



Research Article

## A STATISTICAL STUDY ON FACTORS INFLUENCING ARTHRITIS AMONG WORKING WOMEN

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### ABSTRACT

The purpose of the present study is to explore the factors that influence arthritis among working women. A sample of 200 working women whose age more than 20 years is taken for the study. The data is collected through questionnaire method using 5-point Likert scale. The objective of this paper is also to find the most prominent type of arthritis for different age groups, awareness, cause and medication for arthritis among working women. Exploratory Factor analysis is performed and five important factors that influence arthritis is extracted. The five factors are named as Personal stress, calcium deficiency, obese, hereditary and age.

**KEYWORDS:** Factor analysis, chi-square test, types of arthritis, working women

### INTRODUCTION

Arthritis is caused by inflammation of the tissue lining the joints and some signs of inflammation include redness, heat, pain, and swelling on the joints. Joints are places where two bones meet, such as elbow or knee and over time it will be severely damaged. There are several types of arthritis. The two most common types of arthritis are osteoarthritis and rheumatoid arthritis.

Common arthritis joint symptoms include swelling, pain, stiffness and decreased range of motion. Symptoms can be mild, moderate or severe. They may stay about the same for years, but may progress or get worse over time. Severe arthritis can result in chronic pain, inability to do daily activities and make it difficult to walk or climb stairs. Arthritis can cause permanent joint changes. These changes may be visible, such as finger joints, but often the damage can only be seen on X-ray. Some types of arthritis also affect the heart, eyes, lungs, kidneys and skin as well as the joints.

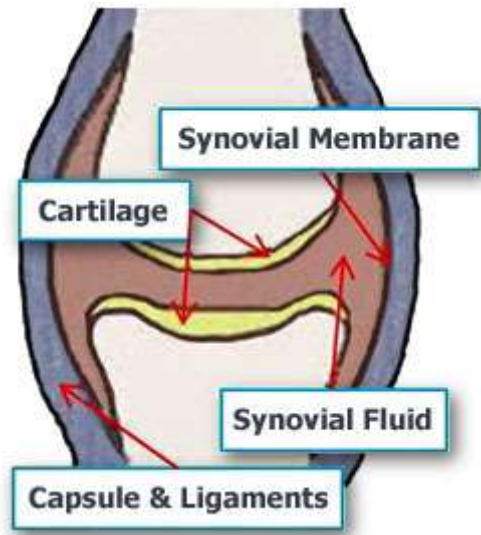
### TYPES OF ARTHRITIS

#### Osteoarthritis

Osteoarthritis usually comes with age and most often affects the fingers, knees, and hips and sometimes osteoarthritis follows an injury to a joint.. This would also affect wrists, elbows, shoulders, and ankles but this occurs less frequently. Some of the symptoms are

- i. Pain in a joint
- ii. Swelling or tenderness in one or more joints
- iii. Stiffness after periods of inactivity, such as sleeping or sitting
- iv. Flare-ups of pain and inflammation after use of the affected joint
- v. Crunching feeling or sound of bone rubbing on bone (called crepitus) when the joint is used





### Causes Osteoarthritis

The exact cause of Osteoarthritis is unknown but the joint damage can be due to repetitive movement which is also known as "wear and tear". It can also begin as the result of an injury. Erosion of the cartilage or the part of the joint that covers the ends of the bones.

- i. Cartilage acts as a shock absorber, allowing the joint to move smoothly.
- ii. As cartilage breaks down, the ends of the bones thicken and the joint may lose its normal shape.
- iii. With further cartilage breakdown, the ends of the bones may begin to rub together, causing pain.
- iv. In addition, damaged joint tissue can cause the release of certain substances called prostaglandins, which can also contribute to the pain and swelling characteristic of the disease.

