDs are further active than acetaminophen in OA and can use when acetaminophen and other topical NSAIDs are not effective. The NSAIDs are selective and non-selective, selective have fewer side effects.

Opioids

Opioids are used to cure average to acute pain if NSAIDs are not efficacious. Powerful opioids (oxymorphone, oxycodone, fentanyl, and morphine) show more effect than weaker like tramadol. Side effects by opioids are dizziness, vomiting, constipation, and headache. Opioids result in drug addiction, further use cause tolerance and hyperalgesia.

Topical

Topical NSAIDs are used instead of oral NSAIDs when adverse effects cause with traditional treatment. Topical NSAIDs are in forms of creams, solutions, bandages, gels, plasters, and sprays. Topical NSAIDs contain diclofenac, ibuprofen, flurbiprofen and ketoprofen. They have fewer systemic effects, but local effects may be happening in 10-15% patients. They comprise dermatitis result in burning itching, rashes in confined area and sensitivity of skin. These are suggested for knee and hand joints patient but slighter successful in hip joints.

Intra-articular injections

Corticosteroids are act on inflammatory and immune system. They hinder inflammatory agents like prostaglandins, phagocytosis and metalloprotease. They should only use for 4-8 months. Corticosteroids include triamcinolone, acetonide and hex acetonide [9]. Glucocorticoid injections have higher efficacy than other drugs. Corticoids act on nuclear receptors, distracting the inflammatory flow at numerous levels, outcome in immunosuppressive and anti-inflammatory response [11].

Hyaluronic acid is glycosaminoglycan take place in the synovial fluid of well and sick person. It acts as emollient for joints and show important role in the coherence of joint formation. HA have anti-inflammatory properties through obstruction of pain receptors. HA is operative in boost joint task and decrease pain. HA is constantly use for about 3-5 weeks need to be administered due to steady onset of action [9].

Glucosamine sulphate

It is nutrient supplement practice to release musculoskeletal symptoms. It also comprises chondroitin sulphate. Glucosamine sulphate and chondroitin are glycosaminoglycan's present in cartilage. Glucosamine sulphate contain pain-relieving activity [10].

Surgical treatment

When further treatments become unsuccessful, or osteoarthritis ache and abnormalities turn into extreme than knee and hip replacing therapy is accomplished [9].

It is not considered as initial treatment. Surgery provides pain relieving effect and working joints for up to 20 years [1]

Prevalence of osteoarthritis worldwide:

Osteoarthritis is evaluated to be the 11th major cause of disease of joints worldwide [12]. Osteoarthritis is common chronic condition that effect most of the people of age 70 years or above [13]. Osteoarthritis may evolve in any joint, but it mostly effect hands, hips, knees, Apophyseal joints, and feet. The rate of hands, hip, knees osteoarthritis increases with age, and women have higher incidence of osteoarthritis than men, increasing mostly above 50 years. Around the age of 80 years most joints sites decline or decreases. In 2005 about 26 million people effected due to some forms of osteoarthritis in USA. The incidence of radiographic hand osteoarthritis differs greatly and has been outlined to scale from 27 to over 80%. From Netherland study, we come to know that women of about age of 60-70 years had 75% of proof of osteoarthritis in the distal inter phalangeal joints (DIP) , and about 10-20% of aged below 40 years were outlined to have osteoarthritis radio graphical changes in their feet or hands.

From Framingham cohort information reveal that an incidence of 13.2% in men and 26.2% in women with the age of 70 or more years have at least joint of one hand have osteoarthritis or its symptoms. If we talk about rural Turkish data, males with the age of 65 or above have one of affected joint. Hand osteoarthritis is less common. Incidence of hand osteoarthritis was established about 8% in USA National Health and Nutrition Examination Survey (NAHNES III) and as we discuss earlier 7% in Framingham cohort.

Teheran study reveals that the hand osteoarthritis incidence in people with the age of 40-50 years was 2.2% and increasing to 22.5% in population aged above 70 years (>70).

Many other studies and from Framingham cohort, variation in the gender among population reveals that women are more affected than men. Moreover, information collected from China including about 13 surveys clarify the 26-621 adults are symptomatic with osteoarthritis irrespective of gender and age. Knee osteoarthritis seems to be less common than hand osteoarthritis, but it also affects women more frequently than men. If we talk about the ratio of knee osteoarthritis it comes as female to male ratio differs as 1.: 1 and 4:1. The prevalence rate of knee osteoarthritis is compared among the population studies of USA and Europe. These studies showed that radiographic changes affect only 1% of population with the age of 25-34 years and it must rise to 50 % in the age of 75 years or above. Framingham study shows that people of age above 45 years, the incidence of radiographic knee osteoarthritis was 19.2% and number must be increasing to about 43.7 % in the age of 80 years or above. According to the information received from the Dutch institute for public health , the prevalence of knee osteoarthritis is about 15.6% in men and 30.5% in women aged 55 and above .

