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Impact of Osteoarthritis on Patients' Work in Guinea

Aly Badra Kamissoko[1], Mamadou Lamine Diallo[1], Adama Bah[1], Salif Diakite[1], Abèni Faouziyath Yaya[2], Douin Flore Tia[1], Aboubacar Sidiki Conde[1], Marie Traore[1], Abdoulaye Barry[1], Kaba Conde[1], Owonayo Oniankitan[3]

[1]Department of Rheumatology, Ignace Deen University Hospital, Conakry, Guinea
[2]Departement of Cardiology, Yalgado Ouedraogo University Hospital, Ouagadougou, Burkina Faso
[3]Department of Rheumatology, Sylvanus Olympio University Hospital, Lome, Togo
Email: drkamissoko@ymail.com

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Abstract

Introduction: Osteoarthritis is one of the leading causes of disability in adults. It leads to decreased work productivity in patients' professional activities. **Objective:** Describe the impact of osteoarthritis on the work of affected patients. **Patients and Methods:** Cross-sectional study from 01/09/22 to 28/02/23 at the rheumatology department of Ignace Deen University Hospital (Conakry). Patients with osteoarthritis diagnosed based on clinical and paraclinical arguments in accordance with the ACR diagnostic criteria and those of Kellgren and Lawrence were included. We did not include patients with pathologies that could affect work (heart failure, respiratory failure, neurological deficit). Work difficulties in osteoarthritis patients were assessed using the Work Productivity and Activity Impairment questionnaire. For association, the significance threshold was set at 5%. **Results:** We collected 365 osteoarthritis patients out of 1546, representing a frequency of 23.6%. The average age of patients was 50.7 ± 6.45 years, with a female predominance (54.2%). Housewives were the most affected socio-professional group. The site of osteoarthritis was mainly in the lumbar spine (43%) and the knee (32.4%). Presenteeism (72%) represented the main source of work incapacity. Osteoarthritis significantly led to absenteeism, presenteeism, overall loss of productivity, and activity impairment in patients. **Conclusion:** Osteoarthritis had an impact on patients' work through absenteeism and presenteeism, requiring collaboration between rheumatologists and occupational physicians. There is a statistically significant association between the site of osteoarthritis and presenteeism ($p = 0.001$), between osteoarthritis and overall productivity loss ($p = 0.008$), and between osteoarthritis and activity limitations ($p = 0.005$).

Keywords

Osteoarthritis, Work, Absenteeism, Presenteeism, Guinea

1. Introduction

Osteoarthritis represents a public health problem worldwide affecting more than half of the population over 65 years of age and being one of the leading causes of disability in adults [1]. The main symptom is pain and limitation of joint function, often significantly impacting patients' quality of life [2].

Although it is considered a disease of the elderly, studies report that osteoarthritis also affects young adults, and estimates of its prevalence vary, as some authors study radiological osteoarthritis and others study symptomatic osteoarthritis [3] [4]. The impact of osteoarthritis on participation in work is significant and will likely increase with the rising prevalence of osteoarthritis and the aging of the working population [5].

Since work is an important aspect of life, the difficulties experienced by workers due to osteoarthritis are significantly greater in people with osteoarthritis than in those without [6]. Unlike inflammatory rheumatic diseases, information on work disability in degenerative rheumatic diseases is scarce, and some authors have reported work limitations, sick leave, and reduced productivity in people with osteoarthritis [7]-[9].

In Guinea, studies on osteoarthritis are primarily epidemiological and diagnostic; however, those focusing on the impact of osteoarthritis are very rare [10] [11]. The authors of this study aimed to assess the work-related difficulties experienced by patients with osteoarthritis in the rheumatology department in Guinea.

2. Patients and Methods

This was a cross-sectional descriptive and analytical study lasting 6 months from 01/09/22 to 28/02/23 carried out in the rheumatology department of the Ignace Deen University Hospital in Conakry (Guinea). The study involved all patients with osteoarthritis who agreed to respond to our questionnaire. Osteoarthritis (axial or peripheral) was diagnosed based on clinical, biological, and radiographic arguments aided by the classifications of the American College of Rheumatology (ACR) and those of Kellgren and Lawrence [12] [13]. Work-related difficulties were assessed using the Work Productivity and Activity Impairment (WPAI) questionnaire [14]. This questionnaire measures deficiencies in paid and unpaid work. It measures the following elements:

- Absenteeism (percentage of work time missed due to health conditions over the past 7 days)
- Presenteeism (percentage of impairment suffered at work due to health conditions over the past 7 days)

- Overall loss of work productivity (an overall estimate of impairment that is a combination of absenteeism and presenteeism)
- Activity impairment (percentage of disability in daily activities due to health conditions over the past 7 days).

