

Survey on Prevalence, Risk Factors and Treatment Pattern of Osteoarthritis in Bangladesh: Retrospective Study

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Abstract

Objectives: To explore the risk factor, prevalence and treatment pattern for patient with osteoarthritis, to survey the socio-demographic information of the patient, to compare the number of affected gender, to know their pain mode, to know the percentage treatment pattern and to identify the outcome of the treatment.

Methodology: The study design was a non-experimental retrospective survey. Total number of sample was 200 osteoarthritis patient's documents.

Results: Result shows that 30-64 years age group were most affected and female were mostly affected by osteoarthritis. Among them the rate of housewife was 39%. They are more vulnerable. Effectiveness of treatment and complementary and alternative therapy was good. Percentage of improvement or satisfied with the treatment was approximately 49%. In total achievement, approximately 17% aims of treatment are not satisfied due to some causes and 34% have no improvement since many of them are new patient.

Conclusion: Osteoarthritis is a common physiotherapy related problem. Because it is not a curable disease but regular physical exercise, treatment can reduce the symptoms.

Keywords: Osteoarthritis; Treatment pattern; Physiotherapy

Abbreviations: OA: Osteoarthritis; SNRIs: Serotonin-norepinephrine Reuptake Inhibitors; JSN: Joint Space Narrowing; NSAIDs: Nonsteroidal Anti-inflammatory Drugs; OARSI: Osteoarthritis Research Society International; AAOS: American Academy of Orthopaedic Surgeons; WHO: World Health Organization

Introduction

Osteoarthritis (OA) is the most common type of rheumatic disease and a leading cause of disability. More than 10 percent of the world populations have OA. As OA progresses, severe joint pain limits patients' physical activity [1]. Osteoarthritis (OA) is estimated to be the fourth leading cause of disability. Most of this disability burden is attributable to the involvement of the hips or the knees. OA is strongly associated with ageing and the Asian region is ageing rapidly. Further, OA has been associated with heavy physical occupational activity, a required livelihood for many people living in rural communities in developing countries. On the other hand, obesity, another major risk factor, may be less prevalent, although it is on the increase. Many of the recent studies have conducted comparisons between urban and rural areas and poor and affluent communities [2,3]. OA is present by histological or radiographic criteria; however, in nearly 80% of people by the age of 80 years only half of them have symptoms [4,5]. OA can be defined pathologically, radio-graphically, or clinically [6].

People aged 65 years and older will outnumber children younger than 5 years, and the number of people aged 60 years and above is expected to double by 2050 and more than triple by 2100. Being primarily related to ageing, the prevalence of OA will steadily increase and is expected to be the single greatest cause of disability in the general population by 2030 [6]. Osteoarthritis (OA) is the most common form of arthritis, affecting millions of people in the United States [7-9]. The EULAR recommendations, which emphasize that knee osteoarthritis may associate with osteoarthritis at other joints due to shared genetic and constitutional risk symptoms, also highlight that the definition of knee osteoarthritis may change based on the different levels of care needed and the clinical requirements [10]. In 1957, Kellgren and Lawrence developed a classification system that sets out a series of radiological features that are considered evidence of osteoarthritis, and divides the disease into five; 0-None, 1-Doubtful, 2-Minimal, 3-Moderate, 4-Severe Grade [11]. The radiological features of knee osteoarthritis were refined by the Osteoarthritis Research Society International in 2007, and divided into: the presence of marginal osteophytes in the medial femoral condyle, medial tibial plateau, lateral femoral condyle and lateral tibial plateau and joint space narrowing (JSN) of the medial compartment and lateral compartment [12]. Typical clinical symptoms are pain, particularly after prolonged activity and weight-bearing; whereas stiffness is experienced after inactivity. It is probably not a single disease but represents the final end result of various disorders leading to joint failure. It is also known as degenerative arthritis, which commonly affects the hands, feet, spine, and large weight-bearing joints, such as the hips and knees [13,14].

Prevalence (%) of various rheumatic diseases in Bangladesh from WHO-ILAR COPCORD studies is 7.5% [15].