In Asian region the community-oriented program for control of Rheumatic disorder (COPCORD0 was held which reported that the incidence of knee osteoarthritis in this region scaled from 1.4% in urban Filipinos to 19.3% in rural communities of Iran. The reason for this variation may be the social or physical environment. Indian studies also reported that the diagnosis of knee osteoarthritis shows differences among urban and rural areas as rate of knee osteoarthritis is higher (5.5%) in urban areas than to the rural areas (3.3%).

In china, the person with the age of 60 years or above shows the double of prevalence of knee osteoarthritis when compared with urban counterparts. When compared to hand and knee osteoarthritis, the hip osteoarthritis is less common. From Asia and Africa study, the incidence of hip osteoarthritis is in the range of 1.4 and 2.8% respectively. In Europe and North America, the prevalence rate is 10.1 and 7.2% respectively [14].

Prevalence in Ireland and other countries

In Ireland, study for osteoarthritis incidences includes 8175 people of age 50 years or more. Out of 8175 people 45.7% (n=2941) were males and 54.3% (n=4431) were females. The incidence rate was 12.9%. Prevalence of osteoarthritis rises with age above 80 years it must rises to about 95%. Osteoarthritis increases with disease condition and gender [15].

Osteoarthritis is a public problem and about 240 million people affected by osteoarthritis, from which men 10% and 18% of women are affected over the age of 60 years. Study from 2011, data from the China Health and Retirement Longitudinal Study (CHARLS). This study was performed on the people of age 60 years, about 8% of knee osteoarthritis was reported and incidence is more common in women as compared to men. Study from ROAD (Research on Osteoarthritis Against Disability) in Japan, shows prevalence about 90% of radiographic hand osteoarthritis and prevalence of erosive hand osteoarthritis less than 5%. The United State study from 2007 to 2008 shows the prevalence of about 7% in adults of age 25 with knee osteoarthritis [16].

The study was performed in Korea on the population of age 50 years. This study includes data of 2,640 people in 2010. The Korean National Health and Nutrition Examination Survey (KNHANES) were selected. The incidence of osteoarthritis is about 14.3% and cases are seen more in women than men [17]. The search was performed in Korean urban and rural hospitals in September 2000 to August 2001 in which 1194 people were included, from which females were 606 and 588 were men. From 1,194 about 189 people are affected with knee osteoarthritis from which mostly women are affected than men in rural areas

[18]. The incidence of osteoarthritis is less in men as compared to women. The study in Australia on about 438 women shows that 128 (56%) women had the incidence of radiological osteoarthritis. Forty-nine 49 (21.6%) had the evidence of radiological knee osteoarthritis. 101 (44.5%) had the incidence of radiological hand osteoarthritis. Smoking is a factor closely related to prevalence of osteoarthritis. Smokers has the evidence of 61% osteoarthritis and non- smokers have 39% prevalence of osteoarthritis [19].

Prevalence of osteoarthritis in Pakistan:

The study is regulated in department of medicine at Liaquat National Hospital Karachi from September 2007 to march 2008 on subjects clinically diagnosed with knee osteoarthritis.in this study about one hundred people were involved with their age above18 years, and obviously of either gender as males and females. These people were observed with their four stages like obesity, age, gender, smoking and anemia. The mean age for this study was 56.28. The result of this study shows that the density related to osteoarthritis was age > 55 years in 60(60%) of the people. Gender involve is 74 (74%) women and 26 (26%) men. Smokers contain about 25 (25%) obesity was here about in 33 (33%) and anemia was here in 7(50%) females and 16 (61.5%) men. This study concludes that mostly women must visit hospital for knee osteoarthritis [20].

The Community Oriental program for the control of Rheumatic diseases (COPCORD) studies regulated in Pakistan, India and Bangladesh shows the incidence of osteoarthritis in urban and rural communities. The rate of osteoarthritis was about 3.1-4.6% in Urban and 3.6% in rural areas of North Pakistan and in Bangladesh it was 10.20%. In India the incidence of osteoarthritis in population was 6.0% and 13.7% in urban and rural areas respectively [21].