The WPAI consists of six questions:

- 1: Currently employed.
- 2: Hours missed due to health problems.
- 3: Hours missed for other reasons.
- 4: Hours actually worked.
- 5: Degree of impact of health on productivity during work (using a visual analogue scale from 0 to 10).
- 6: Degree of productivity affected by health in regular unpaid activities.

Four main results can be generated from the WPAI and expressed as percentages by multiplying the following scores by 100:

1) Percentage of work time missed due to health reasons: Q2/(Q2 + Q4) for those who were currently employed;

2) Percentage of disability during work due to health reasons = Q5/10 for those who were currently employed and actually worked in the past seven days;

3) Overall percentage of work disability due to health reasons: Q2/(Q2 + Q4) + ((1 − Q2/(Q2 + Q4)) × (Q5/10)) for those who were currently employed;

4) Percentage of decrease in activity due to health reasons: Q6/10 for all respondents.

For those who were absent from work and did not actually work in the past seven days, the overall percentage of work disability due to health reasons will be equal to the percentage of work time missed due to health reasons.

2.1. Data Analysis

Data entered from the KoboCollect application were exported as an Excel file and analysed using SPSS version 21. Results were presented in tables. Proportions were calculated for qualitative variables. Quantitative variables were expressed as medians, means, and standard deviations. To determine whether there was a relationship between qualitative variables, we used the Chi-square test. To determine the association between the location of osteoarthritis (exposure variable) and each different types of work-related difficulties including absenteeism, presenteeism, overall loss of work productivity, and activity impairment (dependent variable), we used a separate univariate logistic regression for each dependent variable. The significance level was 5%; a p-value < 0.05 was considered statistically significant.

2.2. Ethical Considerations

The protocol had been submitted and approved by a medical college at the Ignace Deen University Hospital in Conakry. The information has been collected and processed confidentially with strict compliance with ethics.

This study was approved by the Health Research Ethics Committee (CNERS)

via Decree No. D/218/PRG/SGG dated June 2, 2023. We report no conflicts of interest.

3. Results

A total of 1546 patients were seen in rheumatology practice; 471 patients (30.4%) suffered from osteoarthritis. One hundred and six patients (6.77%) could not be included in the study. Forty-nine patients declined to participate, and 57 patients had other chronic conditions that could affect the osteoarthritis (heart failure, neurological deficit, respiratory failure, or a history of recent trauma); ultimately, 351 patients (22.7%) were included in the study. Some presented with osteoarthritis in two or more locations; consequently, we recorded 365 cases of osteoarthritis. Fifty-four percent of them were women. The mean age of patients was 50.7 ± 6.5 years. Patients were housewives in 23.8% of cases, shopkeepers (20%), manual workers (19.5%), farmers (17.5%), and civil servants (13.4%) (Table 1). Osteoarthritis was mainly located in the lumbar spine in 43% of cases, the knees in 32.4% of cases, and the hips in 10.4% of patients (Table 2). 71.7% of these osteoarthritis patients were overweight or obese. Pain was mild to moderate in 62.9% of osteoarthritis patients, and severe to very severe in 36.8%. Presenteeism was observed in 263 (72%) patients, followed by Overall loss of work productivity in 95 (26%) patients with 12.6 ± 4.7 hours per week lost at work (Table 3). There is a statistically significant association between the site of osteoarthritis and presenteeism (p = 0.001), between osteoarthritis and overall productivity loss (p = 0.008), and between osteoarthritis and activity limitations (p = 0.005) (Table 4). The WPAI (Work productivity and activity impairment) questionnaire found that over a working week, osteoarthritis patients:

- missed 12.6 ± 4.7 hours of work, with a range of 17 and 2 hours
- worked an average of 30.2 ± 17.1 hours of work, with a range of 35 and 10 hours

Thus, absenteeism was found in 26% of osteoarthritis patients, presenteeism in 72%, overall loss of work productivity in 24.9%, and activity impairment in 29.9% (Table 3).

