

Epidemiological Profile of Stress among Health Professionals in Northern Benin in 2021

Gounongbé A. Christophe Fabien^{1*} , Mama Cissé Ibrahim¹, Bèhanzin Luc², Azandjèmè Colette Sylvie³, Owona Manga Jules⁴

¹Faculty of Medicine, University of Parakou, Parakou, Benin

²National School for Training of Senior Technicians in Public Health and Surveillance Epidemiology, University of Parakou, Parakou, Benin

³Regional Institute of Public Health of Ouidah, University of Abomey-Calavi, Abomey-Calavi, Benin

⁴Faculty of Medicine and Pharmaceutical Sciences, University of Douala, Douala, Cameroon

Email: *gcfabien@yahoo.ca

How to cite this paper: Fabien, G.A.C., Ibrahim, M.C., Luc, B., Sylvie, A.C. and Jules, O.M. (2023) Epidemiological Profile of Stress among Health Professionals in Northern Benin in 2021. *Occupational Diseases and Environmental Medicine*, 11, 157-166.

<https://doi.org/10.4236/odem.2023.114012>

Received: June 20, 2023

Accepted: September 22, 2023

Published: September 25, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Objective: To study the epidemiological profile of stress among health professionals in North Benin in 2021. **Methods:** It was a cross-sectional and descriptive study with health professionals in the Parakou-N'dali and Tchaourou health zones. These two areas have a population of 462,942 inhabitants served by two university hospitals, three area hospitals and 19 health centers. Sampling was exhaustive by free and informed consent. The data was collected through a questionnaire. Studied socio-professional characteristics and stress. The level of stress was assessed using the Karasek questionnaire. **Results:** Of 813 caregivers approached, 692 were investigated. The participation rate was 85.1%. The average age was 38 years old. Subjects aged 28 - 38 were more numerous, as were those aged between 1 and 10 years. The prevalence of stress was 73.8%. Its level was high at 17.8% and very high at 4.5%. Women were affected (76.6%) than men (70.7%). Within the professional category, midwives were the most affected (82.5%). Respondents from the denominational sector were 90.8% reached. **Conclusion:** Professional stress is endemic in health facilities in northern Benin, particularly faith-based ones. Action must be taken to reduce it.

Keywords

Occupational Stress, Health Training, Parakou-Ndali Zone, Tchaourou, Benin

1. Introduction

Stress is the body's reaction to a real or perceived threat. It is present in any profes-

sional activity. Occupational stress is particularly observed in work situations where social support is lacking, the objectives are not well defined as well as the role of the worker. Stress can have significant repercussions on health because it leads to a whole series of physical, emotional and behavioral disorders, as well as significant repercussions on performance.

The 2006 World Health Organization report on health [1] noted that in many countries in sub-Saharan Africa, the situation of stress in healthcare facilities was critical. A study carried out in 2013 at the Lagune Mother and Child Hospital in Cotonou concluded that the stress factors for caregivers were diverse and numerous [2]. Based on this basis, we wanted to know the situation of stress at work in health establishments in northern Benin. To this end, we have carried out work with the objective of studying the epidemiological profile of occupational stress among health personnel in northern Benin in 2021.

2. Methods

It was a cross-sectional and descriptive study that lasted three months from August 1 to October 30, 2021. Data collection occurred from September 5 to 30, 2021. It involved health professionals practicing in training public, denominational and private sanitary facilities in the health zone of Parakou-Ndali and that of Tchaourou. These are two of the four health zones in the department of Borgou. These two areas have a population of 462,942 inhabitants served by two university hospitals, three area hospitals and 19 health centers (infirmary and maternity ward).

The sampling is an exhaustive census of healthcare personnel (doctors, nurses, midwives, laboratory technicians, and nursing assistants) working in these two health zones. All those who were present at their workstation during the data collection period and had their free and informed consent were included. An individual questionnaire was drawn up by the team and then tested in a health zone close to the study area. Corrected, it allowed us to collect the data. It contains 89 items with open and closed questions. The variables studied were socio-demographic characteristics (gender, age, professional category, seniority in the profession, health unit to which they belong, department) and stress (presence, level, frequency, symptoms).

