

ORIGINAL SCIENTIFIC PAPER  
UDC 616.724.4-002'073**RADIOLOGICALLY  
DEFINED  
OSTEOARTHRISIS IN  
THE FINGER JOINTS  
OF ADULT RESIDENTS  
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Degenerative changes in the finger joints were studied in 550 Zagreb inhabitants, above the age of 45. The sample was selected by the method of unproportional stratified choice according to age and sex. Radiographs of both hands were taken and osteoarthritis on the proximal and distal interphalangeal joints was graded according to the five-point Kellgren-Lawrence scale. Body weight, height and arterial blood pressure were measured and occupational work load was evaluated. The prevalence of osteoarthritis in the finger joints was significantly higher in women (40.9%) than in men (24.8%). It increased with age so that 18.7% of men and 15.0% of women aged 45-54 had finger osteoarthritis compared to 36.3% of men and 68.2% of women aged 75 and older. Distal interphalangeal joints were more often involved (22.8% of men and 37.9% of women) than the proximal ones (9.7% of men and 19.6% of women). The factors most closely associated with osteoarthritis were age and body weight. Occupational work load, as classified in this study, was not significantly related to the development of osteoarthritis, except in the group of housewives, in whom the prevalence of finger arthritis was greater than in the other groups of women.

*Key terms:*  
age, body weight, degenerative joint disease, sex, urban  
area

**D**egenerative joint disease, also called osteoarthritis, is a disease of unknown cause. It may occur locally or it may be generalized. Finger joints are the most commonly affected body parts, along with the knees, other hand joints, hips, feet and spine (1, 2). The principal involvement is in the distal interphalangeal joints (Heberden nodes). The familial, spontaneous type of Heberden nodes is mostly seen in women, whereas traumatic cases are more frequent in men (3, 4).

Epidemiological surveys have shown that the prevalence of osteoarthritis of most joint groups differs between populations (5-11). Although a great number

of studies are difficult to compare, they clearly point to several main risk factors which vary in different parts of the world: inheritance, age, trauma, obesity, abnormal biomechanics and alterations in joint shape. According to *Lawrence* (1), the involvement of the distal interphalangeal joints exceeds all other joints in older age groups.

In this study we report the prevalence of radiologically defined osteoarthritis of the finger joints in a population sample of 550 adult residents of Zagreb, and its relationship to age, sex, weight, height and occupational load. This is the first study in Croatia, performed in accordance with the international standards and it enables comparison of our results with those for other populations.

## SUBJECTS AND METHODS

The subjects in the study were 269 men and 281 women, Zagreb inhabitants, over the age of 45 who participated in the international study "The study on health care of the elderly in urban areas" coordinated by the World Health Organization. The sample was selected by the method of unproportional stratified choice according to age and sex. The study was conducted between 1981 and 1983. The information collected concerned previous medical history, rheumatic complaints and occupation. Any previous trauma or surgery which might have caused predisposition to osteoarthritis were noted. All subjects underwent examination of the musculoskeletal system, with special attention to the hand joints. Clinical signs of osteoarthritis in the fingers were defined by nodular swelling on the dorsal aspect or by periarticular enlargement on one or both lateral aspects of the distal interphalangeal and proximal interphalangeal joints or both. Body height, weight and blood pressure were measured. The relative body weight was calculated according to the formula:

$$\text{Relative body weight} = \frac{\text{absolute body weight}}{\text{ideal body weight}} \times 100$$

The ideal body weight (IBM) was calculated by Lorentz's formula (12), for men (M) and women (W) separately:

$$\text{IBWM} = \text{height} - 100 - \frac{(\text{height} - 150)}{4}$$

$$\text{IBWM} = \text{height} - 100 - \frac{(\text{height} - 150)}{2.5}$$

The subjects who had body weight more than 20% above the ideal body weight, were considered overweight. According to *Lawrence* (13), the subjects



were classified by diastolic blood pressure into three subgroups: those with diastolic blood pressure of 80 mmHg or lower, those with 81-100 mmHg and subjects with diastolic blood pressure above 100 mmHg.

In our population sample there was a small number of subjects holding jobs where fingers were expected to undergo a protracted, stereotyped overuse. Therefore the subjects were classified into three groups according to the general physical demand of their occupational work load. Workers with a higher physical demand, e.g. skilled and non-skilled workers and farmers were group 1, those with a lower physical demand, e.g. office clerks, technicians and intellectuals made group 2. In the two groups the retired subjects were grouped by the job they had performed before retirement. The third group included only housewives.

