

Rotator Cuff Syndrome (RCS) Prevalence and Risk Factors among Midwives, Obstetricians, and Auxiliary Midwives in Bobo Dioulasso (Burkina Faso) in 2024

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Abstract

Introduction: Rotator cuff syndrome is a musculoskeletal disorder of the shoulder that is common but underestimated among midwives, obstetricians, and auxiliary birth attendants in Burkina Faso. **Materials and method:** In order to determine its prevalence and risk factors, we conducted an analytical study among midwives, obstetricians, and auxiliary birth attendants in the city of Bobo Dioulasso. Data were collected using the 2001 Nordic questionnaire adapted to shoulder MSDs. The SALTSA protocol was used for diagnostic confirmation during the physical examination. These data were analysed using EPI INFO software version 7.2.6.0. A univariate logistic regression was performed to identify risk factors. **Results:** We surveyed 116 midwives, obstetricians, and auxiliary midwives from six health centres. The average age was 42.80 years. Midwives accounted for 80.17% of the workforce. Professional seniority was 6 to 10 years in 37.07% of cases. The prevalence of rotator cuff syndrome over the past 12 months was 62.06%, and 37.94% over the past seven days. The clinical symptomatic form of RTS accounted for 57.75% of cases, supraspinatus involvement for 5.55% of cases, and 71.55% of healthcare workers had little knowledge of preventive measures for shoulder MSDs and RTS. Analysis of risk factors revealed a significant link between length of service, night work, and the occurrence of rotator cuff syndrome among healthcare workers. **Discussion:** Rotator cuff syndrome is a common condition among these healthcare workers. Improving working conditions will help to reduce its prevalence.

Keywords

Rotator Cuff Syndrome, Prevalence, Risk Factors, Midwives, Bobo-Dioulasso

1. Introduction

The rotator cuff refers to a group of muscles that insert into the shoulder. These are the supraspinatus, infraspinatus, subscapularis, and teres minor muscles. The tendons of these muscles cover the upper end of the humerus. They play a vital role in rotational movements of the shoulder, as well as in centering the humerus [1]. Rotator cuff syndrome (RCS) refers to a degenerative disease of the rotator cuff that affects the tendons of the rotator cuff muscles and primarily manifests as shoulder pain [2]. Rotator cuff syndrome is widespread worldwide and affects millions of people [3]. In the general population, the prevalence of shoulder pain is estimated at approximately 20% - 60% [4]. In the workplace, these occupational shoulder MSDs are thought to be due to prolonged and/or intense biomechanical constraints [5] [6]. Their prevalence ranged from 16% to 34% among healthcare personnel in the United States [1], and was estimated at 47% in 2019 in Europe among workers from several professional categories [7] [8]. RCS, caused or aggravated by professional activity, deteriorates the quality of life of workers [9] [10]. Manual professions are thought to be the most exposed [11]. Construction, transport, and healthcare are recognized as the fields of activity most likely to develop RCS [2]. In the healthcare field, surgeons and nurses in particular are thought to have high frequencies of shoulder MSDs and RCS [7] [12] [13]. The interest in shoulder MSDs in nurses' contrasts with the weakness of studies relating to RCS devoted to midwives [7].

However, midwives and all professionals who perform childbirth are also subjected to awkward postures and manual handling activities. These gestures and postures can cause shoulder MSDs [14] [15]. However, a study on this problem among midwives in the United Kingdom in 2019 estimated the prevalence at 45%; in Tunisia, this prevalence was estimated at 65% in 2018 [16] [17]. In sub-Saharan Africa, a few studies focusing generally on MSDs among midwives have been conducted. In Côte d'Ivoire, Ouattara *et al.* [16] in 2020 reported a prevalence of 97% of MSDs among midwives, and in Burkina Faso, Somé in 2021 estimated this same prevalence at approximately 83% among maternity staff at the Bobo-Dioulasso University Hospital [17]. However, these studies provide little information on RCS and its risk factors in our context. In Burkina Faso, there are midwives and auxiliary midwives who perform the same tasks as midwives in maternity wards. These tasks include participating in or conducting prenatal consultations, assisting during childbirth, and providing postnatal care. To date, there are few MSD studies on these two occupational profiles.

