

Chronic Idiopathic Constipation: Prevalence and Associated Factors among Healthcare Workers at an Urban Hospital

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ABSTRACT

Background: Chronic constipation, frequent and multifactorial, may be more prevalent among healthcare workers due to occupational stressors. This study aimed to determine its prevalence and associated factors among the staff of the Sourô Sanou University Hospital Center in Bobo-Dioulasso.

Methods: This was a cross-sectional analytical study conducted on a random sample of healthcare staff at the Sourô Sanou University Hospital Center, from April 1st to May 31st, 2025. Only staff members with at least six months of seniority prior to the start of the study and who had given their informed consent were included. The variables concerned sociodemographic, professional, behavior, clinical data and the impact on work. Analysis of factors associated with chronic constipation was performed using binary multivariate regression.

Results: Among 302 participants in the study, 103 (34.2%) individuals, self-reported being constipated, compared with 69 individuals (23.3%), who were found to be constipated based on the Rome IV criteria. The predominant clinical sign was stool with a hard, nut-like appearance in 26.7% of constipated participants. The mean age of participants was 40.3 ± 9.1 years. The study population was predominantly male (55.3%). Factors such as diabetes, stress, and age were associated with an increased risk of constipation. Fiber consumption and male sex were protective factors. Constipation could lead to symptoms such as concentration difficulties and fatigue which negatively affected the professional activity of healthcare workers.

Conclusion: Chronic constipation is common among healthcare professionals in urban areas. The associated factors necessitate preventative strategies focused on a balanced diet and regular physical activity to optimize their well-being and professional productivity.

Keywords

Associated factors, Burkina Faso, Chronic constipation, Health personnel, Prevalence.

Introduction

Chronic constipation is a public health issue due to its prevalence [1,2], its impact on quality of life [3,4] and the significant costs associated with diagnostic tests and treatments [2]. It is defined as abnormal retention of stool in the colon, leading to a decrease

in bowel movement frequency, difficulty passing stool, and a sensation of incomplete evacuation [5].

It affects 16% of the global population [1-3]. Significant variation in prevalence is observed across countries despite the use of uniform symptomatic criteria for diagnosis [6]. In Japan, a national survey reported a prevalence of 11.2% [3], while a study in Brazil reported 24.7%, according to Rome III criteria and the Bristol Scale, in a population of obese adults [7,8]. In sub-Saharan Africa, a study conducted by Séhonou et al. on constipation reported a prevalence of 24.2% according to Rome IV criteria [9]. In Burkina Faso, a study by Bougouma et al. reported that constipation was the second most common indication for colonoscopy [10], while Kaboré et al. found chronic constipation in 35% of older adults in their urban study [11].

Constipation may be primary (normal bowel transit, slowed bowel transit, and/or defecation disorders) or secondary (due to chronic diseases, anatomical abnormalities, and/or medication use) [12,13], organic [14,15], or functional [16-18]. Several factors have been reported in the literature as being associated with constipation, including female gender [6,9,19], advanced age [9,19], the presence of anorectal pathology (whether operated on or not) [9], insufficient physical activity, poor sleep quality, depression, and the use of antidepressants [19-21]. Meanwhile, high daily intake of water and dietary fiber and regular physical activity appear to have a protective effect [22,23].

Numerous studies have focused on chronic constipation in the general population or among patients. However, few have specifically sought to determine its prevalence among rotating shift workers, such as those in hospital settings [3,24-26]. In addition to personal factors, these workers are exposed to the pressure of heavy workloads and a demanding work schedule, intensified by technological advancements [20,21], which impact their physical and mental well-being [3,4,27]. Very few studies have yet analyzed the factors associated with chronic constipation among this population. It is against this backdrop that this study was conducted with the aim of assessing the prevalence of constipation and analyzing the factors associated with it among hospital staff at the Sourô Sanou University Hospital in Bobo-Dioulasso.

Methods

Study Setting

The study was conducted in the Departments of Internal Medicine and Specialties, Surgery and Specialties, Obstetrics and Gynecology and Reproductive Medicine, Pediatrics, Medical Imaging and Radiodiagnostics, LabaORtory, and Pharmacy at Sourô Sanou University Hospital.