Stress was assessed based on the Karasek questionnaire based on 21 items. When the answer to a question is “not at all” we give zero, “rarely” we give one, and “often” we give two. The sum of the scores led to retaining the following four levels of stress:

- low level: when the score is ≤ 7 ;
- average level: if $8 \leq \text{score} \leq 15$;
- high level: when the score is ≥ 16 .

The data collected was processed and analyzed with Epi info 7.2.0.1 software.

The agreement of the local ethics committee for biomedical research of the University of Parakou (appendix) was obtained under the number REP: 0262/CLERB-UP/P/SP/R/SA.

3. Results

3.1. Sociodemographic Characteristics

Of the 813 caregivers approached, 692 were surveyed, *i.e.*, 85.1% participation rate. Those of the female sex were 395 (57.5%) to 297 (42.9%) of the male sex, hence a sex ratio (M/F) equal to 0.7. Their average age was 38. Subjects in the 28 - 38 age group made up 36.6% of the sample and those with a seniority of between 1 and 10 years made up 46.7%. Among them, 62.9% worked in public health facilities. Those who worked in the gynecology and obstetrics departments represented 23.1% and the nursing staff 32.7% of the respondents. The rest of the socio-demographic characteristics are recorded in **Table 1** and **Table 2**.

3.2. Prevalence of Stress

There were 511 (73.8%) respondents including 301 women (43.5%) who said they were stressed at work. The level of stress was high in 154 (22.3%) (**Table 3**). Among women, 76.6% were affected against 70.7% of men. Within corporations, 82.5% of midwives had stress (**Table 4**). Stress was found in 90.8% of health professionals in denominational health facilities (**Table 5**).

The stress link was statistically significant with the subjects' sex ($p = 0.0356$), age ($p = 0.043$), professional category ($p = 0.0102$) and the sector to which they belonged (0.037) (**Table 4** and **Table 5**). In any professional category, at least two out of three caregivers worked under stress apart from physiotherapists. It is noted that the link of this occupational pathology with seniority and hospital service is not statistically significant ($p = 0.450$). Of the 14 hospital departments listed, 10 subject two out of three of their workers to occupational stress (**Table 5**).

4. Discussion

The objective of the study was to know the epidemiology of occupational stress among caregivers in the health zones of Parakou-Ndali and Tchaourou in 2021. Cross-sectional and descriptive with prospective data collection, the study led to valid results for the sample.

Workplace stress was a concern for healthcare workers in both health zones. The rate of 85.1% of respondents is evocative. The study by Gounongbé *et al.* [3] on stress, carried out in the Parakou-Ndali health zone alone in 2013, had already seen a similar participation rate (82.2%) of health workers. In Morocco in 2005, Djeriri *et al.* [4] reported a lower rate (67.8%) of caregivers for this same condition. It goes without saying that occupational stress is indeed a major concern for health professionals.

The female sex was predominant in the sample (sex ratio = 0.7). Gounongbé and collaborators found this female preponderance among health professionals in the Parakou-Ndali health zone in 2013 (sex ratio = 0.6) [3]. The same observation was made at the National Hospital of Niamey (Gounongbé *et al.*, 2021) [5] with a higher rate of women (sex ratio = 11.4). In other studies,

Table 1. Distribution of respondents according to socio-professional characteristics, Parakou-Ndali health zone and Tchaourou zone, 2021.