What would be the prevalence of RCS among midwives, obstetricians, and auxiliary midwives in Burkina Faso, specifically in Bobo-Dioulasso? What would be

the risk factors? Is there a difference in exposure to risk factors among these professions in the city of Bobo-Dioulasso? This study was initiated with the aim of contributing to the improvement of the working conditions of health workers.

2. Main Goal

Study the rotator cuff syndrome among midwives, obstetricians, and auxiliary midwives in the city of Bobo-Dioulasso in 2024.

Specific goals

- 1) Describe the socio-professional profile of midwives, midwives, and auxiliary midwives in the city of Bobo-Dioulasso in 2024.
- 2) Estimate the rotator cuff syndrome prevalence among midwives and auxiliary midwives in the city of Bobo-Dioulasso in 2024.
- 3) Identify the risk factors associated with rotator cuff syndrome among midwives and auxiliary midwives in the city of Bobo-Dioulasso in 2024.
- 4) Highlight the rotator cuff syndrome risk factors in midwives, obstetricians, and auxiliary midwives in the city of Bobo-Dioulasso in 2024.

3. Method and Materials

3.1. Materials

3.1.1. Study Model, Period, and Term

1) Study model

We conducted a cross-sectional analytical study on rotator cuff syndrome among midwives, obstetricians, and auxiliary midwives in the city of Bobo-Dioulasso in 2024.

2) Study period and term

The data analyzed covered the period from January 1 to December 31, 2024. These data were collected over a two-month period (November 1 to December 31, 2024).

3.1.2. Study Location

Our study took place in the city of Bobo Dioulasso, which is the economic capital of BURKINA FASO. It is the capital of the Hauts-Bassins region and is home to the headquarters of the regional health directorate of the region. The health division of the city of Bobo Dioulasso includes the SOUROU SANOU University Hospital Center and the districts of DO and DAFRA. These two health districts are each composed of a Medical Center with a surgical antenna (CMA), Medical Centers (CM), and Health and Social Promotion Centers (CSPS). The CMA of DO and DAFRA, as well as two CM or CSPS of each district, were selected as locations for our study [18]. A total of six health centers in the city of Bobo Dioulasso, selected at random, constituted our study sample.

3.1.3. Study Population

The study concerned midwives, obstetricians, and auxiliary midwives in the public sector of the city of Bobo-Dioulasso.

Inclusion and exclusion criteria

Our study included midwives, midwives, and auxiliary midwives:

- Working in the public sector of the city of Bobo Dioulasso.
- Having at least one year of professional experience.
- Present at their workstation at the time of the study.
- Having consented to participate in the study, with the exception of midwives and auxiliary midwives who were trainees or had a history of scapular pain of traumatic or infectious origin.

3.1.4. Collecting Data, Measuring Weight, and Calculating Variable Tools

1) Questionnaire

Data collection was carried out using a Nordic questionnaire on MSDs version 2001 applied to the upper limb that we administered ourselves to the participants [19]. This questionnaire was modified and adapted to the needs of our study. The Nordic questionnaire is a standardized tool allowing occupational physicians to screen for musculoskeletal disorders. It allows for the screening of MSDs located in various parts of the body during the previous year or week. It was created in 1987 and has undergone several modifications in order to improve it and make it more efficient. For the diagnostic approach of rotator cuff syndrome, during the physical examination, we used the SALTSA tool, which is a clinical examination protocol for the identification and diagnosis of MSDs of the upper limbs developed by the European Union in its French adaptation. This tool has the advantage of diagnosing MSDs of the upper limb based solely on the physical examination using standardized maneuvers [20].