According to the Osteoarthritis Research Society International (OARSI) and the American Academy of Orthopaedic Surgeons (AAOS), the mainstay of OA treatments involves physical measures, drug therapy and surgery. Physical therapy is a simple, everyday adjunctive treatment. Weight loss can adjust the imbalanced mechanical stress, lessen joint pain, and reduce OA risks. Moderate exercises help strengthen muscles and may delay the progression of OA. Alternative treatments such as spa, massage, and acupuncture are also beneficial but lack enough evidence to support efficacy. Surgery is only considered for severe cases when conservative therapy is ineffective because of the invasive trauma and higher risks. Total joint replacement/arthroplasty is regarded as the best orthopaedic surgery for advanced OA. It can potentially reduce pain and improve joint function. Unfortunately, arthroplasty is not recommended for young patients, as the artificial implant has a finite lifespan (usually 10-15 years). Pharmaceutical therapy (acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), opioid analgesics, serotonin-norepinephrine reuptake inhibitors (SNRIs), and intra-articular injections) is the most commonly used OA treatment option aimed mainly at pain relief and anti-inflammation [16].

Global statistics reveal over 100 million people worldwide suffer from OA, which is one of the most common causes of disability. In addition, younger individuals may be susceptible to injury-induced OA. More than 50% of the population around the world (>65 years) show X-ray evidence of OA in one of the joints, thus demonstrating the high incidence of this disease. While OA is equally present in men and women, it appears to be more common among younger men (<45 years) and in the older women (>45 years) [17,18].

Number of Study Center	Total Number of Patients	Duration of study	Name of Study Center
Study Center 1	200	6 months	NHN Dhamalcoat, Mirpur-14, Dhaka
Study Center 2			NHN Shamoli, Mirpur road, Dhaka
Study Center 3			NHN Shahbag, Dhaka
Study Center 4			NHN Boro Moghbazar, Wireless Rail Gate, Dhaka
Study Center 5			NHN 1, Eskaton Road, Dhaka-1217, Study Center

Table 1: Present Study Protocol.

Materials and Methods

Inclusive criteria

In this cross sectional study, medical records of patients of osteoarthritis in those hospitals were studied during the time period. Demographic data, clinical method, treatment pattern and related complications were extracted from the patient's medical files or by interviewing. In some patients diagnosis of osteoarthritis disease was recorded in their medical files and they were given medication. About 200 patient's information data was collected for this research work. In this study, Center for Rehabilitation for Paralyzed, Trauma Center, BSM Medical College and Dhaka Community Medical College and

Hospital were preferred because a good number of osteoarthritis patients visit here, many of them are middle-aged people (Table 1).

Result and Discussions

From the survey conducted, there are some findings which may have vital implication which can show that is, some link among osteoarthritis with age, sex etc. From the Figure 1, it is observed that, majority of the survey population were female which contributes around 57% of the population. Here from Figure 2, we observed that, patients aged from 45 to 64, highly suffers from osteoarthritis and the prevalence is around 68%. The second highest group of patients was aged within 20-44 and the remaining 8% patient group came from the age above 65.

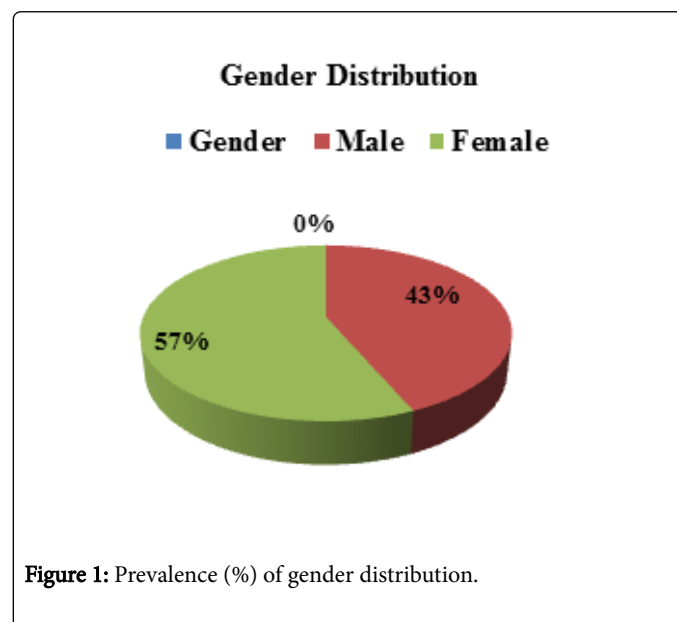


Figure 1: Prevalence (%) of gender distribution.

