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Risk factors and treatment for migraine in adults in Ouagadougou: A cross-sectional survey

Somé Nagaonlé Eric[1]*, Lompo Djingri Labodi[2], Bertrand Méda[1], Kabore Raphael Marie Patrick[2], Kouanda Moumouni[2], Napon Christian[2], Drabo Maxime[1] and Kaboré Jean[2]

[1]Département Biomédical et Santé Publique, Institut de Recherche en Sciences de la Santé (IRSS) Ouagadougou, Burkina Faso.
[2]Unité de Formation et de Recherche en Sciences de la Santé, Département de Médecine et Spécialités Médicales, Section Neurologie, Université Joseph Ki-Zerbo de Ouagadougou, Burkina Faso.

The aim of this study was to describe the migraine treatments implemented in Burkina Faso. It was a descriptive cross-sectional study with a prospective data collection from August to November, 2019 in Burkina Faso. The study included 653 randomly selected participants aged 16 years and over. Female gender, high socioeconomic status, coffee and alcohol consumption, high blood pressure and smoking were significantly and positively associated with migraine. The mean period from the beginning of the symptoms to the initiation of care was 25.93 months ± 42.09 with a range of 0 - 240 months (20 years). While 42 (76.36%) patients self-treated during migraine attacks, 41 (74.55%) never visited a healthcare professional for their migraine. No migraine patient had taken traditional treatment. No improvement was noted in the course of the disease in 28 (50.91%) participants. Migraine predominantly affects women in our context. Psychoactive substances such as coffee, tobacco and alcohol as well as high blood pressure also seem to be risk factors with a strong possibility of reverse causality to be elucidated by a cohort study. Migraine is a disease that responds little or no to treatment which is hardly ever substantive.

Key words: Migraine, treatment, risk factors, Sub Saharan Africa, Burkina Faso.

INTRODUCTION

Migraine is a frequent and disabling primary headache. It presents as recurring headache attacks that can range from once (sometimes several times) a week to once a year. Migraine usually starts at puberty and mostly affects people between 35 and 45 years of age, but it can affect much younger people, especially children. European and American studies have shown that 6-8% of men and 15-18% of women suffer from migraine each year. The figures are comparable in Central and South America. In Puerto Rico, for example, researchers calculated that 6%

*Corresponding author. E-mail: eric.some@gmail.com.

of men and 17% of women suffered from migraines. A survey carried out in Turkey reported an even higher prevalence in this country: 10% in men and 22% in women. The higher rates seen everywhere in females (2-3 times higher than males) have a hormonal cause (OMS, 2004).The intensity of migraine pain ranges from moderate to severe and when severe, it becomes very debilitating, responsible for a significant functional and emotional impact leading to an impairment in quality of life (Gazerani, 2020; Sacco et al., 2020). The prevalence of migraine remains high in most epidemiological studies and its socio-economic and personal impact is significant. Globally, more than a billion people (14.7% of the global population) suffer from migraine (Vos et al., 2012) with an incidence of 17.6 per 1000 person-years (http://www.ffn-neurologie.fr/grand -public / diseases / migraine) (Rist et al., 2021). The prevalence of migraine was reported between 7.9% in France (Pradalier et al., 2004) and 25.2% in India's Karnataka State (Steiner et al., 2016), and it peaked up to 42% in a selected sample of young-age women (Dueland et al., 2005). Prevalence of migraine disorders with monthly frequency higher than 15 days was reported between 1.2% in India's Karnataka State and 6.1% in Brazil. Among pediatric populations, prevalence of migraine was lower, between 9.2 and 10.6% (Steiner et al., 2016). In the Global Burden of Disease Study 2010 and 2015, migraine was ranked successively as the third most common disease and the third cause of disability in the world in men and women under 50 (Leonardi and Raggi, 2019; Osumili et al., 2018). Because of this high prevalence of migraine associated with the repercussions it induces, it is classified by the World Health Organization (WHO) among the twenty diseases with the strongest societal impact, and it climbs up to the ninth place if we consider only the female population (OMS, 2004). In France, nearly 20 million working days are lost due to migraine and the health expenditure caused by this disease annually is nearly 3 billion euros (OMS, 2004).

Although apparently of lower prevalence, migraine is still common in Asia (3% of men and 10% of women) and Africa (3-7% according to community studies). In-depth studies remain to be done (OMS, 2004). In Mali in 2011, a study had shown that 63.8% of students suffering from migraine had absenteeism from 1 to 14 days with an average of 5 days over a quarter and there was a limitation of the ability to concentrate in 19.2% of migraine students (Diallo et al., 2019). Despite its significant socioeconomic impact, migraine remains poorly known, underestimated, underdiagnosed and even undertreated to the point that 80% of migraine patients do not know themselves as such. Despite the existence of well-coded diagnostic criteria, many patients who consult still suffer from delayed diagnosis, most of whom have been wrongly diagnosed with sinusitis. The studies already carried out in Burkina Faso have only targeted headaches as a whole and have been limited to specific socio-

professional groups so that their findings do not allow the development of an adequate health policy. The aim of this study was to describe the treatments implemented in our context and their effectiveness.