Study Design and Period

This was a cross-sectional study with an analytical focus and prospective data collection. Data collection took place from April 1 to May 31, 2025.

Study Population

The population included all healthcare personnel at Sourô Sanou University Hospital who were present during the data collection period and were divided into three groups:

- Medical staff: physicians, surgeons, pharmacists, labaORtory scientists, and residents;
- Paramedical staff: nurses, midwives, obstetric technicians, labaORtory technicians, and physical therapists;
- Support staff: hospital housekeeping staff.

Inclusion Criteria

We included all male and female hospital staff members who had been working at Sourô Sanou University Hospital for at least 6 months prior to the study period, who consented to participate in the study, who were present at the time of the study, who reported having chronic constipation, and/or who met the diagnostic criteria for constipation according to Rome IV [4,8].

Sampling

Type of Sampling

We conducted convenience sampling based on voluntary participation in the various departments of the CHUSS mentioned above. In these departments, we randomly selected staff members present during our visits; participation in the questionnaire was voluntary.

Calculation of Sample Size

We used the adjusted Cochran formula [28] with a maximum proportion p of 50%; thus, we obtained:

$$\text{Adjusted } N = n_0 / 1 + (n_0 - 1) / N$$

N_0 = sample size calculated using the Cochran formula ($z^2 p(1-p) / e^2$)

N = population size (1,016)

Adjusted N = final sample size corrected for the finite population size

Z : coefficient corresponding to a 95% confidence interval (1.96).

p : estimated prevalence of constipation (50%).

e : desired precision (5%)

The expected sample size was 279 people.

Study Variables

The dependent variable was chronic constipation, a dichotomous categorical variable taking the value 1 for YES and 0 for NO.

The independent variables were grouped into five categories:

- Sociodemographic data: age, sex, marital status;
- Occupational data: socio-professional category, length of service at the facility, perceived stress level at work;
- Behavioral data: frequency of daily meals, daily fluid intake, fiber intake, weekly physical activity (outside the hospital), nighttime sleep, medication use, substance use;
- Clinical data: comorbidities and/or medical history, frequency of constipation, weekly stool frequency, difficulty passing stools, sensation of incomplete bowel movements, use of maneuvers to pass stools, stool consistency according to the Bristol Stool Scale [8];

- Data on professional impact: perception of general health, fatigue, difficulty concentrating, headaches, abdominal bloating, abdominal pain.

Operational definitions

Answering “yes” in the “Constipation” box was considered self-reported constipation;

“Frequently” is defined as a symptom present in more than 25% of bowel movements.

“Occasionally” is defined as a symptom present in less than 25% of bowel movements.

Fiber intake was defined as a varied diet including whole grains (beans, peas, soybeans, millet, corn, sorghum), vegetables, or fruits at least twice a week.

Daily physical activity was defined as engaging in at least 30 minutes of walking or another energy-expending activity (cycling, swimming, running, aerobic dance, etc.) per day.

Stress was considered low when the numerical scale was between 1 and 3; it was moderate when between 4 and 6; and very high when between 7 and 10.

Sleep assessment concerned only nighttime sleep. It was considered normal when it reached at least 7 hours per night. It was considered insufficient when it was less than 7 hours per night.

Tools and Data Collection

Data were collected anonymously using a semi-structured questionnaire administered by a hospital resident to the study participants. Verbal informed consent was obtained from each participant following counseling on the study’s objective, its importance, and the survey method prior to data collection. The data collection method was twofold: either an individual interview or self-administration of the questionnaire.

Data Analysis

Data were entered into a computer using EPI Data software via a form designed for this purpose. Descriptive analysis was performed using means, standard deviations, and proportions. The prevalence of constipation was calculated based on the respondents’ reports and according to the Rome IV diagnostic criteria [4,8]. Analyses were performed using Stata 13 software. The Chi-square test was used to assess the association between chronic constipation and certain factors. The results of the multivariate analysis were interpreted using crude and adjusted odds ratios (aOR) with a 95% confidence interval. The significance threshold was set at $p < 0.05$.

Ethical Considerations

The confidentiality of the data collection process was strictly maintained. We obtained authorization from the hospital director before beginning data collection. We then systematically sought the verbal informed consent of individuals willing to participate in the study before interviewing them. This study posed no physical or biological risk to the patients. Data confidentiality was ensured throughout the study. The data, collected anonymously, were used

solely for this study.