The study from Pakistan where well off and poor areas were compared, and osteoarthritic pain was outlined about 111 (5%^) people of poor area and 134 (6.6%) people of wealthy area. The most common cause among the population of both areas was knee joint pain. The prevalence rate was 3% in wealthy areas and 1.8% in poor areas. The osteoarthritis pain increases with age and females got more than males and 17% in Gulsham and 9% in orange [22]. The study shows that osteoarthritis most commonly affects old people. Study was performed in Bangladesh among 384 ethnic people from which most are females and housewives. About 87% have knee osteoarthritis and 13% have hip osteoarthritis [23]. From October 2015 to September 2016 the search was held in Arar and patients and their relatives were selected randomly in Prince Abdul Aziz Mussad Hospital for the purpose of study on incidence of knee osteoarthritis. Total 410 persons are selected from which 80% males (328) and 20% (82) females were involved. About 163 persons are diagnosed with knee osteoarthritis. The incidence of osteoarthritis was 25.6% in age of less than 40 years and increases with increase in age. Women have higher rates of osteoarthritis about 75.6% and men have lower rates of osteoarthritis about 27.7% [24]. In Lahore and Sialkot, the study was held to compare the quality of life affected in patients of osteoarthritis. Total number of patients involve were 158, 105 women and 53 men of the age 40 years and above. Data was collected from different private and government hospitals of Lahore and Sialkot. There are no differences in health-related quality of life among the population of Lahore and Sialkot [25]. In Karachi, Pakistan the symptoms were find out in poor adults and well-off people. 2022 well off while 2210 poor adults are selected for study. Joint pain is more common in well off people (6.6%) as compared to poor adults (5%). Different factors like age, gender, BMI, and weight differently affected people with osteoarthritis [22].

In Rawalpindi, Pakistan the cross-sectional study was performed among the outpatient department, Armed Forces Institute of rehabilitation Medicine (AFIRM). The aim of study is to know about the complementary health approaches in Pakistani patients. Total selected patients are 300 in number and mostly of them are males (68%) of age 61 to 70 with educational status between grade 6 to 10. Most people were from urban areas 51.3% and belonging to Punjab province were 83.3%. The 45.3% people of urban areas use complementary health approaches while people of rural areas use complementary approaches more commonly [26].

MATERIALS AND METHODS

Clinical evaluation of patient suffering from osteoarthritis were studied in different health care systems of Azad Kashmir. Data is collected in month of June and July. Data was collected from Ali Imran hospital.

Patient information/demographics

This portion of data collection shows some characteristics of patients like, name, age, gender, weight, city, marital status and job status.

Chief complaints

These are the clinical features which was mentioned by the patient in his/her own wordings/language due to which patient visit their physician and patient will be further treated which is based on the sign and symptoms.

Importance

It will provide data or clue for the physician about the diagnosis of specific disease. It will also provide data because patient is admitted to certain ward.

History of present illness

This was a brief discussion of the patient's symptoms which was reported by the House officer in trainee medical officer in their own medical language.

Importance

It will provide brief information about the anatomical location, nature of onset, severity, and duration of disease.

Past medical history

The past medical history included information about any serious disease that the patient has experienced in the past or any genetic disease and any previous hospitalization**.** It would provide that information about the final diagnosis of the patient if he had faced such type of symptoms in the past.

Family history

It provided information about the health conditions of other members of the patient. It provides information about some commonly occurring diseases like diabetes mellitus, asthma hypertension.

Social history

It included living status, occupation, education, social drug use, and physical activities. It may be helpful to identify the source of disease.