### **Radiographs**

A single radiograph of the posteroanterior view of both hands was taken, with an average exposure of 0.5 s, 43 kVp and 100 cm, focus film distance. The degree of osteoarthritis in individual joint was graded on a five point scale according to the standard of *Kellgren and Lawrence* (14): 0 = absence, 1 = doubtful, 2 = mild, 3 = moderate, 4 = severe.

Grades 2, 3 and 4 were considered to be a definite sign of the presence of osteoarthritis. Degenerative changes were graded on proximal and distal interphalangeal joints of both hands. The highest radiographic grade recorded on any individual finger joint in each joint group (proximal, distal, proximal+distal interphalangeal joints) was assumed to be the final assessment of osteoarthritis progression in that unit of observation.

Each film was examined independently by three readers. The interobserver agreement on the scores for the individual joints, determined by Friedman's test, was very high ( $P < 0.0001$ ). When one point of difference in grading occurred, the final score was taken to be the one determined by two readers. When there was a disagreement greater than one point between any of the readers, the film was reviewed by all the investigators until a final score was agreed upon.

The results are presented as unweighted mean prevalence. The weighted mean prevalence was also calculated based on the age distribution of men and women in Croatia according to the 1981 population census.

### **Statistics**

The differences in the prevalence of osteoarthritis between men and women, between the right and left hands as well as between subsequent age groups, were tested by means of the t-test for proportions.

The differences in the prevalence of osteoarthritis grades and between men and women, were calculated using the standard chi-squared test. The same test was applied to compare the prevalence of osteoarthritis in groups with different occupational work load.

The relationship between body weight, height, diastolic blood pressure and the grades of degenerative changes in the finger joints was determined by correlation analysis. The value  $P < 0.05$  was considered to be significant.

## RESULTS

A total of 550 subjects participated in the study (Table 1). The mean age ( $\bar{X} \pm SD$ ) was  $62.9 \pm 10.2$  years for men and  $64.1 \pm 10.7$  for women. Height was normally distributed in men ( $171.1 \pm 6.37$  cm) and in women ( $158.4 \pm 6.44$ ). Considering the relative body weight, 64.3% of men and 69.0% of women were overweight.

Table 1 The study sample of Zagreb population according to sex and age

| Age group (years) | Men |        | Women |        |
|-------------------|-----|--------|-------|--------|
|                   | n   | (%)    | n     | (%)    |
| 45-54             | 75  | (27.9) | 69    | (24.6) |
| 55-64             | 69  | (25.7) | 75    | (26.8) |
| 65-74             | 82  | (30.5) | 84    | (29.6) |
| 75+               | 43  | (16.0) | 53    | (18.9) |
| Total             | 269 |        | 281   |        |

Diastolic blood pressure of 81-100 mmHg was present in 63.2% of men and 64.8% of women; diastolic pressure above 100 mmHg was found in 21.9% of men and 20.3% of women.

The association between degenerative changes of finger joints and occupational work load is shown in Table 2. According to the occupational work load, the majority of men (56.1%) had occupations with higher physical demand, whereas most women (38.1%) were housewives.

Table 2 Percentage of men and women according to occupational work load and radiological signs of osteoarthritis (OA) of finger joints

| OA Grade | Occupational work load (%) |                       |                      |                       |            |
|----------|----------------------------|-----------------------|----------------------|-----------------------|------------|
|          | Higher                     |                       | Lower                |                       | Housewives |
|          | Men<br>n=151* (56%)        | Women<br>n=83 (29.5%) | Men<br>n=118 (43.9%) | Women<br>n=91 (32.4%) |            |
| 0        | 36.4                       | 33.7                  | 39.0                 | 25.2                  | 15.9       |
| 1        | 32.5                       | 24.2                  | 28.8                 | 33.0                  | 27.1       |
| 2        | 22.5                       | 28.9                  | 22.0                 | 33.0                  | 36.4       |
| 3        | 7.9                        | 9.6                   | 8.5                  | 6.6                   | 14.1       |
| 4        | 0.7                        | -                     | 1.7                  | -                     | -          |

Comparing housewives to women with occupational work load  $\chi^2 = 35.221$   $P < 0.001$   
 \* $P < 0.001$  men vs women (t-test)



The rate of osteoarthritis prevalence among men and women who held jobs with heavier physical demands was not elevated. The only significant finding was a greater prevalence of osteoarthritis of the finger joints in housewives.