2) Variables

- The dependent variable. This was the presence or absence of rotator cuff syndrome among midwives, obstetricians, and auxiliary midwives, whose presenting symptom was right or left shoulder pain of non-traumatic origin that appeared within the previous twelve (12) months and/or the last seven (7) days. The diagnosis of rotator cuff syndrome was confirmed by a rheumatologist. It was based on a physical examination of the right and left shoulders and, incidentally, the results of X-rays and/or ultrasounds (Note: Paraclinical examinations were not mandatory at this stage; the results of X-rays and/or ultrasounds were reported for patients who had them performed).
- Substantive variables.

They combined:

- Socio-professional data (age, sex, BMI, job position, professional qualification, professional seniority, working hours, work organization, average number of births per working day).
- Data on musculoskeletal shoulder disorders (frequency of shoulder pain, intensity of pain, repetitive movements, level of knowledge on actions and measures to prevent MSDs, medical treatment or consultation with a doctor over the last twelve months, change of position during professional career).

3) Data parameters of preventive measures and evaluated parameters

- **BMI Calculation** [19]

BMI was calculated using the formula $BMI = \text{weight (in kg)}/\text{height}^2 \text{ (in m)}$. Weight was measured using a Pro M160 Little Balance® large-face mechanical bathroom scale.

Interpretation of BMI results: According to the World Health Organization (WHO), the following are the BMI categories and their interpretations:

- Underweight: $<18.5 \text{ kg/m}^2$
- Healthy weight: $18.5 \text{ to } 24.9 \text{ kg/m}^2$
- Overweight: $25 \text{ à } 29.9 \text{ kg/m}^2$
- Obesity: $>30 \text{ kg/m}^2$
- Severe obesity: $>40 \text{ kg/m}^2$

- **Intensity pain measurement**

Pain intensity was estimated using a visual analogue scale (VAS) with values ranging from 1 to 10 [21].

Interpretation:

- VAS 1 to 3: mild pain.
- VAS 3 to 5: moderate pain.
- VAS 5 to 7: Intense pain.
- VAS >7 : Severe pain.

- **Assessment of the preventive measures skills level**

We designed a scale that allows us to differentiate knowledge levels based on the score:

- Level 0: No skills
- Level 1 or intermediate skill: One or two preventive measures
- Level 2 or sufficient skills: three or more preventive measures.

3.1.5. Protocole SALTSA

The SALTSA protocol is a European occupational health research program led by the National Institute for Working Life in Sweden and the Swedish trade union confederations. This program was developed to standardize the epidemiological surveillance of upper limb MSDs (ULM-MSDs) within the European Union. Based on the results obtained, a document serving as a guide for the diagnostic approach to MSDs in the workplace was established. This guide aims to enable the early detection of ULM-MSDs in worker populations, to estimate their frequency, and to prevent them early. The SALTSA tool also allows for the evaluation of the effectiveness of preventive measures. This approach adopted is therefore oriented towards the search for subclinical and clinical disorders through standardized maneuvers accompanied by photographs. We used the SALTSA protocol in its French version for the purposes of our study [20].

The SALTSA protocol is not a clinical manoeuvre protocol for diagnosing shoulder pain. It is an acronym used in medicine for pain assessment (Site, Allure, Link, Time, Associated Symptoms, History).

This protocol allows information about pain to be collected, but it does not involve diagnostic manoeuvres. The manoeuvres used for the differential diagnosis of shoulder pathologies were for supraspinatus injury:

- Jobe's manoeuvre (or supraspinatus fossa manoeuvre): The patient raises their arms 90° forward, with a 30° abduction (in the plane of the shoulder blade), thumbs down (internal rotation). The practitioner applies downward pressure, and the test is positive if the patient feels pain or weakness.
- The bell sign: The patient raises their arm. The practitioner applies pressure to the acromion, causing intense pain.

Rotator cuff syndrome

Neer test: The practitioner stabilises the scapula with one hand and lifts the patient's arm, in maximum internal rotation, to force the acromion into contact with the cuff tendons. A positive test indicates intense pain in the shoulder.