Personal history
It provided information about personal daily routine like sleep, regularity of meal and pregnancy etc. It provided information about the relationship with disease.
Number of patients: 40 -50
Data collection: Inclusion criteria, Exclusion criteria.
Aims and objectives.
The objectives of present study are:
To identify the cause of initial stages of osteoarthritis such as environmental factors, lifestyle, and diet etc.
To find out the ways of preventing osteoarthritis.
To reduce the pain through drugs and other measures.
To reduce inflammation and stiffness.
To determine what early stages of osteoarthritis, need therapy.
To find better ways of reducing the symptoms and side effects of osteoarthritis and treatment to improve the patient comfort.
To learn more about social and emotional factors that may affect patient treatment plans and quality of life.
RESULTS AND DISCUSION
It is clearly indicated from graph 1 that out of 48 patients 18 patients are under the age of 40 years that are suffering from osteoarthritis (37.5%) and 30 patients are over the age 40 (62.5%). This indicates that old population is much more prone to this disease as compared to the young population. This might be due to the weak bones because of the decreased calcium absorption by the bones in later age. As far as the prevalence of osteoarthritis among male and female is concerned graph 2 clearly depicts that osteoarthritis is more common in females than males. About 43 females out of 49 have the problem of osteoarthritis (87.5%) and only 6 males have osteoarthritis out of 49 patients (12.2%). This might be due to the fact that women give birth to the child and with the passage of time the calcium level in the bones decreased and they avoid taking calcium and vitamin D supplements which can be a leading cause of osteoarthritis in women.
Physical activity is also seen a major factor that can be effective in the prevention of this disease. Graph 3 indicates that 20 out of 45 patients have job status (44.4%) and 25 are non-workers (55.6%). This shows that those who are doing jobs and are engaged in some types of physical activities have less prevalence of osteoarthritis as compared to those who are not engaged in physical activities. Hence this study showed that physical activities make the muscles and bones stronger.
Weight is another factor playing an important role in prevalence of this disease. Graph 4 shows that 8 out of 46 patients have weight less than 50 kg (17.4%) and 38 out of 46 have weight more than 50kg (82.6%). Therefore, the community needs to understand the importance of maintaining the normal body weight according to BMI because data shows that greater weight than normal can be one of the major causes of this disease.
Osteoarthritis may be a secondary disease to some other diseases, or it may be a primary disease that can cause various other secondary diseases. Graph 5 shows that 31 patients out of 44 (70.5%) have concomitant disease like (add diseases that u find in questionnaire and 13 out of 44 (29.5) have not any other disease. This shows that there are greater chances that a person suffering from osteoarthritis may have other concomitant diseases because of this disease.
Study shows that different patients of this disease have complains of pains in different body parts. Graph 6 indicates that 39 out of 76 (51.32%) patients have knee pain, 10 out of 76 (13.16%) have shoulder pain, 2 out of 76 (2.63%) have legs pain 4 out of 76 (5.26%) have elbow pain 5 out of 76 (6.58%) have feet pain, 9 out of 76 (11.84%) have hips pain, 3 out of 76(3.95%) have neck pain and 4 out of 76(5.26%) have back pain .The results depicts that patients suffering from osteoarthritis may have pain in knees , shoulders and neck more than the other parts of body like elbow, feet and hips.
Conclusion
Osteoarthritis is a multifactorial disease that has set of symptoms and can have many possible causes. The first of which is genetic, since like all system in body, growth and development of the skeletal system is regulated by various enzymes, protein signals, and other factor that are controlled by genetics. Yet another possible cause for osteoarthritis are hormones, more specifically female associated hormones such as estrogens, as it is known that as these hormones are responsible for regulation of uptake and release of various minerals in the skeletal system which is component of bone density. Another factor for the cause of osteoarthritis is obesity. This could mostly be attributed to increased weight putting stress on weight bearing joints. Some of the most common treatment options such as surgical options, pharmacological options, non- surgical and non-pharmacological options are also discussed in this study along with their benefits and drawbacks. This study would aware the community about the leading causes of osteoarthritis and their treatments and prevention. The community may take advantage from this study to change the lifestyle in order to prevent its habitants from this painful and alarming disease. In future this study would help the researchers in their research by providing a very useful piece of information related to the factors about this disease and aware the community what should be done and what should not to be done regarding the prevention of this disease.
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Age criteria

Age Criteria	Numbers	Total	
Under 40 years	18	48	37.5%
Above 40 years	30		62.5%

Gender 4.2:

Gender Calculations			
Gender	Numbers	Total	%age
Females	43	49	87.5%
Males	6		12.2%

4.3 Employment status:

Employment Status			
Status	Numbers	Total	%age
Working	20	45	44.4%
Non Workers	25		55.6%

4.4 Weight:

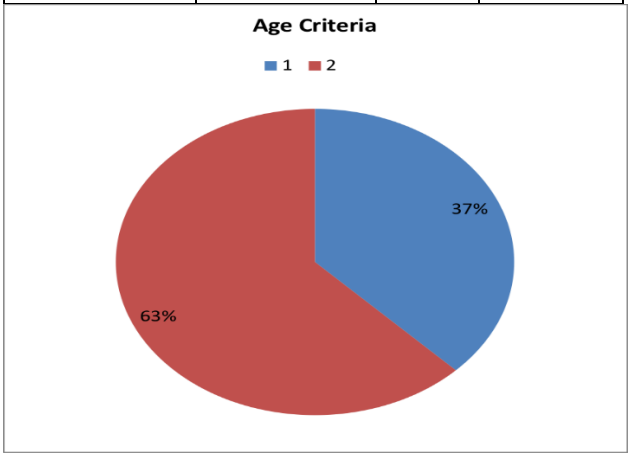
weight			
Weight	Numbers	Total	%age
Less than 50 KG	8	46	17.4%
Over 50 KG	38		82.6%