The prevalence rates of osteoarthritis for finger joints, proximal interphalangeal joints (PIP) and distal interphalangeal joints (DIP) according to the grade and sex, separately for the left and right hands are presented in Table 3. Definite radiological signs of osteoarthritis (grades 2-4) on the proximal interphalangeal joints were present in 9.7% of men and 19.6% of women ( $P < 0.0001$ ). On the distal interphalangeal joints, the prevalence rate was 22.8% in men and 37.9% in women ( $P < 0.0001$ ). Only in women the right hand was significantly more involved with osteoarthritis on proximal interphalangeal joints ( $P < 0.05$ ) as well as on distal interphalangeal joints ( $P < 0.05$ ). The observed difference between the sexes was statistically significant. Arthritis of the finger joints of both hands was more frequent among women than among men.

Table 3 Distribution of radiological osteoarthritis (OA) of finger joints (PIP and DIP), proximal interphalangeal (PIP) and distal interphalangeal joints (DIP) in Zagreb sample (subjects older than 45), by sex and handedness

| OA Grade                                    | Finger joints (PIP + DIP) |        |       |   |      |        |       |        |  |
|---|---------------------------|--------|-------|---|------|--------|-------|--------|--|
|   | Right                     |        |       |   | Left |        |       |        |  |
|   | Men                       |        | Women |   | Men  |        | Women |        |  |
|   | n                         | (%)    | n     | (%)   | n    | (%)    | n     | (%)    |  |
| 0   | 122                       | (45.4) | 66    | (23.5)                                      | 120  | (44.6) | 81    | (28.8) |  |
| 1   | 79                        | (29.4) | 86    | (30.6)                                      | 84   | (31.2) | 99    | (35.2) |  |
| 2   | 53                        | (19.7) | 96    | (34.2)                                      | 44   | (16.4) | 72    | (25.6) |  |
| 3   | 12                        | (4.5)  | 24    | (8.5)                                       | 20   | (7.4)  | 20    | (7.1)  |  |
| 4   | 3                         | (1.1)  | 9     | (3.2)                                       | 1    | (0.4)  | 9     | (3.2)  |  |
| men vs women $\chi^2 = 36.143$ $P < 0.0001$ |                           |        |       | men vs women $\chi^2 = 21.704$ $P < 0.001$  |      |        |       |        |  |
| Proximal interphalangeal joints (PIP)       |                           |        |       |   |      |        |       |        |  |
| 0   | 191                       | (71.0) | 140   | (49.7)                                      | 140  | (49.7) | 151   | (53.7) |  |
| 1   | 50                        | (18.6) | 76    | (21.1)                                      | 76   | (21.1) | 85    | (30.3) |  |
| 2   | 24                        | (8.9)  | 57    | (20.3)                                      | 57   | (20.3) | 40    | (14.2) |  |
| 3   | 3                         | (1.1)  | 6     | (2.1)                                       | 6    | (2.1)  | 3     | (1.1)  |  |
| 4   | 1                         | (0.4)  | 2     | (0.7)                                       | 2    | (0.7)  | 2     | (0.7)  |  |
| men vs women $\chi^2 = 25.752$ $P < 0.0001$ |                           |        |       | men vs women $\chi^2 = 20.385$ $P < 0.0001$ |      |        |       |        |  |
| Distal interphalangeal joints (DIP)         |                           |        |       |   |      |        |       |        |  |
| 0   | 127                       | (47.2) | 123   | (45.6)                                      | 71   | (25.3) | 85    | (30.2) |  |
| 1   | 83                        | (30.9) | 83    | (30.8)                                      | 90   | (32.0) | 103   | (36.7) |  |
| 2   | 48                        | (17.9) | 43    | (16.1)                                      | 90   | (32.0) | 64    | (22.7) |  |
| 3   | 9                         | (3.3)  | 19    | (7.1)                                       | 23   | (8.2)  | 20    | (7.2)  |  |
| 4   | 2                         | (0.7)  | 1     | (0.4)                                       | 7    | (2.5)  | 9     | (3.2)  |  |
| men vs women $\chi^2 = 37.563$ $P < 0.0001$ |                           |        |       | men vs women $\chi^2 = 19.387$ $P < 0.001$  |      |        |       |        |  |