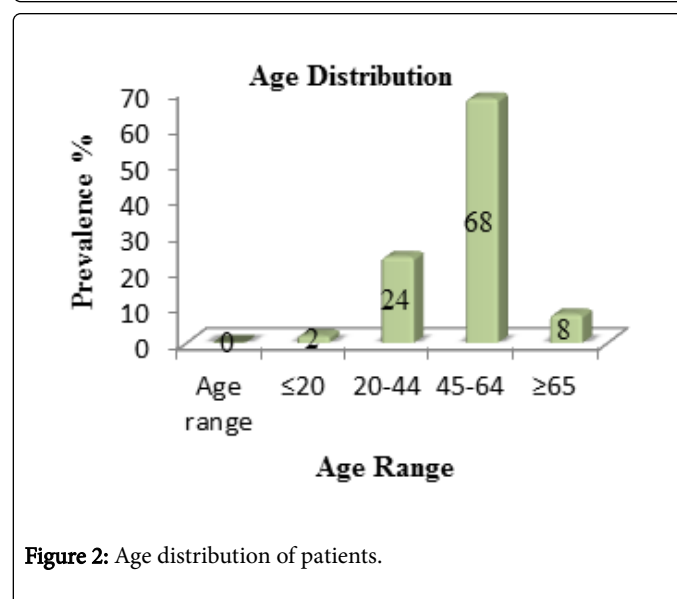


Figure 2: Age distribution of patients.

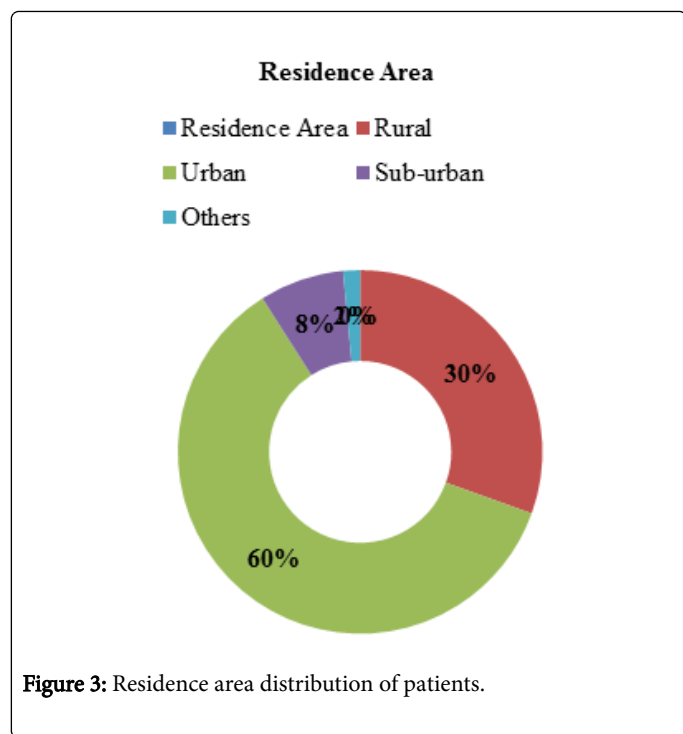


Figure 3: Residence area distribution of patients.

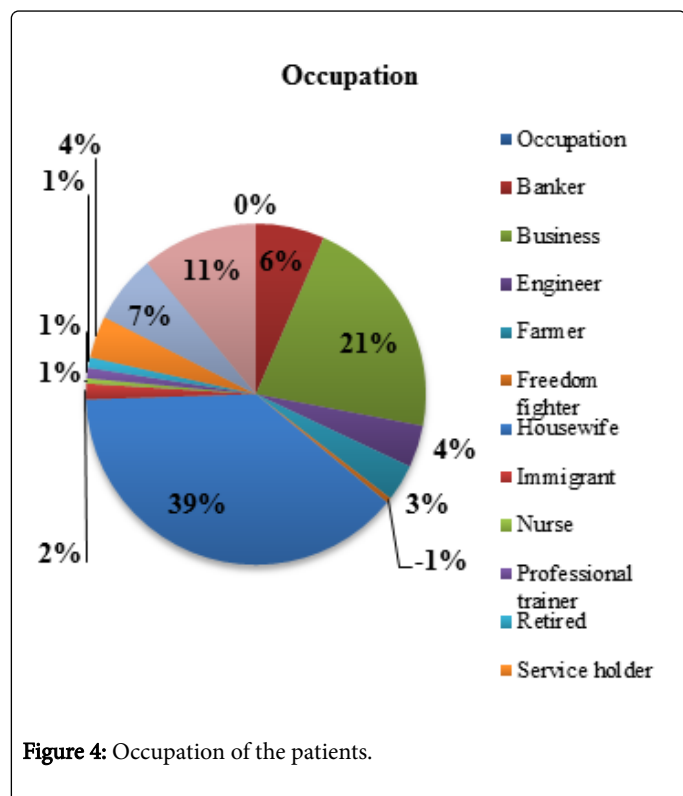


Figure 4: Occupation of the patients.