Results

Sociodemographic characteristics of the study population

The survey included a sample of 302 hospital staff members. Of these, 167 (55.3%) were male, resulting in a sex ratio of 1.2. The mean age of the participants was 40.3 ± 9.1 years, ranging from 24 to 60 years. More than half (58.8%) were under 50 years of age. The majority of participants were married (77.5%). The sociodemographic profile of the participants is presented in Table 1.

Table 1: Sociodemographic characteristics of hospital workers (N = 302).

Variables		Number	Percentage
Gender	Male	167	55.3
	Female	135	44.7
Age groups (years)	[20-30]	74	24.5
	[30-40]	96	31.8
	[40-50]	82	27.1
	>50	50	16.6
Marital status	Married	234	77.5
	Single	60	19.9
	Divorced	6	2
	Widowed	2	0.6

Professional Characteristics

Nurses constituted the largest professional group (45.0%), followed by midwives (17.2%) and resident physicians (16.2%). Most (79.1%, $n=239$) had been in their current position for at least one year, with 42% having more than five years of seniority. On a scale of 1 to 10, the average reported stress score was 5.2. When categorized by this level, 66% of participants were found to have moderate stress. The description of the workers’ professional characteristics is presented in Table 2.

Table 2: Professional characteristics of hospital workers (N = 302).

Variables	Number	Percentage
Occupational category		
Nurse	136	45
Midwife	52	17.2
Resident physician	49	16.2
Physician	35	11.6
Housekeeping staff	20	6.6
Pharmacist	6	2.0
Biologist	3	1.0
Not specified	1	0.3
Length of service at the institution		
Less than 6 months	14	4.7
6 months to 1 year	46	15.2
1 to 5 years	113	37.4
More than 5 years	126	41.7
Not specified	3	1.0
Level of perceived stress at work		
Low stress	82	27
Moderate stress	199	66
High stress	21	7

Behavioral Characteristics

The study examined several aspects of hospital staff members’ lifestyles to better understand the influence of dietary habits, hydration, physical activity, sleep, and stress on constipation. Among the workers, 88.7% reported eating 2–3 meals per day. A majority of participants (72.1%) considered their dietary fiber intake to be average. Among our subjects, 45% consumed 1–2 liters of water per day, and 41.1% reported consuming 2–3 liters. Outside of work, 36.3% reported engaging in no physical activity, and 3.7% reported engaging in physical activity at least 5 times per week. The workers’ habits and lifestyle are detailed in Table 3 below.

Table 3: Habits and lifestyle of workers (N = 302).

Variables	Number	Percentage
Frequency of daily meals		
Fewer than 2	23	7.6
2 - 3	268	88.7
More than 3	11	3.6
Dietary fiber intake		
Low	34	11.2
Moderate	218	72.1
High	50	16.5
Daily water intake		
1/2-1 liter	23	7.6
1-2 liters	136	45.0
2-3 liters	124	41.1
More than 3 liters	19	6.3
Weekly physical activity		
None	109	36.1
1 - 2 times	139	46.0
3 - 4 times	43	14.2
At least 5 times	11	3.7
Average sleep duration		
Less than 7 hours	222	73.5
7 hours or more	80	26.5

Prevalence of constipation based on workers’ self-reports and prevalence of constipation based on Rome IV clinical criteria

Among the 302 participants, 103 (34.2%) reported being constipated.

Based on the Rome IV clinical diagnostic criteria, 69 (23.3%) individuals were considered clinically constipated.

Clinical Characteristics

Signs of constipation according to Rome IV criteria in patients

According to Rome IV criteria, the clinical signs of constipation most frequently reported by healthcare providers were separate hard lumps or lumpy and sausage like (26.5%) and a bowel movement frequency of fewer than 3 times per week (23.5%). Comorbidities were present in 20.2% (n = 61) of them. Signs of constipation according to Rome IV criteria and comorbidities in this population are detailed in Table 4.

Table 4: Description of clinical characteristics among workers.