Socio-professional characteristics	Number	Percentage
Age (years)		
<28	121	17.5
[28 - 38[	253	36.6
[38 - 48[	220	31.8
[48 - 58]	95	13.7
>58	3	0.4
Seniority (years)		
<1	74	10.7
[1 - 10]	316	45.7
]10 - 20]	257	37.1
>20	45	6.5
Qualification		
General practitioner	64	9.2
Consultant	49	7.1
Male nurse	226	32.6
Midwife	80	11.6
Caregiver	157	22.7
Biology lab technician	86	12.4
radiology technician	13	1.9
Physiotherapist	17	2.5
Sector of belonging		
Audience	438	63.3
Private	178	25.7
Confessional	76	11.0

Table 2. Distribution of respondents by service, Parakou-Ndali and Tchaourou health zone, 2021.

Service	Number	Percentage
Gynecology and obstetrics	159	23.1
Medicine	132	19.1
Biology laboratory	100	14.4
Pediatrics	84	12.1
Physiotherapy	72	10.4
Surgery	49	7.1
Anesthesia-resuscitation	30	4.3
Dermatology	19	2.8

Continued

Ophthalmology	14	2.0
Radiology	12	1.7
Emergency room	10	1.4
Otorhinolaryngology	4	0.6
Stomatology	4	0.6
Psychiatry	3	0.4

Table 3. Distribution of health workers according to level of stress, Parakou-Ndali and Tchaourou health zones, 2021.

Level of stress	Number	Percentage
Caregiver not under stress	181	26.1
caregiver under stress (511)		
Low level	143	20.7
Average level	214	30.9
High level	154	22.3
Total	692	100.0

Table 4. Correlation of stress with gender, age, seniority and professional category of respondents, Parakou-Ndali and Tchaourou health zones, 2021.

Characteristics	Total	Stress		<i>p-value</i>
		Number	Percentage	
Sex				0.0356
Male	295	210	71.9	
Feminine	397	301	75.8	
Age				0.043
28 years	121	94	77.7	
[28 - 38 years[	251	194	77.3	
[38 - 48 years old[	219	153	69.9	
[48 - 58 years old]	95	69	72.6	
>58 years old	3	1	33.3	
Seniority				0.450
1 year	74	55	74.3	
[1 - 10 years]	316	227	71.8	
]10 - 20 years]	240	188	78.3	
20 years	45	32	71.1	
Professional category				0.0102
General practitioner	64	47	73.4	
Consultant	48	35	72.9	

Continued

Male nurse	225	172	76.4
Midwife	80	66	82.5
Caregivers	156	119	76.3
Biology lab technician	86	57	66.3
radiology technician	13	10	76.9
Physiotherapist	17	7	41.2

Table 5. Correlation of stress with the sector to which caregivers belong and the exercise service, Parakou-N'dali and Tchaourou health zones, 2021.

Sector and activity area	Total	Stress		p-value
		Number	Percentage	
Sector				0.037
Audience	429	293	68.3	
Private	177	144	81.4	
Confessional	76	69	90.8	
Service				0.098
Obstetric gynecology	159	131	82.4	
Medicine	132	57	43.1	
Laboratory	100	58	58.0	
Pediatrics	84	70	83.3	
Physiotherapy	72	61	84.7	
Surgery	49	35	71.4	
Anesthesia-Resuscitation	30	23	76.7	
Dermatology	19	7	36.8	
Ophthalmology	13	10	76.9	
Radiology	12	9	75.0	
Emergency room	10	7	70.0	
ENT	4	1	25.0	
Stomatology	4	3	75.0	
Psychiatry	3	2	66.7	

notably in Morocco (sex-ratio = 0.8) (Laraqui *et al.*, 2002) [6], in Tunisia (El Ghoul *et al.*, 2017) [7] (sex-ratio = 0.7) and in France (Pocheron, 2007) (sex-ratio = 0.8) [8], the female predominance is also noted. In São Paulo, Brazil, Cavagioni *et al.* in 2011 [9] also noted a strong female presence (sex-ratio = 0.7) among prehospital care professionals. There is indeed a feminization of the health profession [3].

