

Original Article

Demographic Characteristics and Clinical Factors of the Patients Suffering from Osteoarthritis of Hand – A Study Done in A Tertiary Specialized Hospital in Bangladesh

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ABSTRACT

Background: Osteoarthritis (OA) is one of the most common forms of arthritis. Hand OA is a heterogeneous, age and gender-dependent disorder, occurring more frequently in postmenopausal women over 50 years of age.

Objective: This study aims to identify demographic pattern and factors associated with osteoarthritis of hand among patients attending a tertiary level hospital in Bangladesh.

Methods: This cross-sectional study was done in Department of Orthopedics, Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh, between January and December of 2021. A total of 90 patients with OA of hands were included in this study. All patients were selected conveniently, and informed written consent of the patients was taken. Participant data were collected through face-to-face interview using semi-structured questionnaire. Statistical analyses were done with Statistical Package for Social Science (SPSS) version 25.0. Quantitative variables were analyzed by mean and standard deviation while qualitative variables were summarized by percentage.

Results: In this study, the age distribution of the patients ranges from e"40 years to d"75 years irrespective of sex. The mean age of the patients of both sexes was 56.6±8.72 years. Among those 90 patients, 35 persons (38.9%) were male and 55 (61.1%) were female. Most of the patients are housewives 38 (42.22%). Most of the women (87.27%) are menopausal among the total 55 female patients. Only 13 (14.45%) persons had previous history of hand injury, 20 (22.22%) persons had habit of smoking or previously smoker. Most of the subjects 78 (86.67%) were right hand dominant and maximum 67 (74.45%) persons enrolled in this study showed priority affected CMC1 OA to the dominant hand. Most of them (75.55%) took medications for treatment for arthritis.

Conclusion: Our study revealed that osteoarthritis of hands is predominant in females and affects mostly right hand. Further high-quality studies examining the risk factors for hand osteoarthritis are needed to replicate these findings and determine modifiable factors in symptomatic patients.

Keywords: Hand osteoarthritis, clinical factors, demographic characteristics

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INTRODUCTION

Osteoarthritis (OA) is one of the commonest forms of arthritis; prevalence rises progressively with age i.e., by 65 years; clinically, 80% of the patients have radiographic evidence of OA, where only 25-30% of them may have symptoms like pain and disability.¹ Hand OA is a disorder which is heterogeneous, age and gender-dependent, occurring more frequently in postmenopausal women over 50 years of age,² but can be started relatively earlier in life.³ Thumb OA is typically bilateral both clinically and

radiographically featuring tenderness, stiffness, crepitus, swelling, and pain on writing movements or other motions that cause abduction of the thumb.^{4,5} In Bangladesh, prevalence of hand pain related with musculo-cutaneous disorder is ranged from 5.8 to 6.4% but individual study on OA thumb is not available.⁶ A study done in Iran reported that the first carpometacarpal (CMC1) was found the third most common site (34%) of OA hand after the distal interphalangeal (DIP) (79%) and proximal interphalangeal (PIP) joint groups (41%).⁷ In Sweden, the prevalence of CMC1 OA estimated at 1.4% in a mean (SD) age 67.7 years of which women were (78.5%) three to four times higher than men.⁸ Some undisputable risk factors have been discussed in several studies, e.g., older age seems to be the strongest risk factors for symptomatic and radiographically proven hand OA,^{9,10} while body mass index is also positively associated with hand OA.¹¹⁻¹³ Other risk factors include female sex, family history, menopausal status, parity, obesity, higher bone density, greater forearm muscle strength, and joint laxity, heavy work causing pressure on the hands or occupations involving repetitive thumb use or recreation-related usage.⁹⁻¹⁶ Prior hand injury, smoking, bone and cartilage mineralization factors, grip strength, and handedness may also play roles.^{2,14-16} In a developing country like Bangladesh, poor working conditions involving heavy manual labor and occupational injuries probably contribute to the high prevalence of OA in people living in slum communities.⁶ There are also highly increasing professional female groups, mobile users, computing indicates in increasing prevalence of thumb OA patients in upcoming decades. Increased incidence of hand OA will ultimately create higher clinical and socioeconomic burdens to the population and national economy in the long run. This scenario is not only true for our country, but also evident in the western countries.¹⁷ Hence, we proposed this study to identify demographic pattern and factors associated with hand osteoarthritis (OA) in a selected tertiary specialized hospital in Bangladesh.

METHODS

This cross-sectional study was done in the outdoor of Department of Orthopaedics, Shaheed Ziaur Rahman Medical College & Hospital, Bogura, Bangladesh, between January and December of 2021. A total of 90 patients with thumb OA were selected who fulfilled inclusion and exclusion criteria, which

was based on a convenient sampling technique. Patients at age ≥ 40 years and both sexes who meet the diagnostic criteria of OA hand, thumb pain due to chronic non inflammatory causes and pain duration >1 month, stable level of activities of daily living (ADL) with no history of light sensitivity or skin lesion were included in this study. Patients were excluded from the study if they had a neurologic disorder or known debilitating diseases, had received previous treatment for their hand problem in the last six months, including an intraarticular joint injection; had fractures or a significant hand injury or previous surgery to thumb, pregnant women, and had history of light sensitivity or skin lesion.