PATIENTS AND METHODS

Study type and population

It was a descriptive cross-sectional study with a prospective collection of data from August 9th to November 6th, 2019 in Ouagadougou, the capital city of Burkina Faso. It included women and men aged at least 16 years, residing for at least 6 months in the city of Ouagadougou, able to answer the survey questions and having given an informed consent to participate in the study. Simple random sampling was performed. The sample size was calculated from the standard formula $n = z2pqi2$ (n = sample size (z = standard deviation; p = expected prevalence; q = 1-p; i = margin of error. Considering an expected prevalence of 3.82%, a confidence interval of 95% and a margin of error of 1.5%, the sample size was 653 individuals. We randomly selected 2 out of 12 districts in the city of Ouagadougou. We then placed ourselves at the center of each district (the town hall was taken as the center) and threw a pencil in the air. The households in the direction of the sharped end point of the pencil were investigated one by one until the required number of individuals was reached. The variables collected included i) Sociodemographic and clinical characteristics, vascular risk factors (hypertension, diabetes, sedentary, obesity, alcohol, tobacco, etc.), type of treatment (self-medication, traditional treatment, medical prescription, etc.) and results of the treatment (efficacious, moderately efficacious and non- efficacious).

Definition

Predominant intellectual activities/professions: civil servants, private sector workers doing paper work, traders, artists, religious people (pastors, priests), pupils and students were considered as exercising a predominant intellectual activity.

Predominantly physical activity: workers were considered as exercising predominantly physical activity all people working hard physically using their entire body including their hands and/or their feet. Were included in this category farm workers, mechanics, housemaid.

Pain categorization: was assessed using the Visual Analog Scale (VAS). Mild pain was defined as a VAS <4. Moderate pain was defined as a VAS between 4 and 6. Very severe pain was defined as a VAS between 7 and 10. High blood pressure was defined as a systolic blood pressure >14 or a diastolic blood pressure >9.

Socioeconomic status: We considered the occupation of the head of the household, his main economic activity, the living environment, the main means of transportation for the household. The socioeconomic status was deemed high in this study when there was at least one of the following elements (a car, a job at or above a Master's level, a house with more than 3 rooms); the socioeconomic status was ranked as middle when the household owns at least one motorbike, a job above the end of middle school level or a house of at least 2 rooms; the socioeconomic status was low when all items of the middle socioeconomic status were missing.

Migraine diagnosis

The diagnosis of migraine was made according to the criteria of the International Headache Society (https://ihs-headache.org/en/resources/guidelines).

Migraine without aura

Migraine without aura is defined as recurrent attacks lasting from 4 to 72 h. Typical features of the headache are unilateral topography, pulsatile type, moderate or severe intensity, worsening with routine physical activity, and association with symptoms such as nausea and / or photophobia and phonophobia. Its diagnosis is purely clinical according to HIS 2013:

A. At least five attacks meeting criteria B-D
B. Headache attacks lasting 4 to 72 h (without treatment or with ineffective treatment)
C. Headache having at least two of the following four characteristics:

1. Unilateral topography
2. Pulsatile type
3. Moderate or severe pain
4. Worsened by or resulting in avoidance of routine physical activity (for example, walking or climbing stairs)

D. During the headache, at least one of the following symptoms:

1. Nausea and / or vomiting
2. Photophobia and phonophobia
E. Not better explained by another diagnosis of ICHD-3.

Migraine with aura

Recurrent attacks, lasting several minutes, with unilateral symptoms, totally reversible that can be visual, sensitive or other type of symptoms; which usually develop gradually and are generally followed by headache and the associated signs of migraine. HIS 2013 diagnosis criteria for migraine with aura are:

A. At least two attacks meeting criteria B and C
B. At least one fully reversible aura symptom that can be:

1. Visual
2. Sensitive
3. Related to the speech and / or the language
4. With motility disorders
5. With brainstem aura
6. Retinal

C. At least three of the following six characteristics
1. At least one aura symptom develops gradually over ≥5 min
2. Two or more aura symptoms occur in succession
3. Each aura symptom lasts 5-60 minutes
4. At least one aura symptom is unilateral
5. At least one aura symptom is positive
6. The aura is accompanied, or followed within 60 minutes, by a headache

D. Not better explained by another diagnosis of ICHD-3.

Data collection and processing

Data were collected from households by direct individual interview using a structured questionnaire. The Chi-square test was used to compare the proportions in non-ordinal categorical variable and the Mann-Whitney test for ordinal categorical variable and the t-test for quantitative variables such as age. All tests had a significance level of 0.05. The data collected was analyzed using the Epi info software, version 7.2.2.6.