Hawkins-Kennedy test: The patient has their arm raised to 90° abduction, with the elbow bent at 90°. The practitioner rotates the patient's arm inward. A positive test indicates pain.

These manoeuvres helped to locate the source of the pain, but the final diagnosis was based on the overall clinical examination, medical imaging (ultrasound, MRI), and the patient's history.

3.2. Methods

3.2.1. Data Collection

Our study was conducted in two stages: The first involved conducting an interview with midwives and auxiliary midwives at their workplaces. We administered a questionnaire to gather various information. The final stage involved a physical examination of workers suspected of having rotator cuff syndrome during the interview. The physical examination was performed according to the SALTSA protocol to establish a clinical diagnosis of rotator cuff syndrome. Medical imaging tests were optional, but if present, could better support the diagnosis.

3.2.2. Data Analysis

We first verified, labeled, and coded our variables. We then performed a descriptive analysis of these data (calculating the mean and standard deviation for quantitative variables; calculating frequency and proportion for qualitative variables). Finally, a univariate logistic regression was performed to identify factors associated with RCS. Variables that, following univariate analysis, had a p-value < 0.20 were entered into a multivariate logistic regression. A significance threshold of 5% was set for all estimates in this study. The English version of Epi Info 7.2.6.0 was used for data analysis. Graphs were generated using Excel 2013. Comparison of qualitative variables was performed using the chi-square test.

3.3. Ethical Accounts

Our study was conducted in accordance with the required ethical guidelines. We

requested various data collection authorizations from the Hauts Bassins Regional Health Directorate (regional capital: Bobo Dioulasso), as well as authorizations from the district medical officers involved in our study. The authorization issued by the regional director served as our authorization for all data collection sites. During data collection, we obtained consent from participants prior to interviews. We declare that we have no conflicts of interest.

4. Results

4.1. Workforce

We visited six health centers in the city of Bobo Dioulasso. The total number of midwives, obstetricians, and auxiliary midwives counted in these facilities was 184. Of this number, 116 agents agreed to participate in our study, representing a participation rate of 63.04%.

4.2. Socio-Professional Features

4.2.1. Gender and Age

The sample consisted of 93 women (80.17%) and 23 men (19.83%), with a sex ratio of 0.24. The average age of participants was 42.80 years, with a range of 28 to 56 years. The age group between 41 and 50 years represented 54.31% of this sample.

4.2.2. Body Mass Index

Obese workers represented 43% of the study sample, 35% of whom were overweight, and 22% of whom were of normal weight.

4.2.3. Workstation

In our study, midwives represented 63.79% ($n = 74$) of the sample.

4.2.4. Job Tenure

Workers with more than 10 years of seniority represented 49.90% ($n = 58$) of the workforce.

4.2.5. Weekly Working Hours

In this corporation, the weekly working time varied from 40 to 50 hours for 71.55% of workers; it exceeded 50 hours for 20.69% (24) of workers.

4.2.6. Work Organization

In our series, 96.55% ($n = 112$) of workers were assigned to alternating-shift positions.

4.2.7. Working Hours Perception

In our series, 68.10% of workers considered night work (6 p.m. - 8 a.m.) to be restrictive.

4.2.8. Repetitive Movements

In our study, 77.59% of workers performed repetitive procedures during childbirth and episiotomy suturing.

4.2.9. Birth Numbers Per Working Day

Per working day, 52.59% of workers carried out an average of 4 to 6 deliveries, and 26.72% carried out more than 6 deliveries.

4.3. Rotator Cuff Syndrome Facts

4.3.1. Rotator Cuff Syndrome within the Past 12 Months

The prevalence of rotator cuff syndrome was estimated at 62.06% over the past 12 months, during which 58 workers experienced right shoulder pain, representing 50% of participants. This pain was “frequently” and “almost always” experienced by 5.17% and 7.76% of workers, respectively, and moderate and severe pain were experienced by 37.93% and 2.26% of workers, respectively.