The average age of our respondents was 38 years old. It is similar to that (37.9 ± 10.7 years) of health workers from Lomé in Togo (Bagny *et al.*, 2010) [10]. But

it is below that (45.65 ± 8.9 years) found in Morocco in 2011 (Korrida *et al.*) [11]. However, none of our respondents was under the age of 18 in accordance with the recommendations of the ILO on the minimum age for admission to employment [12].

At 36.6%, subjects aged 28 to 38 were the most numerous in the sample. In the quest for the health consequences of night work among nursing staff in Niamey (2021), Gounongbé and collaborators noted that those aged 30 - 39 (40.80%) were the most represented [5]. So, there is a similarity between the two age groups.

They were 45.66% to have 1 year to 10 years of seniority in the profession. This is the most represented seniority. At the Niamey National Hospital in 2021, those with 8 to 15 years of seniority (49.2%) came first [5]. At the hospital of the University of Medical Sciences of Kerman in Iran, the shift staff dominated in terms of seniority those who were 5 to 10 years old (34.4%) (Zare *et al.*, 2018) [13].

Respondents from public health facilities were in the majority (62.92%) in the sample. This would be due to their high representativeness in the sample. The Beninese labor code has fixed the weekly working time at 40 hours, regardless of sex and mode of remuneration. However, 70.2% of our respondents worked beyond 40 hours. While three out of five respondents are employed by state. So, there is extra work.

Three out of four of our respondents (73.8%) were stressed. In Morocco (Laraqui *et al.*, 2008), Tunisia (Halouani *et al.*, 2018) and France (Weibel *et al.*, 2004) health professionals were also stressed, but at lower rates, respectively 21.7%; 40.7% and 46% [6] [14] [15]. Female staff were more affected (75.8%). The same observation was made in Morocco (Laraqui *et al.* 2008) [6] but to a lesser extent (59.1%). Paramedics were also more affected, in this case, midwives (82.50%), nurses (76.44%), and caregivers (76.28%). According to Laraqui and collaborators in Morocco in 2008 [6] and Mrizak and collaborators [16] in Tunisia (2004), paramedical staff were more affected by stress, particularly caregivers and nurses. In Tunisia, doctors were the most stressed (Halouani *et al.*, 2018) [14].

Stress was statistically related to sex ($p = 0.0356$) and to age in North Benin ($p = 0.043$). In Tunisian series (Halouani *et al.*, 2018; Bouattour *et al.*, 2016) [14] [17], stress was only associated with age. This was the case in Morocco in 2008 ($p = 0.016$), according to the study by Laraqui *et al.* [6]. This correlation was not obtained in Nigeria (Olayinka *et al.*, 2013) [18] and in France (Tripodi *et al.*, 2007) [19]. It is significantly related to the sector to which the health facility belongs ($p = 0.037$). Its highest prevalence is recorded in faith-based health facilities (90.8%). We expected to have a lower rate in religious circles because of the tolerance that religion advocates. Authors explained the presence of stress in elderly subjects by the fear of the end of their careers [6] [20].

These two health zones are full of more caregivers in the department, they can

therefore be extrapolated to the entire department. However, the declarative nature of the survey constitutes a limitation.

5. Conclusion

Occupational stress is endemic in health facilities in northern Benin, particularly faith-based ones. The prevalence is high in 2021. All categories of health professions are affected, in this case paramedics. Preventive measures are necessary to be taken by the health authorities in order to promote the health of health professionals. This involves solving problems with an ecosystem approach.