Variables	Number	Percentage
Signs of constipation (n = 302)		
Hard or lumpy stools	80	26.5
Bowel movements < 3 times/week	71	23.5
Intense straining	41	13.6
Incomplete evacuation	37	12.3
Use of manual manoeuvres	35	11.6
Comorbidities (n = 61)		
High blood pressure	40	65.6
Diabetes	13	21.3
Rheumatic conditions	5	8.2
Gastric ulcer	3	5.0
Hemorrhoidal disease	2	3.3
Neurological conditions	2	3.3
Asthma	2	3.3
Sickle cell disease	1	1.6

NB: Some patients had multiple symptoms and/or comorbidities.

Factors Associated with Constipation among Hospital Staff at Sourô Sanou University Hospital

In univariate analysis, 12 factors were associated with constipation at the 20% threshold. These were:

- Sociodemographic factors: male gender, age over 40, and being married or divorced;
- Occupational factors: being a physician or pharmacist;
- Clinical factors: the presence of comorbidities, particularly diabetes and hypertension;
- Behavioral factors: eating 2–3 meals per day, drinking more than 3 liters of water per day, engaging in 3–4 sessions of physical activity per week, having an average or high daily intake of dietary fiber, and reporting a moderate or high level of stress.

Multivariate analysis identified five factors significantly associated with constipation. The following factors were associated with an increased risk of constipation:

- Workers with diabetes had a 5.8-fold higher risk of constipation compared to non-diabetic patients [aOR = 5.80; 95% CI (1.62–20.77); p = 0.007].
- Workers who reported moderate stress levels had a 3.37-fold higher risk of constipation compared to those who reported low stress levels [aOR = 3.37; 95% CI (1.47–7.75); p = 0.004].
- Workers who reported high stress levels had a more than 5-fold increased risk of constipation compared to those who reported low stress levels [aOR = 5.33; 95% CI (1.51–18.80); p = 0.009].
- Being in the 40–50 age group was significantly associated with a 2.59-fold increased risk of constipation [aOR = 2.59; 95% CI (1.05–6.39); p = 0.038] compared to the reference group (≤30 years). The other age groups showed no significant association after adjustment.

The following factors were associated with a protective effect against constipation:

- An average fiber intake was associated with a reduction in the risk of constipation of approximately 74% [aOR = 0.26; 95% CI (0.12–0.58); p = 0.001].

- High fiber intake was associated with an 80% reduction in the risk of constipation [aOR = 0.20; 95% CI (0.07–0.60); p = 0.004].
- Being male was associated with a 57% reduction in the risk of constipation compared to females [aOR = 0.43; 95% CI (0.23–0.80); p = 0.008]

Table 5 below shows the results of the of factors associated with constipation.

Table 5: Factors associated with constipation in multivariate analysis.

Variables	Crude OR (IC 95%)	aOR (IC 95%)	p-value
Gender			
Female	1	1	
Male	0.51 (0.29-0.87)	0.43 (0.23-0.80)	0.008
Age (in years)			
≤ 30	1	1	
[30 - 40]	1.85 (0.84-4.08)	1.68 (0.70-3.99)	0.244
[40 - 50]	2.62 (1.18-5.82)	2.59 (1.05-6.39)	0.038
> 50	1.56 (0.62-3.95)	2.20 (0.80-6.07)	0.127
Diabetes			
No	1	1	
Yes	4.08 (1.32-12.59)	5.80 (1.62-20.77)	0.007
Dietary fiber intake			
low	1	1	
Moderate	0.26 (0.12-0.55)	0.26 (0.12-0.58)	0.001
High	0.18 (0.06-0.50)	0.20 (0.07-0.60)	0.004
Level of stress			
Low	1	1	
Moderate	2.66 (1.28-5.54)	3.37 (1.47-7.75)	0.004
High	3.45 (1.12-10.61)	5.33 (1.51-18.80)	0.009

Impact of Chronic Constipation on Work

Among the 103 workers who reported being constipated, 47 (45.6%) indicated that constipation had an impact on their work. The main effects were fatigue and difficulty concentrating, reported by 55.3% and 36.2% of respondents, respectively. Details of the impact of chronic constipation are presented in Table 6 below.

Table 6: Impact of chronic constipation on work (N = 47).