4.3.2. RCS in the Last 7 Days

The overall prevalence of rotator cuff syndrome over the past 7 days was 37.94%; 34 workers had experienced right shoulder pain, or 29.31%. Shoulder pain was “frequently” experienced in 4.31% of cases, and “almost always” in 7.76%. The intensity ranged from moderate to severe in 24.14% and 2.59% of workers, respectively.

4.3.3. Medical Imaging Results

Nine (9) workers with RCS out of the 72 cases RCSeened had medical imaging examinations; 4 ultrasound images (5.55%) were in favor of supraspinatus muscle tendinitis.

4.3.4. MSDs Preventive Measures Skills Levels

Among the participants, 71.55% (83 people) had no knowledge of preventive measures for MSDs.

4.3.5. Consultation with a Doctor or Medical Treatment in the Past 12 Months

In the last twelve months, 49 workers (42.24%) have consulted a doctor or received medical treatment for shoulder pain.

4.3.6. Position Change During Professional Life

During their professional careers, 10 workers in our sample (8.63%) benefited from a change of position due to shoulder pain associated with other types of MSDs.

4.4. Analytical Study

4.4.1. Rotator Cuff Syndrome and Job Tenure

There was a statistically significant association between RCS and job tenure of between 11 and 15 years ($p < 0.05$).

4.4.2. Rotator Cuff Syndrome and Work Schedule

There was a statistically significant association between RCS and night work ($p < 0.05$). In our study, the hours from 6 pm to 8 am were designated as restrictive working hours.

5. Discussion

5.1. Study Limitations

The prevalence and risk factors study allowed us to achieve results, the interpretation of which must take into account some limitations.

The small size of our sample and the relatively average participation rate (60%) are linked to the unavailability of midwives, obstetricians, and auxiliary midwives due to their workload. Secondly, this cross-sectional study, carried out over a period of two months, did not include observation of health workers in real-life activity situations, which did not allow us to establish a formal causal link between the different criteria evaluated and serve as a basis for preventive postural education.

Given the lack of state coverage for paraclinical assessments of civil servants, we were unable to conduct medical imaging assessments during our study. We only mentioned the results of workers who had assessments or who voluntarily consented to have them performed. Medical imaging assessments such as CT scans and magnetic resonance imaging would have better supported the diagnosis of RCS compared to standard X-rays and ultrasounds.

Finally, confounding factors such as the impact of psychosocial factors and comorbidities such as diabetes, hypertension, and dyslipidemia on the occurrence of RCS were not evaluated during our study.

5.2. Results

The study included 116 health workers out of a total of 184, representing a participation rate of 63.04%. Midwives represented 63.79% of the sample (**Table 1**).

Table 1. Distribution of workers by workstation.

Workstation	Number of Staff (n)	Percentage (%)
Midwives	74	63.79
Maieuticians	21	18.10
Auxiliary Midwives	21	18.10
Total	116	100

The average age of this population was 42.80 years, with extremes ranging from 28 to 56 years. Our results corroborate those of Okuyucu *et al.* [22], who, in England in 2019, reported an average age of 42.7 years, while Ouattara *et al.* in Côte d'Ivoire a year later noted 38 years during their study on MSDs among midwives in the Toumodi health district [16]. In West African countries, health workers are posted to rural areas of their countries at the beginning of their careers to gain experience before being redeployed to cities a few years later. As a result, we find much younger midwives in the suburbs than those working in urban centers.