RESULTS

Socio-demographic characteristics

We analyzed the data of 653 participants, interviewed in the households of two districts (districts n° 7 and 11) drawn randomly from the 12 districts in the city of Ouagadougou. The mean age was 24.49 years (95% confidence interval (95% CI): 7.01; 41.96). Females were more represented with 339 (51.91%) participants. Among the 653 participants, 55 were migraine patients with a migraine prevalence of 8.42% CI [6.53; 10.80]. Their mean age was 28.69 years (95% CI: 14.41-42.97). The 26 to 35 year age group (36.36%) was the most represented. Female gender, predominant-intellectual-activity socio-professional category, middle class socio-economic status and secondary school level participants accounted for 69.09, 55, 62 and 49%, respectively.

Factors associated with migraine

Female gender, high socioeconomic status, coffee and alcohol consumption were significantly and positively associated with migraine. The profession did not seem associated with migraine although only 7.32% of migraine patients with a predominantly intellectual profession had migraine compared to 10.29% for other professions. Education was also not significantly associated with migraine. Considering cardiovascular risk factors, high blood pressure and smoking were positively associated with migraine. Variables as diabetes, obesity and physical inactivity have not been found among our migraine patients (Table 1).

Migraine treatment

The mean time from the beginning of the symptoms to the initiation of care was 25.93 months ± 42.09 with a range of 0 - 240 months (20 years) (Figure 1). While 42 (76.36%) patients self-treated during migraine attacks, 41 (74.55%) never visited a healthcare professional for their migraine. No migraine patient had taken traditional treatment. No improvement was noted in the course of the disease in 28 (50.91%) participants (Table 2).

DISCUSSION

Study limitations

The households' survey took place in a context of

Table 1. Risk factors for migraine.

Characteristics	Participants with migraine	Participants without migraine	
Gender			
Female	38 (11.21%)	301 (88.79%)	
Male	17 (5.41%)	297 (94.59%)	p=0.038
Predominantly-intellectual-activity Profession			
Yes	30 (7.32%)	380 (92.68%)	
No	25 (10.29%)	218 (89.71%)	p =0.186
Socio-economic status			
Low	5 (2.92 %)	166 (97.08 %)	
Middle	34 (7.19 %)	439 (92.81 %)	p =0.003
High	16 (25.40 %)	47 (74.60 %)	
Education level			
Illiterate	13 (3.82 %)	327 (96.18 %)	
Secondary level	27 (9.03 %)	272 (90.97 %)	p =0.065
University level	13 (19.40 %)	54 (80.60 %)	
Other	2 (100.00%)	0 (0.00%)	
Coffee consumptions			
Yes	14 (19.8 %)	59 (80.82 %)	
No	41 (7.07 %)	539 (92.93 %)	p = 0.0004
Alcohol consumption			
Yes	14 (13.86%)	87 (86.14%)	
No	41 (7.43%)	511 (92.57%)	p =0.0323
High blood pressure			
Yes	5 (29.41%)	12 (70.59%)	
No	50 (7.86%)	586 (92.14%)	p =0.0016
Smoking			
Yes	10 (31.25%)	22 (68.75%)	
No	45 (7.25%)	576 (92.75%)	p=0.00000186

security threat with its share of suspicion and mistrust of foreign people visiting households. The work was therefore more difficult and the information gathered may not be as reliable as we would expect. Moreover, the participants provided verbal response that we were not able to check for accuracy. Among the illiterate participants, the translation of the questionnaire directly into local languages might have been source of misunderstanding of the questions and source of incorrect answers. Finally we just run a bivariate analysis, displaying only crude odd ratio. Multiple small cells associated with missing data did not allow for multivariate analysis that could have addressed the confounding variables issues.