Regardless of the site of osteoarthritis, the risk of presenteeism was multiplied by 5, mainly in knee osteoarthritis and cervical osteoarthritis (p-value = 0.001) (Table 4).

Similarly, regardless of the site of osteoarthritis, the overall loss of productivity was multiplied by 3, mainly in cervical osteoarthritis and lumbar spine degenerative disease (p-value = 0.008) (Table 4).

4. Discussion

The study was conducted in the country's only rheumatology department, making it a major magnet for patients with rheumatic diseases. Hospital recruitment does not allow for extrapolation of the results to the general population. In addition to this bias, the failure of some patients to keep follow-up appointments forced us to

Table 1. Distribution of patients according to sociodemographic characteristics.

	Number	Percentage
Frequency		
Osteoarthritis without work-related difficulties	1181	76.4
Osteoarthritis with work-related difficulties	365	23.6
Sex		
Female	197	54.2
Male	167	41.9
Age groups		
30 - 39 years	9	2.5
40 - 49 years	157	41.9
50 - 59 years	171	46.8
60 - 69 years	32	8.8
Marital status		
Married	222	60.8
Widowed	60	12.9
Divorced	47	16.4
Single	36	9.9
Education level		
Secondary	159	43.6
Tertiary	121	33.2
Not in School	50	13.7
Primary	35	9.6
Occupations		
Housewife	87	23.8
Shopkeeper	73	20
Farmer	64	17.5
Laborer	51	13.9
Administrative Officer	49	13.4
Teacher	21	5.8
Tailor	10	2.7
Security Officer	6	1.6
Health worker	4	1.1
Total	365	100

Age (mean ± standard deviation): 50.71 ± 6.5 years.

Table 2. Distribution of patients according to the clinical characteristics of osteoarthritis.

	Number	Percentage
History and conditions		
High blood pressure	139	38.1
Gastroduodenal Ulcer	107	29.3
Diabetes	83	22.7
Notion of trauma	62	17
Pain intensity (VAS)		
Mild pain	50	13.6
Moderate pain	180	49.4
Severe pain	100	27.4
Extremely severe pain	35	9.6
Radiographic signs		
Elective pinching	332	91
Osteophytes	322	88.2
Osteocondensation	176	48.2
Geodes	36	9.8
Location of osteoarthritis Axial		
Lumbar osteoarthritis	159	43
Cervical osteoarthritis	18	4.9
Back osteoarthritis	2	0.5
Peripheral		
knee osteoarthritis	118	32.4
Coxarthrosis	38	10.4
Omarthrosis	29	7.9
Digital osteoarthritis	1	0.3
Total	351	100

Table 3. Distribution of patients according to different types of work difficulties.

	Number	Percentage
Absenteeism	95	26
Presenteeism	263	72
Overall loss of work productivity	91	24.9
Activity impairment	109	29.9

Table 4. Association between different types of work-related difficulties and the location of osteoarthritis.

	Absenteeism (N = 95)	Presenteeism (N = 263)	Overall loss of work productivity (N = 91)	Activity impairment (N = 109)
Knee osteoarthritis	7 (7.3%)	94 (35.7%)	35 (23.8%)	65 (59.6%)
Lumbar osteoarthritis	50 (52.6%)	107 (40.6%)	25 (42.8%)	23 (21.1%)
Coxarthrosis	19 (20%)	17 (6.4%)	11 (14.3%)	17 (15.6%)
Omarthrosis	14 (14.7%)	16 (6%)	8 (4.8%)	2 (1.8%)
Cervicarthrosis	05 (5.2%)	30 (11.4%)	12 (14.3%)	2 (1.8%)
p-value	**0.064**	**0.001**	**0.008**	**0.005**
OR	**1.6 (0.64 - 7.35)**	**4.7 (3.58 - 9.22)**	**3.1 (3.02 - 6.13)**	**1.39 (1.05 - 3.27)**

exclude them from the study. Nevertheless, the results we obtained allowed us to assess the work-related difficulties of patients with osteoarthritis.

The female predominance of osteoarthritis in our study has been found in several African studies, including those by Condé *et al.* in Guinea (sex ratio: 0.4) and Nzambi *et al.* in Congo (sex ratio: 0.8) [10] [15]. This female predominance could be explained by menopause, excess weight, and the housework to which women are exposed.