Residence area distribution

Here we observed from Figure 3, that patients from urban area are highly suffered from osteoarthritis and the prevalence is around 60%. The second highest group of patients was from rural and the remaining 8% and 2% patient group came from sub-urban and others. Here we

observed that, patients highly suffered from osteoarthritis are housewife and the prevalence is around 39% from the data. There are many people with different occupations (Figure 4).

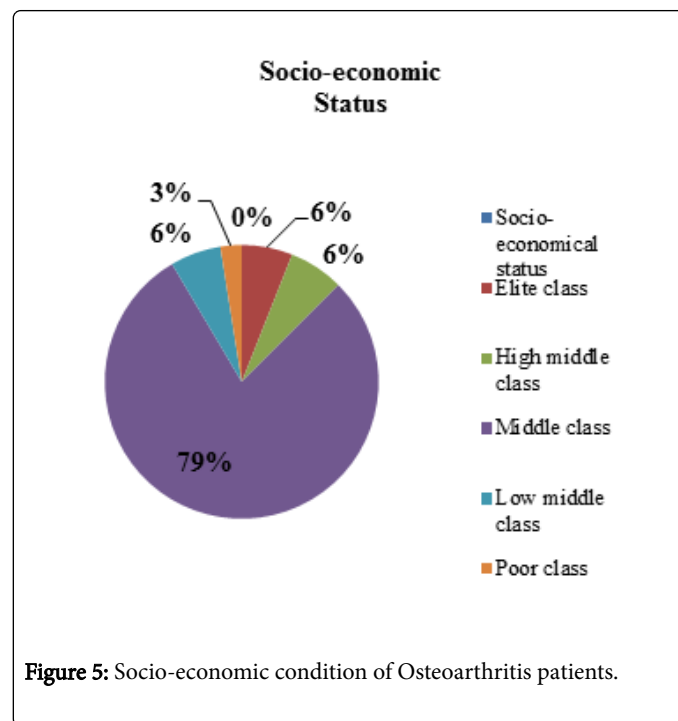


Figure 5: Socio-economic condition of Osteoarthritis patients.

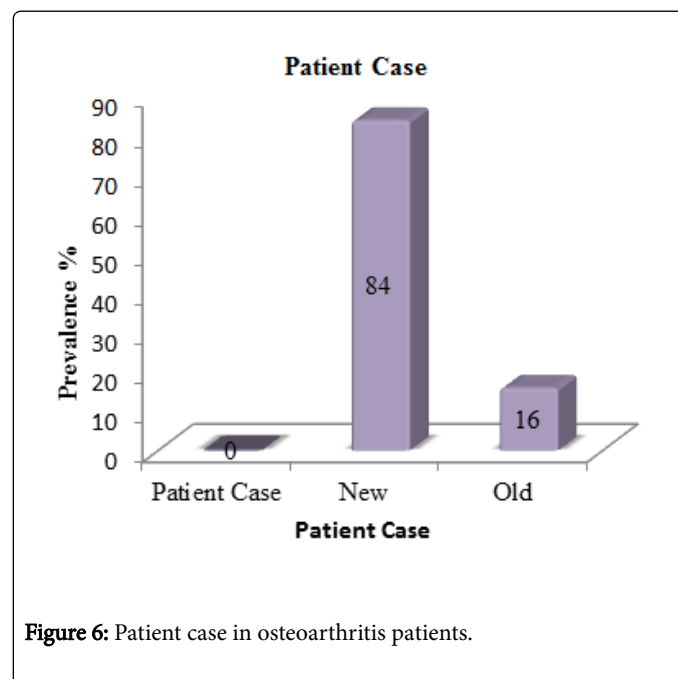


Figure 6: Patient case in osteoarthritis patients.