4.5 Concomitant diseases:

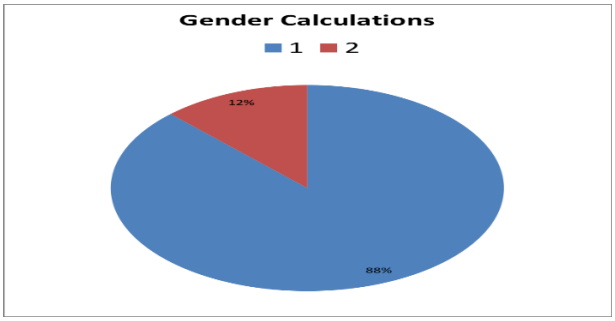
Disease Findings			
Status	Numbers	Total	%age
Disease found in	31	44	70.5%
Disease not found in	13		29.5%

4.6 Body pains:

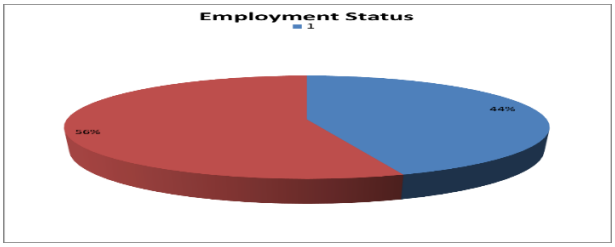
Calculations on Body Pain			
Body Part	Numbers	Total	%age
Knee	39	76	51.32%
Shoulder	10		13.16%
Legs	2		2.63%
Elbow	4		5.26%
Feet	5		6.58%
Hips	9		11.84%
Neck	3		3.95%
Back	4		5.26%



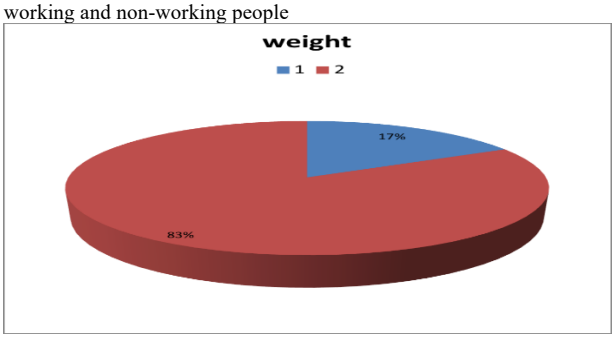
Graph 1. Showing the percentage of prevalence of osteoarthritis in different age groups



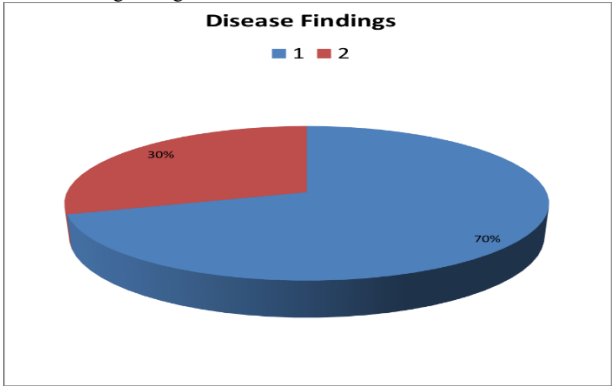
Graph 2: Showing the percentages of prevalence of osteoarthritis in males and females



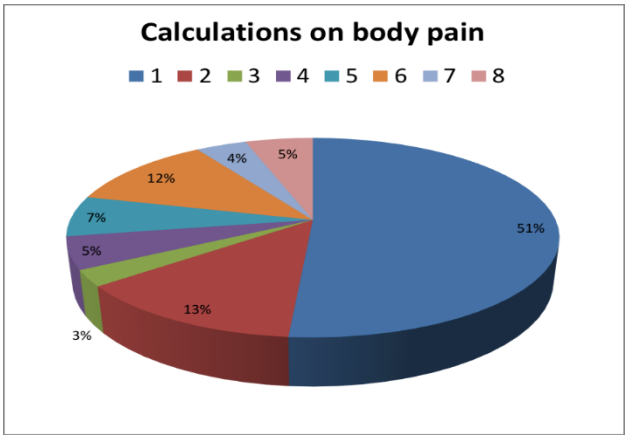
Graph 3: Showing the percentage of prevalence of osteoarthritis in working and non-working people



Graph 4: Showing the percentage of prevalence of osteoarthritis in different weight range.



Graph 5: Showing the percentage of prevalence of osteoarthritis with concomitant diseases.



Graph 6: Showing the percentage of prevalence of osteoarthritis with other disease