BMI calculations revealed that 43% and 35% of staff were obese and overweight, respectively. Obesity and overweight among midwives have been identified at high proportions by various authors [16] [23]. In Algeria, Athamnia found a proportion of 61% of overweight midwives. In the United Kingdom, [22] the proportions of overweight and obese midwives were 30.4% and 30.1%, respectively. Professional seniority ranged from 6 to 10 years in 37.07% of cases, thus representing the largest segment of our sample (Figure 1). Okuyucu in England reported an average professional seniority of 15 years. This difference in results could be explained by the fact that in Europe the population is aging, with low attractiveness of young people to the medical professions. The weekly working hours were 40 - 50 hours in 71.55% of cases. According to the Burkinabe labor code, normal weekly working hours are 40 hours [24]. However, in the health sector, due to guard duty and insufficient staff, weekly hours are higher, forcing health workers to work an overload of work and relatively little rest time. This situation would thus favor the appearance of shoulder MSDs. In other countries, such as England, the weekly working time of midwives is 37.5 hours [22]. The implementation of such an organization takes into account the risk of professional burnout caused by long working hours. In the context of work overload, midwives performed an average of 4 - 6 deliveries per working day. In Tunisia, Chouchane found a median of 3 deliveries among midwives [15]. This gap would be due to the high birth rate in Burkina Faso (4.8 children/woman in 2022) associated with the insufficient number of centers and health personnel [25]. Socio-professional data highlight the arduousness of the work of midwives, negatively impacting their health and favoring the appearance of MSDs (Table 2 and Table 3).

This high workload, a risk factor for professional exposure, potentiates the occurrence of pain, particularly rotator cuff syndrome, the characteristics of which have been described over two evolutionary periods. Thus, during the last 12 months of the year covered by the study data, the prevalence of rotator cuff syndrome was 62.06% (Table 4) and 37.94% during the last seven days (Table 5).

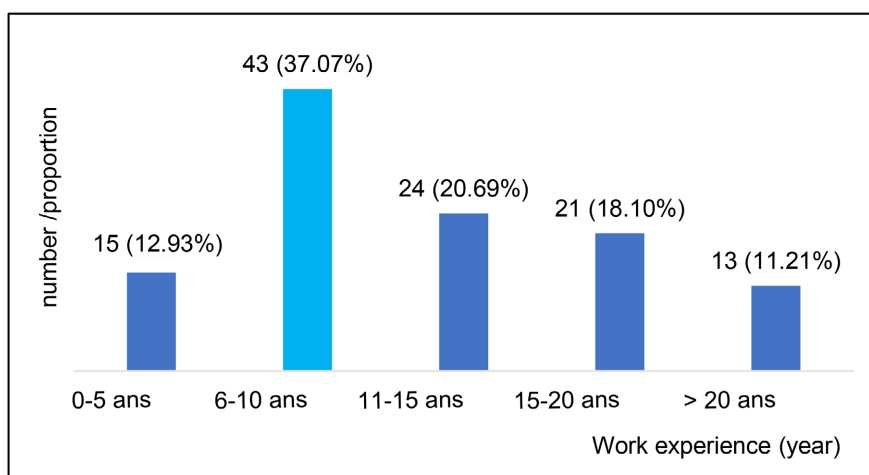


Figure 1. Distribution of workers by seniority levels in the profession.

Table 2. Worker distribution according to their perception of time slots.

Perceived Restrictive Work Hours	Number of staff (n)	Percentage (%)
8 - 12 hours	15	12.93
12 - 18 hours	17	14.66
18 - 8 hours	79	68.10
Not applicable	5	4.31
Total	116	100

Table 3. Worker distribution based on average daily deliveries.

Average number of deliveries per day	Number of Staff (n)	Percentage (%)
[0 - 3]	24	20.69
[4 - 6]	61	52.59
>6	31	26.72
Total	116	100

Table 4. Description of the summary care record (RCS) over the past 12 months.

Parameters	Number of Staff	Proportion (%)
Prevalence of RCS by location		
Overall	72	62.06
Right shoulder	58	50
Left shoulder	43	37.07
Frequency of Pain Occurrence		
Sometimes	48	41.38
Frequently	06	5.17
Almost always	09	7.76
Pain Intensity		
Low	25	21.55
Moderate	44	37.93
High	03	2.59

Table 5. Description of the over the last 7 days.