Socio-economical condition

Osteoarthritis patients: In case of socio-economic condition of osteoarthritis, it is observed in Figure 5 that 79% patients were from middle class, 6% people were from total upper-middle class, and remaining 6% and 3% were from low-middle class and poor economic status out of 200 samples. Here we observed that, 84% patients were

new and remaining 16% patients were old and they were suffered osteoarthritis for long time (Figure 6).

Level of pain among the osteoarthritis patients during different positions: From Figure 7; we observed the pain mode in different stages. Most of the people suffered mild pain according to the data. Here we observed the stiffness among patients suffered from osteoarthritis (Figure 8). Most of the patients had no stiffness according to the acquired data.

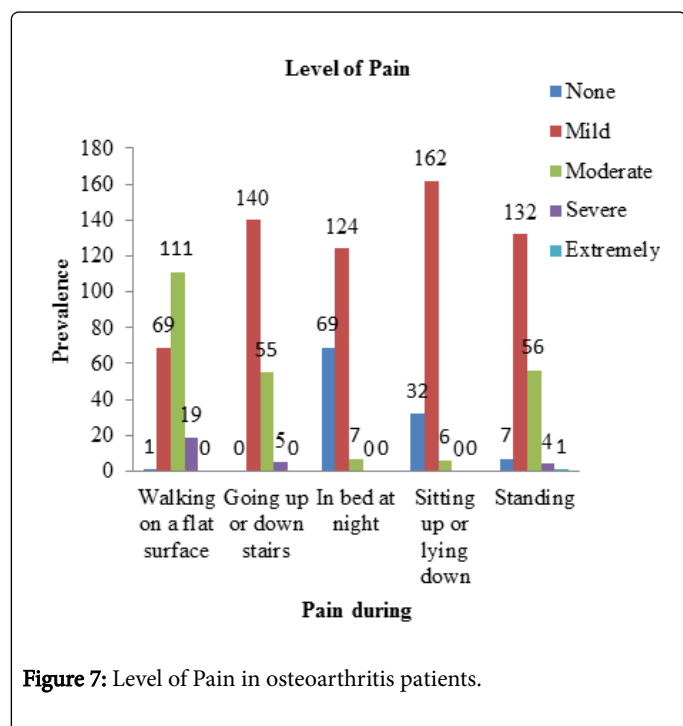


Figure 7: Level of Pain in osteoarthritis patients.

Level of difficulty in osteoarthritis patients during different household activities: Most of the patient had moderate difficulty but not extreme level according to the data (Figure 9). Here we observed that, exercise was given mild as treatment among the patients by understanding their joint condition (Figure 10).

Weight control, rest and joint care, medicine: Here we observed that, patients were also given to control weight, rest and joint care and medicine as a part of their treatment. Here we also observed that in some cases patients were not given medicine (Figure 11).

Surgery: Here we observed that, 85% patients were not done the surgery since most of the patient case is new. And 10% patients were recommended for surgery of joint.

Medicine: Here we observed that, most of the patients were given calcium supplements and esomeprazole and omeprazole to avoid GIT disorder (Figure 12). The patients were also given ketorolac tromethamine, chondroitin with glucosamine, naproxen, aceclofenac etc., but these medicines were used most.

Complementary and alternative therapy: Here we observed that, there were also complementary and alternative therapy used as treatment along with medicine (Figure 13). Physiotherapy was the most used complementary therapy and the prevalence was 85%. From Figure 14, here we observed that, 49% patients were satisfied with the treatment. But there were also non-satisfied patients and the

prevalence was 17%. And 34% patients had no improvement since they were new to the treatment.