Informed written consent of the patients was taken. Participant data were collected through face-to-face interview using semi-structured questionnaire. Data was checked and verified manually. Data analysis was done by using Statistical Package for Social Science (SPSS) version 25.0. Quantitative variables were analyzed by mean and standard deviation while qualitative variables were summarized by percentage. The study was approved by the Ethical Review Committee of Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh.

RESULTS

In our study, a total of 90 patients were enrolled. The age distribution of the patients ranged from ≥ 40 years to ≤ 75 years irrespective of sex. The mean age of the patients of both sexes was 56.6 ± 8.72 years. Most of them (45.56%) belonged to the 51-60 years age-group. In this study, 35 persons (38.9%) were male and 55 (61.1%) were female. Male to female ratio was 1:1.57. In the present study, most of the patients were housewives (42.22%). Out of 90 patients, 18 of the patients (20%) belong to manual workers group and 15 (16.66%) are related with services or managerial activities (Table-I). Most (64.44%) of the study subjects were from middle class families followed by poor socioeconomic status 20 (22.22%) according to monthly income. (Fig. 1). In the present study, most of the women (87.27%) are menopausal among the total 55 female patients. 13 (14.45%) persons had previous history of hand injury. 20 (22.22%) persons had habit of smoking or previously smoker. Most of the subjects 78 (86.67%) were right hand dominant and 67 (74.45%) persons enrolled in this study showed priority affected CMC1 OA to the dominant hand. Most of them (75.55%) took medications for treatment for arthritis.

Baseline characteristics in patients with CMC1 OA are shown in Table-II. Out of the 90 patients of the study irrespective of sex, it was observed that in 65 (72.22%) patients' symptoms were exacerbated mostly by activities followed by 15 (16.66%) patients who are almost severely affected even had persistent symptoms. On the other hand, most of the patients (75.55%) mentioned their getting relief following NSAIDs uses, while 15.56% had some relief from rest/inactivity, 6.67% patients were benefited by heat and rest 2.22% by splinting. However, none of them got benefits from by active joint movement (Table-III)

Table-I: Demographic characteristics of the study participants (n=90)

| Variables | Frequency | Percentage |
|------------------------------|-----------|------------|
| Age in years | | |
| 41-50 | 18 | 20% |
| 51-60 | 41 | 45.56% |
| 61-70 | 20 | 22.22% |
| >70 | 11 | 12.22% |
| Gender | | |
| Male | 35 | 38.9% |
| Female | 55 | 61.1% |
| Occupation | | |
| Housewife | 38 | 42.22% |
| Service/Managerial/Desk work | 15 | 16.66% |
| Manual worker | 18 | 20% |
| Farmer | 4 | 4.44% |
| Business | 3 | 2.7% |
| Retired | 9 | 3.33% |
| Recreational job | 3 | 3.33% |
| Total | 90 | 100.0% |

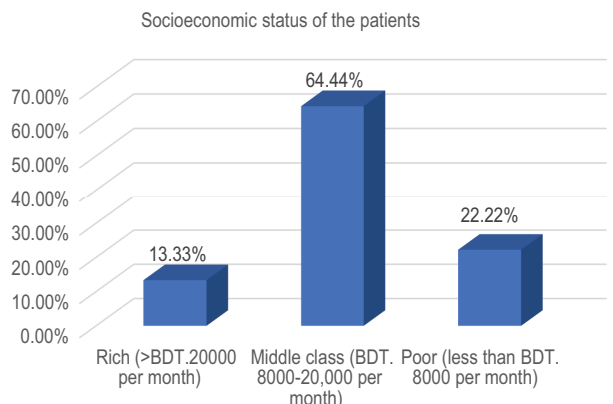


Fig. 1: Bar diagram of the socioeconomic status of the patients (n=90)

Table-II: Baseline characteristics of the study population for CMC1 OA (n=90)

| Characteristic | Frequency | Percentage |
|--|-----------|------------|
| H/O hand injury | 13 | 14.45% |
| Smoker/Previously smoker | 20 | 22.22% |
| Dominant hand | | |
| Right | 78 | 86.67% |
| Left | 12 | 13.33% |
| Affected hand | | |
| Right | 52 | 57.78% |
| Left | 16 | 17.78% |
| Both | 22 | 24.44% |
| Take medication for arthritis | | |
| Yes | 68 | 75.55% |
| No | 22 | 24.44% |
| Menopausal women among total female (n=55) | 48 | 87.27% |