Conflicts of Interest

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

References

- [1] Organisation Mondiale de la Santé. Personnels de santé. Genève.
<https://www.who.int/fr/health-topics/health-workforce>
- [2] Gounongbé, A.C.F., Ayélo, A.P., Aguèmon, B., Djidonou, A., Gahou, T.L., Tognon, T.F., Gandaho, P. and Fayomi, B. (2013) Évaluation des facteurs de stress chez les soignants de l'hôpital de la mère et de l'enfant de Cotonou, Bénin. *Le Bénin Médical*, **53**, 28-32.
- [3] Gounongbé, F., Ayélo, A., Aguèmon, B., Chouti, F., Zannou, M. and Fayomi, B. (2013) Facteurs de risques des accidents d'exposition au sang chez les professionnels de la santé de la zone sanitaire Parakou-N'dali (Nord-Bénin). *RAMReS Sciences de la Santé*, **1**, 11-15.
- [4] Djeriri, K., Charof R., Laurichesse, H., Fontana, L., El Aouad, R., Merle, J.L., Catilina, P., Beytout, J. and Chamoux, A. (2005) Comportement et conditions de travail exposant au sang: Analyse des pratiques dans trois établissements de soins au Maroc. *Médecine et Maladies Infectieuses*, **35**, 396-401.
<https://doi.org/10.1016/j.medmal.2005.06.002>
- [5] Gounongbé, A.C.F., Ibrahim Amadou, S., Mikponhoué, R., Mama Cissé, I., Hinson, A.V. and Ayélo, A.P. (2020) Conséquences sanitaires du travail de nuit chez le personnel infirmier de l'hôpital national de Niamey en 2020. *Cahiers du CBRSI*, **19**, 77-86.
- [6] Laraqui, O., Laraqui, S., Tripodi, D., Caubet, A., Verger, C. and Laraqui, C.H. (2008) Évaluation du stress chez le personnel de santé au Maroc: A propos d'une étude multicentrique. *Archives des Maladies Professionnelles et de l'Environnement*, **69**, 672-682. <https://doi.org/10.1016/j.admp.2008.06.014>
- [7] El Ghoul, J., Fki, W., Berrhouma, C., Khmakhem, R., Sanaii, S. and Ayadi, H. (2019) Habitudes tabagiques chez les personnels de santé dans un hôpital régional tunisien. *Revue des Maladies Respiratoires*, **36**, A186.
<https://doi.org/10.1016/j.rmr.2018.10.411>
- [8] Pocheron, M.H. (2007) Prévention des accidents avec exposition au sang et liquides biologiques. *Médecine et Maladies Infectieuses*, **37**, S71-S73.
[https://doi.org/10.1016/S0399-077X\(07\)80028-X](https://doi.org/10.1016/S0399-077X(07)80028-X)
- [9] Cavagioni, L. and Pierin, A.M. (2012) Risco cardiovascular em profissionais de saúde de serviços de atendimento pré-hospitalar [Cardiovascular Risk among Health