The average age of the patients was comparable to the data from Ken *et al.* [16] in Japan (54.2 ± 12.2) and Condé *et al.* in Guinea (59.32 ± 10.96). This could be related to the fact that aging is a predictive factor for osteoarthritis [10].

By performing a bivariate analysis between the different types of work-related difficulties and the location of osteoarthritis, the statistically significant elements were presenteeism and overall loss of work productivity, with p-values of 0.001 and 0.008, respectively. In their study on the occupational consequences of osteoarthritis, Rat A-C *et al.* found that loss of productivity was statistically associated with osteoarthritis [17]. The presenteeism reported in our study is likely due to the worker's persistence despite health problems (pain and disability), at the risk of being replaced or losing their job.

The majority of our patients were obese. This result was consistent with the literature in which obesity is the main direct mechanical risk factor due to the consequences it causes on bones and joints, and constitutes a basis for the occurrence of osteoarthritis [18].

The site of osteoarthritis was mainly located in the lumbar spine degenerative (43%) disease and then in the knee (32.4%). Our results are similar to those of Ndao AC in Senegal (50% lumbar osteoarthritis and 35.8% knee osteoarthritis) and Bishnoi in India (50% lumbar osteoarthritis and 45.5% knee osteoarthritis) [19] [20]. The rarity of digital osteoarthritis in sub-Saharan Africa was confirmed by the single case found in our study [21].

The number of patients reporting absenteeism due to osteoarthritis was similar to the data of Terpstra *et al.* [22] in the Netherlands in 2022 (7%) and Ken *et al.* in Japan in 2018 (11%) [16]. This showed that osteoarthritis-related pain is a con-

tributing factor to absenteeism in workers. The high frequency of presenteeism in our study was close to the results of Ken *et al.* in Japan in 2018 (71%) [16]. This could be due to the fact that osteoarthritis patients choose to stay at work rather than take time off to manage their pain. This situation led to a reduction in their productivity at work. Also, our results confirmed the findings in the literature on the higher contribution of presenteeism than absenteeism to the overall costs of lost productivity attributable to osteoarthritis [23] [24].

In our study, the prescription of NSAIDs (65.4% of cases) was part of a variable use of this class (100% in Mazieres [23], 34.2% in general practitioners in France [25], 40% of patients with painful knee osteoarthritis in England [26]). In our study, paracetamol was the most commonly used analgesic. In our context, the low prescription rate of opioids could be explained by the fear of their side effects in prolonged use. Local injections of depot corticosteroids (70.4%) were an important contribution in pain management. Anti-arthritic drugs (15.3%), which reduce the use of analgesics with their structural effect, had a prescription limited by their cost. The average number of hours lost in weeks due to unproductivity at work was slightly lower than that found by Terpstra *et al.* in 2022 (14.2 h) [22]. This result showed that there would be a large difference in the organizational work culture between the Netherlands and Guinea but also that osteoarthritis patients do not experience restrictions at work, thus causing absenteeism at work. The study also revealed significant differences between the site of osteoarthritis and the different domains of work productivity. The presenteeism group had a significantly higher rate than the other groups. This result was consistent with other research that reported an association between work disability and the location of osteoarthritis [16]. This finding could be related to the greater intensity of pain experienced by patients.

5. Conclusion

Osteoarthritis was a common condition in the rheumatology department, affecting patients' professional activity. Predominantly affecting the lumbar region and the knees, this condition had an impact on work. There is a statistically significant association between the site of osteoarthritis and presenteeism ($p = 0.001$), between osteoarthritis and overall productivity loss ($p = 0.008$), and between osteoarthritis and activity limitations ($p = 0.005$). Multidisciplinary studies involving rheumatologists and occupational physicians would be important to determine optimal management strategies for patients with osteoarthritis.

Author Contributions

Drafting of the protocol and manuscript: Aly Badra Kamissoko, Mamadou Lamine Diallo, Adama Bah, Salif Diakite; **Data collection, statistical analysis and translation:** Aly Badra Kamissoko, Salif Diakite, Abèni Faouziyath Yaya, Douin Flore Tia, Aboubacar Sidiki Conde; **Proofreading:** Marie Traore, Abdoulaye Barry, Kaba Conde, Owonayo Oniankitan.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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