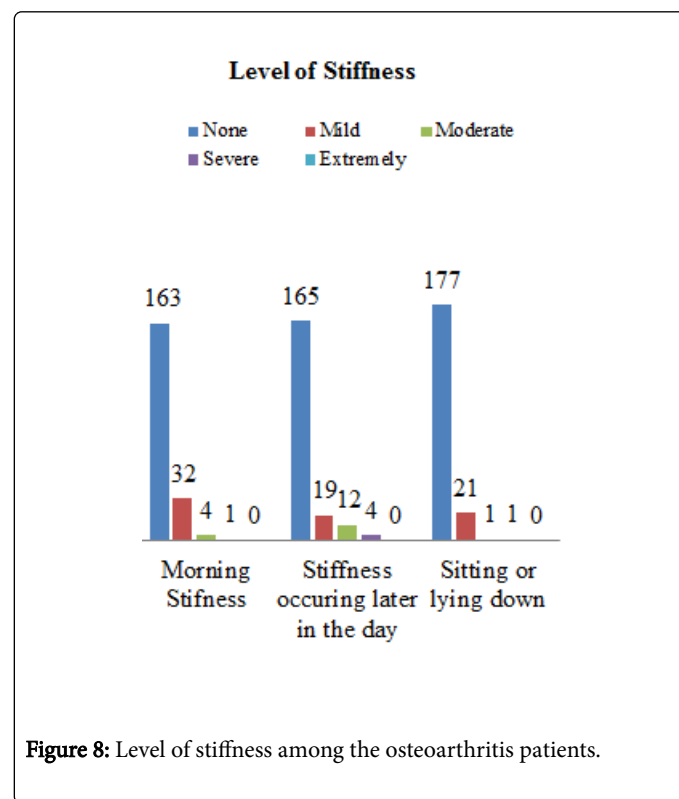


Figure 8: Level of stiffness among the osteoarthritis patients.

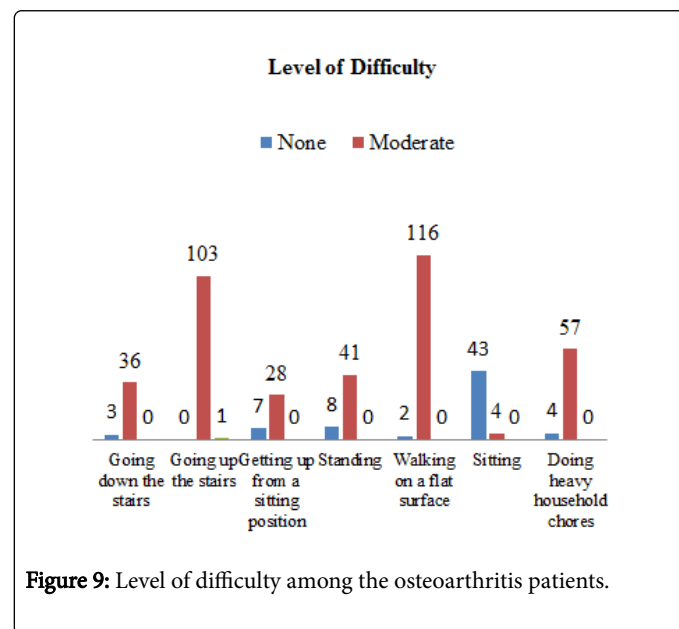


Figure 9: Level of difficulty among the osteoarthritis patients.

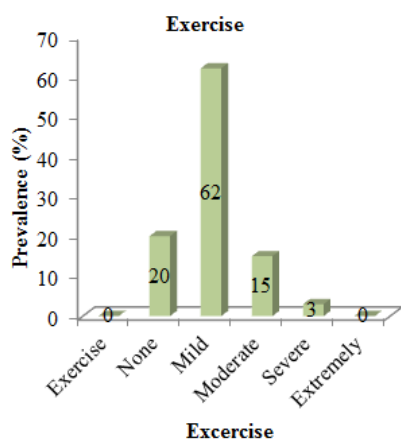


Figure 10: Exercise as treatment.

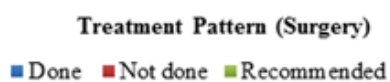
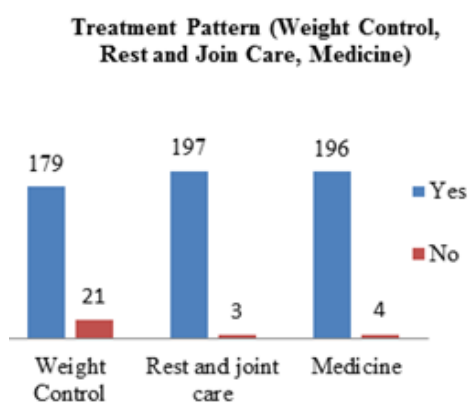


Figure 11: Weight control, rest and joint care, medicine as treatment.