Table-III: Aggravating and Relieving factors for the CMC1 OA patients

| Variables | Frequency | Percentage |
|---------------------|-----------|------------|
| Aggravating factors | | |
| Activities | 65 | 72.22% |
| Rest | 3 | 3.33% |
| Persistent | 12 | 13.33% |
| Relieving factors | | |
| Rest | 14 | 15.56% |
| Heat | 6 | 6.67% |
| NSAIDs | 68 | 75.55% |
| Splint | 2 | 2.22% |
| Total | 90 | 100% |

DISCUSSION

In this study, out of 90 patients, most (45.56%) of the patients belong to age group 51-60 years, 20% from 41-50 years group, 22.22% from 61-70 years group and other 12.22% from >70 years age group. Interestingly, a total of 72 patients (80%) were above 51 years. The mean age of the patients of both sexes was 56.6±8.72 years. To date, only few studies specific to hand OA are available in Bangladesh; however, none of them dealt with clinical factors or demographics of the patients. Bani et al.¹⁸ found the mean age was 56.6 years in their study. Roux et al.¹⁹ got 42 patients of CMC1 OA during their study in a mean age of 64.8±8.0. Several studies support the high

prevalence of CMC1 OA in the age group with 51 and above.²⁰⁻²³ Contrary to the common belief, it is not necessarily a disease of older people, but can occur relatively earlier in life, impairing the patient's capacity to work.³ In our study, among total 90 subjects completed the study, 38.9% were male and 61.1% were female. Male to female ratio was 1:1.5. In terms of the expected and proved predominance in prevalence of symptomatic hand OA; CMC1 OA is ought to be occurred predominantly in female group, which is supported by many studies including meta-analysis and systemic reviews.^{18-21,24-27} In Bangladesh, the point prevalence estimates of musculoskeletal pain in rural, urban slum, and affluent urban communities were 26.2% (women 31.3%, men 21.1%), 24.9% (women 27.5%, men 22.6%), and 27.9% (women 35.5%, men 18.6%), respectively.⁶ Hence, these findings regarding gender distribution are consistent with relative studies. In the present study, most of the patients of CMC1 OA are female and housewives 38 (42.22%) among the total participants. Two other different studies done in Bangladesh showed that patients are predominantly female and mostly housewives are more affected.^{28,29} Out of 90 patients, 18 of the patients (20%) belong to manual workers group and 15(16.66%) are related with services or managerial activities. Roux et al.¹⁹ found that 14.3% of subjects in managerial job, 14.3% in liberal profession and larger part which is more than 50% of study population as retired. According to social trends and socioeconomic condition in Bangladesh along with higher female subjects, the lion's share of study subjects was within housewife group. Most (64.44%) of the study subjects were from middle class families followed by poor socioeconomic status 20(22.22%). A person belongs to the middle-class category when his/her income ranges between BDT. 8000-20000 per month according to Bangladesh Bureau of Statistics (BBS).³⁰ Most of the subjects came from Dhaka metropolitan city and urban areas. In studies, they found most of the osteoarthritis patients are from middle class group followed by poor people which represents a common scenario.^{28,29} In the present study, the mean age of the patients of both sexes was 56.6±8.72 years. Most of the women (87.27%) are menopausal among the total 55 female patients. Age seems to be the strongest risk factors for radiographic and symptomatic hand osteoarthritis.^{9,10} The present study found that 18 subjects were engaged with manual activities (20%), while 13

patients (14.45%) had history of previous hand injuries. Among total patients, 22.22% had habit of smoking or previously smoker. Several studies mentioned about potential risk factors for OA of CMC joint of thumb include female sex, increasing age over 40, family history, age of menarche, menopausal status, obesity, heavy work causing pressure on the hands or occupations involving repetitive thumb use or recreation-related usage; prior hand injury, smoking, bone and cartilage mineralization factors, grip strength, and handedness also played roles.^{2,14-16} Most of the subjects (86.67%) are right hand dominant and 57.78% enrolled in this study showed priority affected CMC1 to the right hand, which was very similar to the findings of two other studies.^{24,31} 65(72.22%) patients showed that symptoms get exacerbated mostly by activities, followed by 15(16.66%) patients who are almost severely affected even had persistent symptoms in most of the day. On the other hand, most of the patients (75.55%) mentioned their getting relief of pain by taking NSAIDs, while 15.56% had some relief from rest/inactivity, 6.67% patients by heat and 2.22% by splinting. However, none of them got benefits from active joint movement. Sillem et al.²⁴ and Brosseau et al.³¹ mentioned that a larger group who used to take medications got relieved of symptoms.

CONCLUSION

From the results of the present study, it may be concluded that there are various risk factors for hand OA, which might have strong influence over the hand finger joints for prolonged period which might predispose for the development of hand OA. Housewives (homework activities), post-menopausal female gender age more than 51 years, smoking, ageing, low educational level, and previous hand trauma are also considered risk factors for the development of hand osteoarthritis. Further high-quality studies examining the risk factors for hand osteoarthritis are needed to replicate these findings and determine modifiable factors in symptomatic patients.

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