### Symptoms

The main symptom of Osteoarthritis is chronic pain, causing loss of mobility and often stiffness in the joints. The chronic pain is described as the burning sensation and a crackling noise (called "crepitus") when the affected joint is moved or touched, and patients may experience muscle spasm and contractions in the tendons. Occasionally, the joints may also be filled with fluid. Humid weather increases the pain in many patients. It commonly affects the hands, feet, spine, and the large weight-bearing joints, such as the hips and knees or any other joint.

**Diagnosis:** X-rays and MRI

### Rheumatoid Arthritis

Rheumatoid arthritis is just another type of arthritis and the patients with rheumatoid arthritis often wake up with stiff and swollen joints and they will feel tired. While this condition can affect many parts of the body, two thirds of patients with rheumatoid arthritis have wrist and hand problems. Often, the joints feel hot and look red. Rheumatoid arthritis is most common in the wrist and knuckles. The rheumatoid arthritis affects many other joints, including the wrists, elbow, shoulders, and ankles.

It is caused by an abnormality in your immune system and other body tissues, including muscles, blood vessels, heart, lungs, nerves and skin. Most cases appear after the age of 60 especially working women. Rheumatoid arthritis often affects body's defence system by attacking the tissues instead of germs, viruses and other foreign substances, which can cause pain, stiffness and joint damage.



### Causes

Rheumatoid arthritis affects the cells that lubricate and line joints and the tissues become swollen. They end up stretching supporting structures of the joints such as ligaments and tendons. As the support structures stretch out, the joints become deformed and unstable. The joint cartilage and bone wear away and often the joints feel hot and look red. It typically happens in both hands.

### Symptoms

Stiffness, swelling and pain are common symptoms for all types of arthritis. There are some symptoms that are unique to rheumatoid arthritis

- i. Firm bumps along fingers or the elbow
- ii. Soft lump on the back of the hand that moves as the fingers straighten
- iii. Abnormal bend or collapse of fingers
- iv. Sudden inability to straighten or bend a finger
- v. A bent middle finger joint
- vi. A bent end of the finger and over-extended middle joint (figure 3)
- vii. Bones in the wrist that stick out

**Diagnosis:** MRI

### Gouty Arthritis

Gouty is another type of arthritis which affects one or few joints usually the big toe and ankle. It is caused by the build-up of uric acid crystals within the joint where it causes intense pain, swelling, warmth, and redness. Gout is also known as Podagra when it involves big toe. The joint at the base of the big toe is the most commonly affected area for Gout arthritis. It may also present as kidney stones or urate nephropathy and it is caused by elevated levels of uric acid in the blood and the uric acid crystallizes. The crystals deposit in joints, tendons, and surrounding tissues causing Gout Arthritis.



### Sign and Symptoms

The first symptom of gouty arthritis is sudden onset of a hot, red, swollen joint and the most common joint involved is at the base of the big toe where swelling can be associated with severe tenderness. It will not only affect the toe but also in almost any joint can be involved for example, knee, ankle, and small joints of the hands. In some people, the acute pain is so intense that even a bed sheet on the toe causes severe pain. Acute gouty arthritis at the base of the big toe is referred to as podagra. Kidney stones are more frequent in people with gout arthritis.

### Diagnosis

Synovial fluid analysis should be done if the patient suffers from toe. X-rays are also useful for identifying chronic gouty arthritis.

### Psoriatic Arthritis

Psoriatic arthritis is a form of arthritic joint disease associated with the chronic skin scaling and fingernail changes seen in psoriasis.



### Symptoms

Symptoms of psoriatic arthritis include dry, scaly, silver patches of skin combined with joint pain and destructive changes in the feet, hands, knees, and spine. Tendon pain and nail deformities are other hallmarks of psoriatic arthritis.

### Diagnosis

Skin and nail changes characteristic of psoriasis with accompanying arthritic symptoms are the hall-marks of psoriatic arthritis. A blood test for rheumatoid factor, antibodies that suggest the presence of rheumatoid arthritis, is negative in nearly all patients with psoriatic arthritis. X rays may show characteristic damage to the larger joints on either side of the body as well as fusion of the joints at the ends of the fingers and toes.