Probability of difference in proportion of OA grade 2-4 between right and left DIP in women:  $P < 0.05$

Table 4 shows age and sex specific prevalences of definitive radiographic signs of osteoarthritis (grades 2-4) on the fingers of the right and left hands, in 10-year age groups. For the youngest age category, the percentage of female subjects with osteoarthritis of the fingers of both hands, was slightly, but not significantly lower than that for males. Among older subjects, women had significantly more arthrotic changes of the finger joints. The percentage of male subjects with finger osteoarthritis increased from 18.7% for those aged 45-54 years to 36.3% for those aged 75 years and older, but this difference was not statistically significant. Comparing the same age groups in females, the respective percentages were 15.0 and 68.2%, and this difference was highly significant ( $P < 0.0001$ ). Osteoarthritis of the fingers was more common on the right hand than on the left, but this difference was significant only in women ( $P < 0.05$ ).

Table 4 Definitive radiological evidence of osteoarthritis (grades 2-4) of the right and left finger joints by age and sex

| Sex   | Finger joints | Age group (years) |                     |       |                     |       |                     |     |                     |
|-------|---------------|-------------------|---------------------|-------|---------------------|-------|---------------------|-----|---------------------|
|       |               | 45-54             |                     | 55-64 |                     | 65-74 |                     | 75+ |                     |
|       |               | n                 | (%)                 | n     | (%)                 | n     | (%)                 | n   | (%)                 |
| Men   | Right         | 15                | (20.0)              | 20    | (29.0) <sup>a</sup> | 18    | (22.0) <sup>d</sup> | 15  | (34.9) <sup>e</sup> |
|       | Left          | 13                | (17.3)              | 18    | (26.1)              | 18    | (22.0) <sup>c</sup> | 16  | (17.7) <sup>c</sup> |
| Women | Right         | 12                | (17.1) <sub>y</sub> | 37    | (49.3)              | 43    | (51.8) <sub>v</sub> | 37  | (69.8)              |
|       | Left          | 9                 | (12.9) <sub>v</sub> | 22    | (28.3) <sub>y</sub> | 40    | (48.2)              | 30  | (56.6)              |

t-test: <sup>a</sup>P < 0.05, <sup>c</sup>P < 0.001, <sup>d</sup>P < 0.0001  
man vs women of the same age group

t-test: <sup>v</sup>P < 0.05, <sup>y</sup>P < 0.0001  
comparing an age group to the subsequent one

The number of finger joints affected by osteoarthritis increased with age on both hands in men and women alike (Table 5). The percentage of women with 3-5 and with 6-10 affected finger joints increased significantly, from 2.9% among those aged 45-54 years to 16.4% among those aged 65-74 years. However, the differences between the same age groups in men were not statistically significant.



Table 5 Distribution of men and women by the number of osteoarthritis (OA) affected finger joints by age groups

|       | Age group (years) | n  | Number of OA affected finger joints |                   |                  |                  |      |
|-------|-------------------|----|-------------------------------------|-------------------|------------------|------------------|------|
|       |                   |    | 0                                   | 1-2               | 3-5              | 6-10             | 11+  |
| Men   | 45-54             | 85 | 71.8                                | 17.6              | 8.2              | 2.4              | -    |
|       | 55-64             | 65 | 61.5                                | 21.5              | 7.7              | 6.2              | 3.1  |
|       | 65-74             | 80 | 55.0 <sup>c</sup>                   | 27.5              | 11.3             | 3.7 <sup>b</sup> | 2.5  |
|       | 75+               | 39 | 56.4 <sup>d</sup>                   | 20.5              | 10.3             | 5.1 <sup>a</sup> | 7.7  |
| Women | 45-54             | 70 | 75.7                                | 18.5 <sub>z</sub> | 2.9 <sub>z</sub> | 2.9 <sub>x</sub> | -    |
|       | 55-64             | 76 | 50.0                                | 27.6              | 11.8             | 7.9              | 2.7  |
|       | 65-74             | 82 | 29.3                                | 35.3              | 15.9             | 16.9             | 2.6  |
|       | 75+               | 53 | 16.9                                | 33.9              | 18.9             | 18.9             | 11.4 |

t-test: <sup>a</sup>P < 0.05, <sup>b</sup>P < 0.01, <sup>c</sup>P < 0.001, <sup>d</sup>P < 0.0001  
 men vs women of the same age group

t-test: <sub>z</sub>P < 0.05, <sub>x</sub>P < 0.0001

comparing the youngest age group (45-54) to the oldest age group (65-74) of the same sex

As shown in Table 6, the smallest number of men and women had only radiological signs of finger osteoarthritis. The majority of men (42.5%) only had clinical signs of the disease, while an almost equal number of women had either only clinical signs (28.5%) or both clinical and radiological signs (31.3%). There was a significant difference in the frequency of clinical symptoms between those with grade 0 (66.7%) and those with grade 1 (75.3%), (P<0.01) and also between those with grade 0 and those with grades 2-4 (82.9%), (P<0.001).