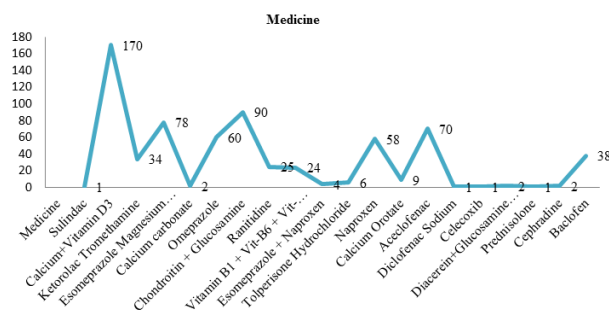


Figure 12: Medicine as treatment for osteoarthritis

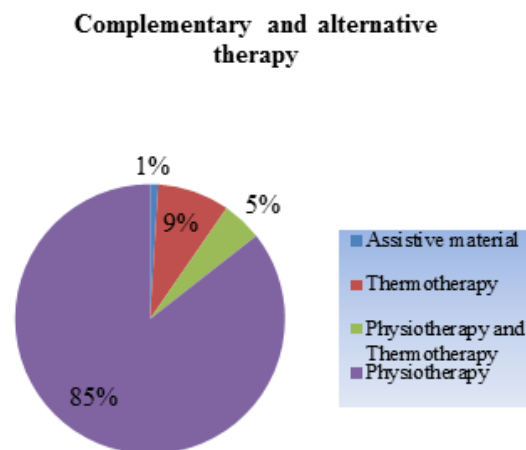
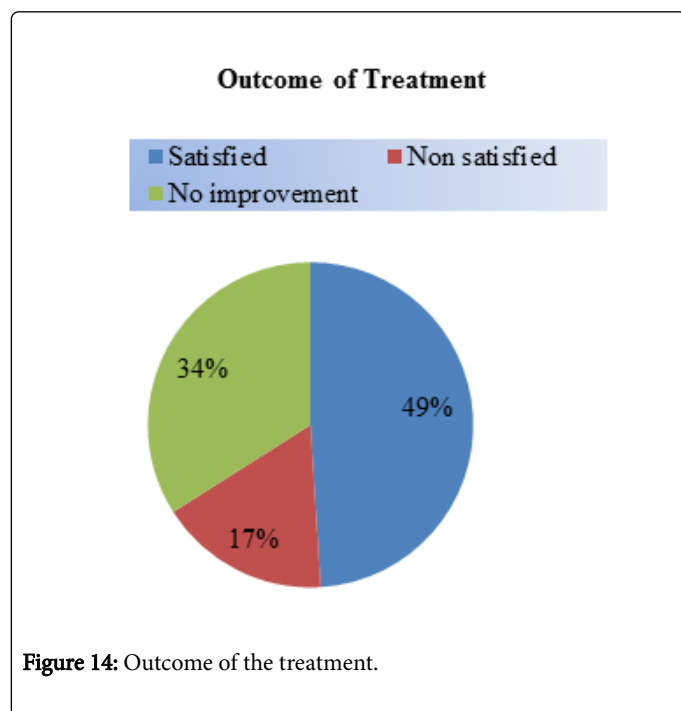


Figure 13: Complementary and alternative therapy

Discussions

Two hundred patients of OA were observed during this studied. Out of them, 87 (43%) were male and 113 (57%) were female. The subjects were divided into four age groups period of this study. First age group is less than 20 years, and second age group is (20-44) years, third age group is (45-64) years and fourth group is more than 65 years. Among them more participants were into the age groups 45-64 years and less participants were into the aged group of >20 years. It indicates that overall 45-64 years are more vulnerable age group to be affected with osteoarthritis. Occupation of OA patients was an important focusing point of this study. A number of studies have considered the role of occupational factors in the development of OA. It has been suggested that repetitive use of specific joints by workers exceeds normal tolerances and might be conducive to degeneration of joints. In our study 77 (39%) patients were house wife that means housewife are mostly affected by knee OA, this may be due to long time activity in knee bending position according to our culture. In Bangladesh women constitute 48.6% of total population. In this study only 98 (49%)

participants aims of treatment is achieved in out of 200 participants. And remaining 34 (17%) are not satisfied with the treatment.



Conclusions

The main aim of the study was to explore the risk factor, prevalence and treatment pattern for osteoarthritis. In this study it was proved that osteoarthritis is common over 30 to 64 years of age and 57% female are more affected than male. Among 200 participants 39% was housewife. It indicates that housewife are more affected by OA. This survey work also reflects the overall figure of age group, gender distribution, weight variation, socio-economic condition, occupation, pain mode, stiffness, and difficulty amount and treatment pattern of patients in Dhaka city.