Impact of chronic constipation	Number	Percentage
Fatigue	26	55.3
Concentration difficulties	17	36.2
Headaches	6	12.8
Abdominal bloating	4	8.5
Abdominal pain	2	4.3

NB: Some agents had multiple types of impact.

Discussion

Sociodemographic characteristics of the population

The study population was predominantly male (55.3%), with a mean age of 40.3 ± 9.1 years, and the vast majority of participants were married (77.5%).

These data are consistent with the demographic structure of civil servants in Burkina Faso according to the National Institute of

Statistics and Demography of Burkina Faso and previous studies [29,30].

Characteristics related to habits and lifestyle

Regarding dietary fiber, 72.1% of participants estimated their intake as average, and 11.3% reported having a low intake. On the one hand, high-fiber foods (fresh fruits and vegetables) are not consistently included in all meals eaten at the workplace [31]. On the other hand, some employees do not have the habit of consuming fresh or dried fruits and vegetables daily, either due to a lack of nutritional and dietary knowledge or due to financial constraints.

Hydration is a key factor in preventing constipation. In our study, nearly 45% of participants consumed 1–2 liters of water per day and 41% consumed 2–3 liters daily, which is sufficient according to the World Health Organization's daily recommendations of 1.5–2 liters for adults [32]. However, in a hot climate, this amount may prove insufficient due to increased fluid loss through sweating. Approximately 7.6% of participants consumed less than one liter per day. This low water intake could be explained, on the one hand, by the lack of drinking water available within the departments—in the form of water fountains or jugs—and thus the responsibility falling on the staff. On the other hand, it could be due to a lack of restrooms, leading to a tendency to voluntarily limit water intake.

Excluding steps taken as part of their work, 36.3% of workers reported not engaging in any other physical activity. Only 3.7% of participants reported engaging in physical activity five or more times per week. This could be explained by inadequate infrastructure, marked by a lack of walking paths, the absence of dedicated sports facilities within the hospital (sports fields and gyms), and a shortage of group sports activities.

Regarding sleep, 73.4% of participants slept less than 7 hours per night. Shift work schedules may be a cause of sleep disturbances and digestive disorders [33]. Working in the medical field can sometimes be stressful (66%) due to the need to provide quality care while meeting the high expectations of the patients under one's care [34].

Clinical Characteristics

The most common clinical sign among patients suffering from constipation was the appearance of stool that was hard like scyphules, observed in 26.7% of those with constipation. This finding is consistent with that of Kaboré et al. [11], who found that hard or lumpy stools were the predominant sign observed in older adults in their study. Similarly, Séhonou et al. [9] in Benin reported that the clinical manifestations of constipation in the Beninese population were dominated by the passage of hard or fragmented stools. The hard consistency of stools requires intense straining during bowel movements, thereby contributing to symptomatic impact through the proctalgia it causes. It can also lead to complications such as anal fissures, hematochezia, and hemorrhoidal disease, which may explain why it is the most commonly reported symptom in cases of constipation.

Prevalence of Constipation

In addition to the subjective perception of constipation, this study also identified cases that met the Rome IV objective criteria, which are used in gastroenterology to diagnose functional constipation.

Based on the Rome IV criteria, 69 out of 296 respondents (23.3%) were considered “clinically constipated”. In comparison, 103 people (34.2%) self-reported being constipated. A cross-analysis highlights a significant discrepancy between the two approaches: 62 subjects were constipated according to Rome IV and perceived themselves as such, while 40 subjects reported being constipated without meeting the Rome IV criteria (false positives) and 7 subjects met the Rome IV criteria without considering themselves constipated (false negatives).

The true agreement rate (apparent sensitivity) between patient perceptions and clinical criteria was therefore 89.9%, and the rate of subjective overestimation reached 38.8%. This highlights the difficulty of accurately diagnosing constipation and the importance of using objective diagnostic criteria in epidemiological studies of functional disorders [6]. The prevalence of 23.3% observed in this study according to Rome IV criteria is significantly higher than the 10.4% reported in the global adult general population, according to a systematic review and meta-analysis conducted by Barberio et al. [6]. However, it is lower than that reported in the United States, where 48–81.9% of shift workers report suffering from constipation [25]. This high prevalence of constipation in healthcare settings highlights the fact that the healthcare workforce is at high risk for constipation and that communication and prevention measures would be appropriate to implement.