	Paramètres	Count	Proportion (%)
Prevalence by location	Overall	45	37.94
	Right Shoulder	34	29.31
	Left Shoulder	17	14.66
Frequency of pain occurrences	Sometimes	26	22.41
	Frequently	05	4.31
	Almost Always	09	7.76
Intensity of pain	Low	12	10.34
	Moderate	28	24.14
	High	03	2.59

Our results are similar to those of Chouchane *et al.* [15], who, in their study conducted in Tunisia, estimated the prevalence of shoulder involvement among midwives at 64.8%; in contrast, our data are slightly higher than those of Okuyucu in England [22]. This difference in results could be attributed to the difficult working conditions in which the activity is carried out in maternity wards. The diagnosis of these conditions sometimes required the use of paraclinical examinations, in particular medical imaging (Table 6). These examinations made it possible to detect mainly lesions of the supraspinatus muscle on ultrasound (5.55%) and tendon calcification (4.16%) on standard radiography. Ouédraogo *et al.* [26] in Ouagadougou also reported 61.9% of cases of supraspinatus tendinitis and 3.1% of tendon calcification. Tchicaya *et al.* described in Abidjan (CI) a predominance of subscapularis muscle involvement in 53.1% of cases against 19.6% of supraspinatus muscle involvement in supermarket cashiers [26].

Table 6. Medical imaging results.

Medical Imaging/Diagnosis	Number of staff (n)	Percentage (%)
Ultrasound		
Supraspinatus tendinitis	04	5.55
Supraspinatus tendinitis + bursitis	02	2.77
Shoulder X-ray		
Calcific tendinitis	03	4.16
No examination performed	63	87.5
Total	72	100

The supraspinatus muscle, due to its anatomical position and its function as an abductor and medial rotator, is one of the most stressed muscles in shoulder movements. Furthermore, the natural tendency of the humeral head to irritate this tendon during its ascent under the influence of the deltoid muscle leads to the early onset of lesions. Faced with shoulder pain, 42.24% of the midwives, obstetricians, and auxiliary midwives in our sample had sought medical treatment or consulted a doctor; 71.55% of them admitted to having very little knowledge about MSD prevention (**Table 7**), and only 8.63% of our sample had benefited from a job change. Indeed, five job changes were made from the delivery room to the prenatal, family planning, and healthy infant departments where the workload is lower. The gap in results observed between the prevalence of RCS (62.06%) and the proportions of agents who received medical treatment and a change of position clearly demonstrates the lack of adequate management of shoulder MSDs among health workers and the absence of appropriate monitoring of those affected by them.

Table 7. Distribution of workers by knowledge of MSD prevention measures.

Knowledge Level	Number of staff (n)	Percentage (%)
None	83	71.55
Intermediate knowledge (one to two prevention measures)	33	28.45
Sufficient knowledge (three or more prevention measures)	00	00
Total	116	100

This problem was also observed in France in 2021, where only 9.4% of midwives suffering from shoulder MSDs had benefited from a change of position [27]. On the other hand, in England, MSD management strategies are more developed so that the proportions are higher: 45% of midwives with shoulder MSDs had benefited from a change of position and 60.6% from a consultation with a doctor [22]. Reducing the prevalence and impact of this condition on the health of the worker and on work is based on prevention, the effectiveness of which requires the identification of risk factors. The analytical approach to risk factors made it possible to establish a statistically significant association between RCS and professional seniority of 11 to 15 years, without, however, finding one between rotator cuff syndrome and age, sex, and BMI (**Table 8**).

Job tenure implies the existence of prolonged exposure to biomechanical (work overload, awkward postures), organizational (night work), and psychosocial factors such as stress. In addition, the majority of agents are women (80.17% of our sample), who place greater demands on the shoulder during pro-

fessional activity, coupled with family life and domestic work. Occhiminuti in France in 2021 established the link between age, professional seniority, high BMI, and MSD [27]. The link between overweight, obesity, and MSD was also established by Chouchane and Okuyucu. The mechanism responsible for the occurrence of RCS in overweight and obese subjects could be explained by the fact that the accumulation and infiltration of fat in the rotator cuff tendons increase inflammatory phenomena at the local level, reducing their flexibility and increasing the risk of rupture [3].