### Septic Arthritis

Septic arthritis is inflammation of a joint due to a bacterial or fungal infection. Septic arthritis that is due to the bacteria that cause gonorrhea which has different symptoms and is also called gonococcal arthritis,

### Symptoms

- i. Inability to move the limb with the infected joint
- ii. Intense joint pain
- iii. Fever
- iv. Joint swelling
- v. Irritability

### Diagnosis

- i. Aspiration of joint fluid for cell count, examination of crystals under the microscope, gram stain, and culture
- ii. Blood culture
- iii. X-ray of affected joint

### Spondyloarthritis

Spondyloarthritis is another type of arthritis which is of inflammatory rheumatic diseases which affects mainly the spine.



**Symptoms**

Spondyloarthritis differs from other types of arthritis in that it involves the sites where the ligaments and tendons attach to bones. Symptoms present in two main ways. The first is inflammation causing pain and stiffness of the spine. Some forms can affect the hands and feet or arms and legs. The second type is bone destruction causing deformities of the spine and poor function of the shoulders and hips.

**Diagnosis**

Correct diagnosis requires a physician to assess the patient's medical history and do a physical exam. The doctor also may order imaging tests or blood tests or need an X-ray of the sacroiliac joints, a pair of joints in the pelvis etc. If X-rays do not show enough changes, but the symptoms are highly suspicious, the doctor might order magnetic resonance imaging, or MRI, which shows these joints better and can pick up early involvement before an X-ray can.

**OBJECTIVES**

- i. To study about arthritis affected working women of different age groups with different types of Arthritis
- ii. To study about the Risk Factors that influencing Arthritis
- iii. To study about awareness, causes and medication for Arthritis
- iv. To study the association between variables of interest and type of arthritis

**MATERIALS AND METHODS**

The respondents of this present study were 200 randomly selected working women. The instrument used is questionnaire method to gather the needed data for the investigation. The statistical tools for descriptive statistics were percentage analysis and inferential statistics is chi-square test. The exploratory factor analysis was performed to find the factors influencing arthritis among working women.

**RESULTS AND DISCUSSION**

**Percentage Analysis**

The descriptive analysis show that most of the working women with age group above 40 are mostly affected by Arthritis. 58% of women are having diabetes.42.5% of women are having Hypertension. 46% of the women are having their BMI 25.-29.9 which indicates obese.11% of the women are having more than 30 as their BMI which indicates Overweight. 57.5% of the women do not practice any physical activities like walking, jogging, yoga gymnasium.82% of the women are aware about Arthritis.61% of the women are having osteoarthritis. 23% of the women are having Rheumatoid Arthritis. 32% of the women are having Gout Arthritis.5.5% of the women are having Septic Arthritis.49% of the women do not undergo any treatment.58% of the women do not undergo proper medication for Arthritis.

**Chisquare Test**

- i. There is association between osteoarthritis and Rheumatoid Arthritis and age group, Diabetes and BMI.
- ii. There is association between cavity problem and osteoarthritis.
- iii. There is association between kidney problem with Gout Arthritis

**Factor Analysis**

Exploratory factor analysis along with varimax rotation is used to extract the factors that affect the arthritis among working women .The variables are measured with 5-point Likert scale ranging from strongly agree to strongly disagree.

The factor analysis by principal component method with varimax rotation is applied on the variables to find the factors affecting or influencing the arthritis among working women. Five factors have been extracted and the following table gives the factor loadings of rotated component matrix.

Component Transformation Matrix					
Component	1	2	3	4	5
1	.793	.513	.203	.182	.183
2	.537	-.752	-.232	.232	-.194
3	.079	-.319	.865	-.378	-.031
4	-.256	-.168	.311	.761	.480
5	.101	-.202	-.245	-.438	.835

Exploratory Factor analysis is performed and found that there five important factors that influence arthritis. The five factors are named as personal stress, occupation, obese, hereditary and lack of physical activity.

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