Table 6 Distribution of clinical and radiological signs of osteoarthritis (OA) of finger joints in men and women

| OA signs                  | Men |                     | Women |        |
|---------------------------|-----|---------------------|-------|--------|
|                           | n   | (%)                 | n     | (%)    |
| Clinical                  | 141 | (42.5) <sup>c</sup> | 80    | (28.5) |
| Radiological              | 13  | (4.7) <sup>a</sup>  | 27    | (9.6)  |
| Clinical and radiological | 54  | (20.1) <sup>b</sup> | 88    | (31.3) |
| None                      | 88  | (32.7)              | 86    | (30.6) |

t-test: <sup>a</sup>P < 0.05, <sup>b</sup>P < 0.001, <sup>c</sup>P < 0.0001 men vs women

There was a significant, weak to moderate, relationship between the osteoarthritis of the finger joints and age (r=0.591, P<0.0001), relative body

weight ( $r = 0.262$ ,  $P < 0.01$ ) and height ( $r = 0.429$ ,  $P < 0.0001$ ). The coefficient of partial correlation showed that the relationship between body height and osteoarthritis of the fingers ceased to be significant, after the influence of age had been excluded ( $r = 0.1616$ ).

There was no evidence of either positive or negative relationship between diastolic blood pressure and osteoarthritis of the finger joints.

## DISCUSSION

Radiological evidence of the osteoarthritis of the finger joints in the urban Croatian population, aged 45 years and older, expressed as "unweighted mean prevalence" was 24.8% in men and 32.9% in women. The values for the "weighted mean prevalence" were similar i.e. 24.2 and 29.3% for men and women respectively. The rates of osteoarthritis prevalence obtained in this study were higher than in those reported by *Lawrence and co-workers* (5) and *Butler and co-workers* (15), which were carried out in the sixties, and similar to those found in the *Zoetermeer survey* (6) and *Göteborg study* (16), which took place in the late seventies and eighties. However, the differences in the prevalence of osteoarthritis between populations may be attributed also to genetic or environmental factors or to both, as well as to the interobserver differences, that is to different criteria used to establish radiological osteoarthritis.

The osteoarthritis of the fingers was noted to be more common in men in younger age groups, showing an increased prevalence with age for both sexes. Among older subjects the prevalence was higher in women than in men. This pattern was similar to that reported by *Butler and co-workers* (15) and *Acheson and co-workers* (7).

Earlier studies, our own and those of other authors, (5, 6, 8, 15, 17, 18) showed an increasing prevalence of radiological osteoarthritis with age, up to at least 75 years. A study (19) which included two age groups of elderly people from Göteborg, aged 70 and 79 years, had revealed an increase in the osteoarthritis hand prevalence in the older group. However, a later study in the same subjects (16) failed to show increase in radiological or clinical signs of hand osteoarthritis from the 79- to the 85-year-old group. These data indicate that in the very old the increasing age does not necessarily lead to a higher osteoarthritis prevalence. We found an increasing prevalence of finger osteoarthritis in subsequent age groups, including the two oldest ones, but these differences were not statistically significant. The number of finger joints affected with osteoarthritis also increased with age for both sexes, as reported earlier by *Butler and co-workers* in the *Tecumseh (Michigan) study* (15).

In both men and women significantly fewer joints from the proximal interphalangeal group were affected than from the distal interphalangeal one; the finding is in agreement with those reported by others (5, 7, 15). Among younger



individuals, osteoarthritis was mostly located in the distal interphalangeal joints, whereas among the older both the proximal and the distal interphalangeal joints were involved, as was also reported by *Butler and co-workers* (15).