Table 8. Rotator cuff syndrome and length of service.

Variables	RCS		OR [IC à 95%]	p-value
	yes	no		
Professional seniority				0.13
0 - 5 years	7	8		
6 - 10 years	25	18	1.58 [0.48; 5.17]	0.44
11 - 15 years	20	4	5.71 [1.30; 25.02]	0.02
16 - 20 years	12	9	1.52 [0.40; 5.77]	0.53
Greater than 20 years	8	5	1.82 [0.40; 8.27]	0.43

Organizational risk factors were identified in our series; a statistically significant link was established between night shifts and the occurrence of RCS (Table 9).

Table 9. Rotator cuff syndrome and demanding work schedules.

items	RCS		p-value
	Yes	No	
Demanding work schedule (hours)			
8 - 12 hours	11	4	
12 - 18 hours	10	7	
18 - 8 hours	51	28	0.026
Not affected	0	5	

During shifts, teams are generally reduced in maternity wards, which results in a high workload with overstretching of health workers. A similar link between night work and shoulder MSDs had already been documented by Okuyucu [22]. Except for night work, RCS was not attributable to the number of deliveries or the

repetitiveness of gestures at the workstation. Being a midwife, midwife, or auxiliary midwife did not influence the occurrence of rotator cuff syndrome. These three professional profiles, working in the same environment and subject to the same constraints, are exposed to the same risk factors for the occurrence of RCS. The only organizational risk factor identified was night work; however, this does not entirely obscure the involvement of others in the occurrence of RCS (**Figure 2**).

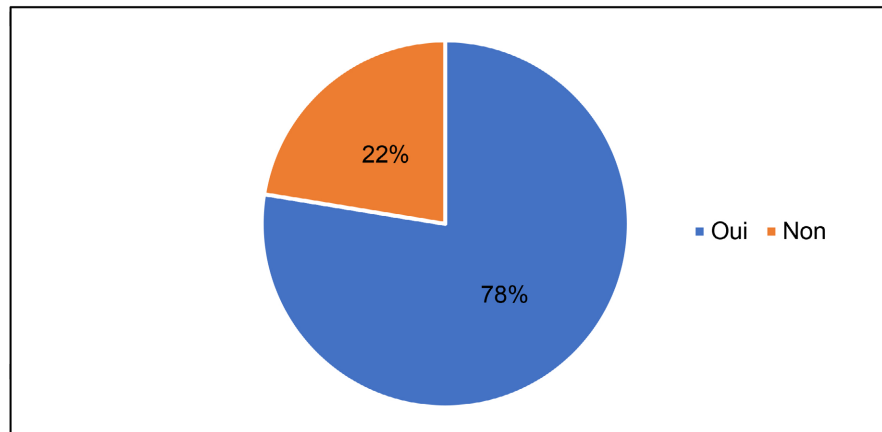


Figure 2. Distribution of workers by repetitive motion practices.

6. Conclusions

Rotator cuff syndrome is a common condition among midwives and midwifery assistants in the city of Bobo-Dioulasso. Long hours, night shifts, and work overload make working conditions difficult for midwives and midwifery assistants. Night shifts and 11 to 15 years of professional experience were identified as risk factors for rotator cuff syndrome in these workers. Differences in professional qualifications were not an additional exposure factor. They were subject to the same risk factors for developing rotator cuff syndrome. Lack of knowledge about MSD prevention and the lack of adequate medical care for midwives and midwifery assistants suffering from rotator cuff syndrome have a negative impact on their long-term professional careers. It is therefore necessary to improve the working conditions of these agents through an ergonomic reorganization of their workstations and regular medical monitoring. Midwives, obstetricians, and auxiliary midwives play a very important role in reproductive health.

Making their working environment healthy and sanitary should be a priority because this will improve their performance and also enhance the quality of patient care in maternity wards.

Conflicts of Interest

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

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