Life style and cardiovascular risk factors

Coffee intake was found in 25.45% of migraine patients. Coffee consumption was significantly associated with migraine attacks with 20.29% of coffee consumers among migraine patients versus 7.02% of those not consuming coffee (p<0.01). This relation could be biased because some migraine patients take coffee to relieve their pain. Actually, Rasmussen (1993) did not find a significant association between coffee consumption and migraine (Rasmussen, 1993). Alcohol intake was found in 23.64% of migraine patients. There was a significant association between alcohol consumption and migraine and 13.86% of alcohol consumers suffered from migraine
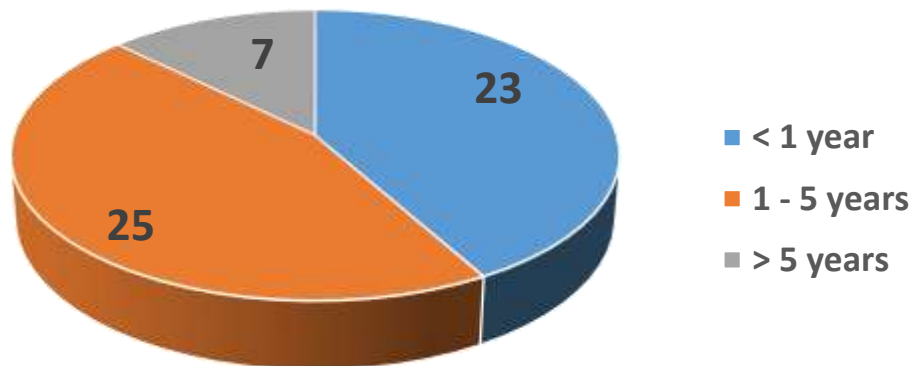
Figure 1. Distribution of migraine patients according to the time from the beginning of the symptoms to the initiation of care (in years).

Table 2. Type of treatments and the migraine disease progression.

Type and effects of treatments	Frequency	Percentage
Type of treatments		
Medical treatments	12	21.82
Traditional treatments	0	0.00
Self-medication	42	76.36
No treatment	1	1.82
Disease progression		
Clear improvement	0	0.00
Little improvement	24	43.64
Steady health status	28	50.91
Worsening of the health status	3	5.45

versus 7.43% of non-alcohol consumers (p <0.05). These findings were not corroborated by the results of an Ethiopian study which did not find an association between alcohol consumption and migraine (Gelaye et al., 2013). Likewise, Rasmussen (1993) in their study did not find a significant association between alcohol consumption and migraine (Rasmussen, 1993). The association found in our study is difficult to assess because alcohol consumption sometimes leads to headaches which can be a confusion bias with migraine headaches. It is also recognized that taking psychoactive substances can lead to depressive disorders in migraine patients (Radat, 2011). Smoking was found in 18.18% of migraine patients. A migraine prevalence of 31.25% was found in smokers against 7.25% in non-smokers (p <0.01). In a study carried out in France in 1998, tobacco was not involved in migraine attacks (Guevara et al., 1998). Likewise, Rasmussen (1993) in their study did not find a significant association between tobacco consumption and migraine (Rasmussen, 1993). However, in Ethiopia an association between tobacco consumption and migraine had been observed but in a protective direction, as migraine was rather predominant in non-smokers (Gelaye et al., 2013). As most recent studies have not addressed this question, there is a research need to confirm the role of smoking on the migraine attacks.

Migraine treatment

Among the 55 migraine patients, 41 people (74.55%) had never visited a health professional. A similar rate was found in Nigeria, in hospital settings with 80.4% of migraine patients having never consulted a doctor (Oshinaike et al., 2014). This low consultation rate could be explained either by the ignorance on migraine headaches perceived as being caused by the identified triggering factors or by the trivialization of the migraine attacks. In France, different results were found with 59.53% of non-consultation (Cassat, 2002). This difference could be explained by the inaccessibility of health care to the majority of the population in our context compared to France.

Also in our sample, the practice of self-medication affected more than two-thirds of the participants who were taking treatment and this was at 100% a treatment self-administered during attacks. In Congo, this practice was observed in 89.8% of migraine patients (Ossou-Nguiet et al., 2019) while it was 66.8% in Mali. Although these results are slightly different from ours, the self-medication rate remains very high in all studies and this could be explained by the low consultation rate. Among the 55 migraine patients, 28 (50.91%) saw their migraine evolve without improvement. Less than half had some improvement in their attacks frequency and severity (43.64%). This could be explained by the lack of long-term treatment for migraine linked to the low consultation rate. This situation can also be explained by a lack of information and sensitization of the front-line health professionals who use to manage migraine by prescribing symptomatic treatments during migraine attacks without referring to neurologists.

Conclusion

Migraine as a disabling disease would affect predominantly women in our context. Psychoactive substances such as coffee, tobacco and alcohol as well as high blood pressure also seem to be risk factors with a strong possibility of reverse causality to be elucidated by a cohort study. It is a neglected disease both by the patient himself and by non-specialist health care professionals. Self-medication is widely preferred to specialized medical care. As a result, migraine is a disease that responds little or no to treatment which is hardly ever substantive. Professional health workers need to be sensitized and their knowledge updated in relation to this pathology in Burkina Faso.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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