Occupational physical activity and joint injury, which may be risk factors for osteoarthritis, have not been significantly associated with the development of finger osteoarthritis in this study. However, a general conclusion is limited by the fact that a small number of subjects with occupations demanding protracted overuse of hand joints were included in the study. The only significant finding was a greater prevalence of osteoarthritis on the fingers among housewives. According to *Acheson and co-workers* (7) it seems that a minor repeated trauma plays an important role in the development of osteoarthritis.

Clinical signs of degenerative joint disease in this study were recognized before radiographic signs in 66.7% of the subjects. According to *Bagge and co-workers*, however, in a population sample aged 79 and 85 years, there were 50% of those with radiological changes but no clinical signs of osteoarthritis (16). It was found earlier that hands and knees (5, 15) were the most frequent sites of pain. In our population sample, among those with radiological signs of osteoarthritis, pain and stiffness were commoner with women which is in accordance with the results of *Lawrence and co-workers* (5) and *Acheson and co-workers* (7).

It is evident that the pattern of osteoarthritis in the finger joints of the adult participants of the Zagreb study in the 1981-1983 period was similar to that reported by *Lawrence and co-workers* (5), *Butler and co-workers* (15) and *Acheson and co-workers* (7).

Some authors (20, 21) have shown a relationship between obesity and osteoarthritis of the weight-bearing joints. In a study of hand osteoarthritis such positive relationship has also been found (22). We have found that obesity bears a certain influence on finger osteoarthritis, which appears to be somewhat stronger in women than in men.

Since the prevalence of osteoarthritis increases with age, the association between height and finger osteoarthritis, found in this study, is an indirect one i.e. it is the consequence of a significant relationship between height and age.

*Lawrence* (23) pointed to a relationship between increasing diastolic pressure and osteoarthritis. That association has neither been confirmed in this study nor in another recent study (24).

The data in this study are based on a cross-sectional examination. Further data on the incidence of the disease are required which may enable a deeper insight into its aetiology.

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## REFERENCES

1. *Lawrence JS*. Rheumatism in populations. London: W. Heinemann Medical Books Ltd, 1977;98-155.
2. *Felson DT*. Osteoarthritis. *Epidemiol Rheum Dis* 1990;16:499-512.
3. *Stecher RM*. Heberden nodes, a clinical description. *Ann Rheum Dis* 1955;14:1-15.
4. *Peyron JG*. Epidemiologic and etiologic approach of osteoarthritis. *Semin Arthritis Rheum* 1979;8:288-303.
5. *Lawrence JS, Bremner WM, Bier F*. Osteoarthritis. Prevalence in the population and relationship between symptoms and X-rays changes. *Ann Rheum Dis* 1966;25:124.
6. *Van Saase JLCM, van Romunde LKJ, Cats A, Vandenbroucke JP, Valkenburg HA*. Epidemiology of osteoarthritis: Zoetermeer survey. Comparison of radiological osteoarthritis in a Dutch population with that in 10 other populations. *Ann Rheum Dis* 1989;48:271-80.
7. *Acheson RM, Chan VK, Clement AR*. New Haven survey of joint diseases XII. Distribution and symptoms of osteoarthritis in the hands with reference to handedness. *Ann Rheum Dis* 1970;29:275-85.
8. *Bremner JM, Lawrence JS, Miall WE*. Degenerative joint diseases in Jamaican rural population. *Ann Rheum Dis* 1968;27:332-62.
9. *Solomon L, Beighton P, Lawrence JS*. Osteoarthritis in rural South African Negro population. *Ann Rheum Dis* 1976;32:274-8.
10. *Shickikawa K, Mayeda A, Komatsubara V, Orthara M, Taniguchi A*. Rheumatic complaints in an urban and rural population in Osaka. *Ann Rheum Dis* 1966;25:25-31.
11. *Lee P, Kelewa A, Smythe HA, Bombardier C, Goldsmith CH*. Epidemiology of musculoskeletal disorders (complaints) and related disability in Canada. *J Rheumatol* 1985;12:169-73.
12. *Lorentz FH*. Körpermessungen und Konstitutionsindex. In: *Sporthygiene, zweite auflage*. Berlin: Springer, 1931;135-61.
13. *Lawrence JS*. Rheumatism in cotton operatives. *Br J Ind Med* 1961;18:270.
14. *Kellgren JH, Lawrence JS*. Radiological assessment of osteoarthritis. *Ann Rheum Dis* 1957;16:494-501.
15. *Butler WJ, Hawthorne VM, Mikkelsen WM, et al*. Prevalence of radiologically defined osteoarthritis in the finger and wrist joints of adult residents of Tecumseh, Michigan 1962-65. *J Clin Epidemiol* 1988;41(5):467-73.
16. *Bagge E, Bjelle A, Eden S, Svanborg A*. Osteoarthritis in the elderly: clinical and radiological findings in 79 and 85 year olds. *Ann Rheum Dis* 1991;50:535-9.
17. *Allander E*. Prevalence, incidence and remission rates of some common rheumatic diseases and syndromes. *Scand J Rheumatol* 1974;3:145-53.
18. *Plato CC, Norris AH*. Osteoarthritis of the hand: longitudinal studies. *Am J Epidemiol* 1979;10:740-6.
19. *Bergstrom G, Bjelle A, Sundh V, Svanborg A*. Joint disorders at ages 70, 75 and 79 years a cross sectional comparison. *Br J Rheumatol* 1986;25:333-41.
20. *Leach RE, Baumgard S, Broom J*. Obesity. Its relationship with osteoarthritis of the knee. *Clin Orthop* 1973;93:271-6.
21. *Hatz AJ, Fisher ME, Bril J*. The association of obesity with joint pain and osteoarthritis in the HANES data. *J Chron Dis* 1986;39:311-9.
22. *Engel A*. Osteoarthritis and body measurements. Rockville, MD: National Center for Health Statistics 1968 (Series 11, no. 29, PHS publication no. 1999).
23. *Lawrence JS*. Hypertension in relation to musculoskeletal disorders. *Ann Rheum Dis* 1975;34:451-6.
24. *Davis MA, Ettinger WM, Neuhaus JM*. The role of metabolic factors and blood pressure in the association of obesity with osteoarthritis of the knee. *J Rheumatol* 1988;15:1827-32.