- Professionals Working in Pre-Hospital Care Services]. *Revista da Escola de Enfermagem da USP*, **46**, 395-403. <https://doi.org/10.1590/S0080-62342012000200018>
- [10] Bagny, A., Bouglouga, O., Djibril, M., Lawson, A., Laconi Kaaga, Y., Hamza Sama, D., Balaka, A. and Redah, D. (2013) Knowledge, Attitudes, and Practices Relative to the Risk of Transmission of Hepatitis B and C Viruses in a Hospital in Togo. *Médecine et Santé Tropicales*, **23**, 300-303. <https://doi.org/10.1684/mst.2013.0227>
- [11] Korrida, A., Bnin, M., Achablou, N. and Assahal, R. (2021) Évaluation du risque cardiovasculaire chez les sujets asymptomatiques résidents au Sud du Maroc. *Medecine des Maladies Metaboliques*, **15**, 709-715. <https://doi.org/10.1016/j.mmm.2021.06.002>
- [12] Organisation Internationale du Travail. Convention N°138 sur l'âge minimum d'admission à l'emploi. https://www.ilo.org/dyn/normlex/fr/?p=NORMLEXPUB:12100:0::NO::P12100_ilo_code:C138
- [13] Zare, S., Shirvan, H.E., Hemmatjo, R., Faridan, M., Hajghani, M. and Dehaghi, B.F. (2018) Using the Analytic Network Process Method for Prioritizing and Weighing Shift Work Disorders among the Personnel of Hospitals of Kerman University of Medical Sciences. *Journal of Circadian Rhythms*, **16**, 10. <https://doi.org/10.5334/jcr.163>
- [14] Halouani, N., Turki, M., Ennaoui, R., Aloulou, J. and Amami, O. (2018) La détresse psychologique du personnel médical et paramédical d'anesthésie-réanimation. *The Pan African Medical Journal*, **29**, Article 221. <https://doi.org/10.11604/pamj.2018.29.221.12189>
- [15] Weibel, L., Pittet, A., Gabrion, I., Kreutz, G. and Aussedat, M. (2004) Évaluation du stress des médecins urgentistes lors des interventions pré hospitalières. *Archives des Maladies Professionnelles et de l'Environnement*, **65**, 139. [https://doi.org/10.1016/S1775-8785\(04\)93145-1](https://doi.org/10.1016/S1775-8785(04)93145-1)
- [16] Mrizak, N., Assadi, J., Maalel, O., Tabka, F. and Nouira, L. (2004) Évaluation de la souffrance des soignants par l'analyse du concept de l'épuisement professionnel. *Archives des Maladies Professionnelles et de l'Environnement*, **65**, 140. [https://doi.org/10.1016/S1775-8785\(04\)93147-5](https://doi.org/10.1016/S1775-8785(04)93147-5)
- [17] Bouattour, R.M., Trigui, D., Hajjaji, M., Baati, I., Feki, I. and Masmoudi, J. (2016) Stress au travail chez le personnel soignant en psychiatrie. *Archives des Maladies Professionnelles et de l'Environnement*, **77**, 402-403. <https://doi.org/10.1016/j.admp.2016.03.105>
- [18] Onasoga Olayinka, A., Osamudiamen, O.S. and Ojo, A.A. (2013) Occupational Stress Management among Nurses in Selected Hospital in Benin City, Edo State, Nigeria. *European Journal of Experimental Biology*, **3**, 473-481.
- [19] Tripodi, D., Keriven-Dessomme, B., Lombrail, P., Bourut Lacouture, M., Chabot, A., Cantineau, A., et al. (2007) Évaluation des risques professionnels perçus chez le personnel du centre hospitalo-universitaire de Nantes. *Archives des Maladies Professionnelles et de l'Environnement*, **68**, 457-473. [https://doi.org/10.1016/S1775-8785\(07\)78217-6](https://doi.org/10.1016/S1775-8785(07)78217-6)
- [20] Vaillant, N. and Wolf, F. (2010) Stress, anxiété et dépression au travail: Existe-t-il des différences entre entreprises? *Revue Française d'Economie*, **25**, 39-74. <https://doi.org/10.3917/rfe.104.0039>

Annex**Questionnaire**

N°		Quotation		
		Not at all (0)	Rarely (1)	Often (2)
Q1	In the last 6 months have you experienced sudden feelings of panic?			
Q2	Relationships with those around you (hierarchy, colleagues and patients) stress you out			
Q3	Does the organization of work in the health facility give you satisfaction?			
Q4	Do you ever feel tense?			
Q5	Do you ever feel angry?			
Q6	Do you ever have a feeling of fear as if something horrible is going to happen to you?			
Q7	I work 8 hours a day			
Q8	I work more than 8 hours a day			
Q9	I work more than 5 days in a week			
Q10	I get on well with the administration			
Q11	I get along well with co-workers			
Q12	I get along well with patients or clients			
Q13	I get on well with the parents of patients			
Q14	The work materials that are at my disposal are sufficient			
Q15	The work materials available to me are suitable			
Q16	The work materials that are at my disposal are in good condition			
Q17	Consumables are available in sufficient quantity			
Q18	I have personal protective equipment			
Q19	Workplace light is adequate			
Q20	The working environment temperature is suitable			
Q21	There are relaxation areas in the health facility			