Authors' Contribution

Istiaq Jahan & Salma Haque Sima, contributed to the concept and design of the study. Md. Didaruzzaman Sohel did the literature search and wrote the paper. Md. Didaruzzaman Sohel contributed to the initial revision of the paper. Marjana Khalil & Md. Hassan Kawsar, contributed to the critical revision of the paper and approved the final version before publication.

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References

1. Franssen M, Bridgett L, March L, Hoy D, Penserga E, et al. (2011) The epidemiology of osteoarthritis in Asia. *Int J Rheum Dis* 14: 113-121.
2. Litwic A, Edwards MH, Dennison EM, Cooper C (2013) Epidemiology and burden of osteoarthritis. *Br Med Bull* 105: 185-199.
3. Altman R, Asch E, Bloch D, Bole G, Borenstein D, et al. (1986) Development of criteria for the classification and reporting of osteoarthritis. Classification of osteoarthritis of the knee. Diagnostic and Therapeutic Criteria Committee of the American Rheumatism Association. *Arthritis Rheum* 29: 1039-1049.
4. Hochberg MC, Lawrence RC, Everett DE, Huntley JC (1989) Epidemiologic associations of pain in osteoarthritis of the knee: data from the National Health and Nutrition Examination Survey and the National Health and Nutrition Examination. 1: epidemiologic follow-up survey. *Semin Arthritis Rheum* 18: 4-9.
5. Zhang Y, Jordan JM (2010) Epidemiology of osteoarthritis. *Clin Geriatr Med* 26: 355-369.
6. Alexander M, Philip G (2017) Conaghan Synovitis in osteoarthritis: current understanding with therapeutic implications. *Arthritis Res Ther* 19: 18.
7. Altman R, Asch E, Bloch D, Bole G, Borenstein D, et al. (1986) Development of criteria for the classification and reporting of osteoarthritis. Classification of osteoarthritis of the knee. Diagnostic and Therapeutic Criteria Committee of the American Rheumatism Association. *Arthritis Rheum* 29: 1039-1049.
8. Kafil N, Aamir K, Murad S, Ara J, Anjum S (2003) A placebo controlled clinical trial on Nimesulide in Osteoarthritis. *J Surg Pakistan* 8: 5-8.
9. Zhang W, Doherty M, Peat G (2010) EULAR evidence-based recommendations for the diagnosis of knee osteoarthritis. *Ann Rheum Dis* 69: 483-489.
10. Kellgren JH, Lawrence JS (1957) Radiological assessment of osteoarthritis. *Ann Rheum Dis* 16: 494-502.
11. Cooper C, Javaid MK, Arden N (2014) Epidemiology of osteoarthritis. In: *Atlas of Osteoarthritis*. Springer Healthcare, Tarporley. pp 21-36.
12. Guillemin F (2002) Epidemiology of the rheumatic diseases : Eds A J Silman, M C Hochberg. Oxford: University Press, 2001. *Ann Rheum Dis* 61: 861-861.
13. Akinpelu AO, Alonge TO, Adekanla BA, Odole AC (2009) Prevalence and pattern of symptomatic knee osteoarthritis in Nigeria: A community-based study. *Internet J Allied Health Sci Pract* 7: 3.
14. Chaiamnuay P, Darmawan J, Muirden KD, Assawatanabodee P (1998) Epidemiology of rheumatic disease in rural Thailand: a WHO-ILAR COPCORD study. *Community Oriented Programme for the Control of Rheumatic Disease. J Rheumatol* 25: 1382-1387.
15. Rahman MM, Cibere J, Anis AH, Goldsmith CH, Kopec JA (2014) Risk of Type 2 Diabetes among Osteoarthritis Patients in a Prospective Longitudinal Study. *Int J Rheum*.
16. Zhang W, Ouyang H, Dass CR, Xu J (2016) Current research on pharmacologic and regenerative therapies for osteoarthritis. *Bone Res* 4: 15040.
17. Bhatia D, Bejarano T, Novo M (2013) Current interventions in the management of knee osteoarthritis. *J Pharm Bioallied Sci* 5: 30-38.
18. Liikavainio T, Bragge T, Hakkarainen M, Karjalainen PA, Arokoski JP (2010) Gait and muscle activation changes in men with knee osteoarthritis. *Knee* 17: 69-76.