**Sažetak**

**RADIOLOŠKO ODREĐIVANJE OSTEOARTROZE ZGLOBOVA  
PRSTIJU ŠAKA U STARIJOJ POPULACIJI GRADA ZAGREBA**

U istraživanju je sudjelovalo 550 ispitanika starije populacije grada Zagreba: 269 muškaraca i 281 žena u dobi iznad 45 godina. Uzorak ispitanika odabran je metodom neproporcionalnog stratificiranog izbora prema dobi i spolu. Ispitanicima je uzeta iscrpna anamneza, rendgenski su snimljene obje šake u AP projekciji, izmjerena je tjelesna visina, težina i arterijski tlak. Degenerativne promjene zglobova stupnjavane su prema međunarodno prihvaćenoj Kellgren-Lawrenceovoj klasifikaciji, koju i Svjetska zdravstvena organizacija preporučuje za epidemiološke studije osteoartrize. Prema kriterijima ove klasifikacije degenerativne promjene svrstavaju se u četiri stupnja. Prvi stupanj odnosi se na zglobove s mogućim znakovima degenerativnih promjena, a stupnjevi 2, 3 i 4 na zglobove sa sigurnim znakovima ovih promjena. Degenerativne promjene očitovale su se na proksimalnim i distalnim interfalangealnim zglobovima desne i lijeve šake. Za konačnu ocjenu za svakog je ispitanika uzet najveći utvrđeni stupanj degenerativnih promjena na nekom od tih zglobova. U evaluaciji radiografija sudjelovala su tri čitača.

Prevalencija degenerativne bolesti zglobova prstiju šaka je u nas, kao i u drugim populacijama, viša u žena (40,9%) nego u muškaraca (24,8%). U mladih ispitanika bolest je češća u muškaraca (18,7% muškaraca i 15,0% žena, u dobi od 45-54 godine), dok je među starijim ispitanicima prevalencija artroze prstiju šaka viša u žena u odnosu prema muškarcima (36,3% muškaraca i 68,2% žena starijih od 75 godina). Distalni interfalangealni zglobovi češće su zahvaćeni artrozom (22,8% u muškaraca i 37,9% u žena), u odnosu na proksimalne interfalangealne zglobove (9,7% u muškaraca i 19,6% u žena). Utvrđeno je da je artroza prstiju šaka najviše povezana sa životnom dobi i tjelesnom težinom. Nije nađena značajna povezanost zanimanja s pojavom artroze na prstima, osim u skupini domaćica, u kojih je nađena veća učestalost artroze na prstima nego u drugim zanimanjima.

*Ključne riječi:*

degenerativna bolest zglobova, dob, gradsko područje, spol, tjelesna težina

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