Factors Associated with Constipation Among Hospital Staff

At a significance level of $p < 0.05$, the factors associated with constipation were gender, marital status, the presence of comorbidities, dietary fiber intake, and perceived stress.

Gender, age, and chronic constipation

Being male was associated with a 57% reduction in the risk of constipation compared to females [aOR = 0.43; 95% CI (0.23–0.80)]. According to various studies, being female increases the risk of constipation [6,35,36] due to the influence of hormones such as progesterone, which slows intestinal motility, and a greater tendency for women to delay bowel movements longer when away from home [37].

Being in the 40–50 age group was significantly associated with a 2.59-fold increased risk of constipation [aOR = 2.59; 95% CI (1.05–6.39)] compared to those under 40 years of age. The prevalence of constipation is reported to be higher among older adults, and the older the person, the higher the risk [6].

Diabetes and Chronic Constipation

Patients with diabetes had a 5.8-fold increased risk of constipation compared to non-diabetic patients [aOR = 5.80; 95% CI (1.62–20.77); $p = 0.007$]. Neurological damage (diabetic neuropathy)

associated with diabetes can affect the enteric nervous system, slowing intestinal motility and reducing rectal sensitivity, thereby promoting constipation. Our results are consistent with those reported in studies by Kaboré et al. [11] and Choung et al. [38] in the United States, which found a significant association between the presence of comorbidities such as diabetes, hypertension, and neurological diseases (Parkinson’s disease and multiple sclerosis) and constipation.

Stress and Chronic Constipation

Workers who reported experiencing moderate stress [aOR = 3.37; 95% CI (1.47–7.75)] or high [aOR = 5.33; 95% CI (1.51–18.80)] had a 3.37-fold and 5.55-fold increased risk of constipation, respectively, compared to those reporting a low level of stress ($p < 0.05$). These results are consistent with the systematic review conducted by Gozali et al. [39], which demonstrated a significant association between psychological stress related to family, work, and life in general and functional constipation. This can be explained by the fact that there is growing evidence that stress-induced corticotropin release causes intestinal dysfunction through multiple pathways, either via the hypothalamic-pituitary-adrenal axis, the autonomic nervous system, or directly on the intestine itself [40].

Dietary Fiber Intake and Chronic Constipation

Healthcare workers who reported moderate [aOR = 0.26; 95% CI (0.12–0.58)] or high [aOR = 0.20; 95% CI (0.07–0.60)] of dietary fiber had a reduced risk of constipation of approximately 74% ($p = 0.001$) and 80% ($p = 0.004$), respectively, compared to those who did not consume any. These results are consistent with those reported in studies by Kaboré among older adults [11] and Yang in China [40] on the effect of dietary fiber on constipation. Soluble and insoluble dietary fiber, by increasing stool bulk and retaining water, mechanically stimulate peristalsis and thus improve chronic constipation by increasing stool frequency [41].

Impact of Chronic Constipation on Work

According to 46.1% of workers with constipation, the condition appears to affect their professional activities. Tomita [3] and Ota [27] also reported impaired work performance in 36.8% and 39.2% of individuals with constipation in their respective studies. This could be explained by the fact that the symptoms of chronic constipation are often severe and bothersome, negatively impacting patients’ quality of life and thereby affecting their productivity at work and other daily activities [42]. Symptoms of discomfort at work varied, as in other studies [27].

Limitations and Constraints of the Study

Our study consisted of a descriptive and analytical cross-sectional survey involving prospective data collection from healthcare workers in a hospital setting. This study had several limitations related to:

- The professional setting, characterized by participants who were often unavailable to complete the questionnaire due to their work duties;
- The potential subjectivity of responses provided by

respondents during face-to-face interviews;

- The incompleteness of data collected via self-administered questionnaires.

Conclusion

The prevalence of constipation is higher among hospital staff than in the general population. The most commonly reported symptom is hard, lumpy stools, which are directly responsible for complications such as anal fissures, bloody stools, and hemorrhoids. Associated factors included female gender, the presence of diabetes, insufficient dietary fiber intake, and stress. The implementation of targeted interventions focused on improving diet and organizing regular group physical activities within hospitals by health authorities would improve the well-being of hospital staff and increase their productivity.

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