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Profile and Prevalence of Dyslipidemia in Workplace in Togo

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Abstract: Objectives: Dyslipidemia constitute a public health problem in the world. Very few studies were carried out on this subject in workplace. This work completed in workplace aimed to determine the prevalence of the dyslipidemia in workplace, to describe dyslipidemic profile in workers and its associated factors. Materials and Methods: It was about a descriptive cross-sectional study led June to September 2017 (04 months) on the medical files of the workers of a company of telephony in Togo. Were included the medical files comprising all the parameters of the lipidic assessment (total cholesterol, of triglycerides, the LDL and HDL cholesterol). The incomplete files were excluded. The dyslipidemia was defined for a total cholesterol higher than or 2, 4 g/L (6, 2 mmol/L) and/or a rate of HDL cholesterol lower than 0, 4 g/L (1 mmol/L) at the man or lower than 0, 50 g/L (1, 3 mmol/L) at the woman and/or a triglyceride higher than 2 g/L (2, 3 mmol/L) and/or a rate of LDLc > 1, 88 g/L. Results: The average age of the workers was 46, 57 years ± 7, 7 (extreme of 28 and 60 years). The administrative staff was prevalent in a proportion of 53, 4%. The pure hypercholesterolemia were most frequent (64%), followed by hypo HDL cholesterol and mixed dyslipidemia respectively 16,4% and 12,9%. The dyslipidemia was isolated in 72% from the cases, was combined with another factor of cardiovascular risk such as arterial hypertension (20, 2%), diabete (7, 1%) and an ischaemic cardiopathy (1, 1%) of the cases. Conclusion: Dyslipidemias are a reality in occupational environment in Togo with high prevalence estimated at 60.3% and are associated to other factor of cardiovascular risk such as arterial hypertension, diabete, and overweight. So it seems necessary to lead occupational health programs in order to control them.

Keywords: Dyslipidemia, Prevalence, Workplace, Prevention

1. Introduction

In recent decades, African countries, including Togo, have been undergoing an epidemiological transition marked by the emergence of cardiovascular diseases for which the socio-economic consequences are important [1-5]. At the origin of this pandemic, the major risk factors such as high blood pressure, diabetes, sedentary lifestyle, obesity and

dyslipidemias, the prevalence of which continues to increase [5]. Indeed, the dyslipidemias are today a real public health problem [6, 8]. Formerly unknown in traditional African societies, the dyslipidemias have a considerable extent with prevalence differences of around 20% in the Maghreb countries [9, 10]. In sub-Saharan Africa, high prevalence of more than 35% are reported in some areas [11-15]. Due to an often insidious development, the dyslipidemias often go unnoticed and sometimes discovered by chance during a routine consultation or in the search for factors associated with a cardiovascular pathology or its complications [16, 17]. Faced with this threat, the screening of cardiovascular risk factors and the implementation of prevention programs become necessary. In this sense, in the workplace during medical visits instituted as part of the surveillance of workers' health, the screening for the dyslipidemias through biochemical explorations in addition to the clinical investigations is useful [18-19]. However, despite their easy realization, very little data are available on the prevalence of the dyslipidemias in the workplace [20, 21]. It is in this context that this research work was initiated to contribute to the development of a prevention plan for the cardiovascular diseases in the workplace. The objective of our study was to determine the prevalence of the dyslipidemias in the workplace, describe the dyslipidemic profile of workers, and describe the factors associated with the dyslipidemia.

2. Materials and Methods

It was a descriptive cross-sectional study conducted from June to September 2017 (04 months) on the medical records of the workers of a telephone company in Togo. These files resulting from the annual medical examination of the staff were archived at the autonomous medical service of the company under the responsibility of the occupational doctor. The medical records including all lipid parameters (the total cholesterol, the triglycerides, the LDL and HDL cholesterol) were included. Incomplete files have been excluded. The dyslipidemia has been defined for the total cholesterolemia greater than or 2.4 g / L (6.2 mmol / L) and / or HDL cholesterol level below 0.4 g / L (1 mmol / L) in the adult male or less than 0.50 g / L (1.3 mmol / L) in adult female and / or a higher triglyceridemia than 2 g / L (2.3 mmol / L) and / or LDLc > 1, 88 g / L. In addition, the subjects treated for a dyslipidemia by drug treatments were also counted. The dyslipidemic profiles were classified according to the criteria of Ferrieres J [22]: Pure hypercholesterolemia (total cholesterolemia greater than 6.2 mmol / L or 2.4 g / L and triglyceridemia less than 2.3 mmol / L or 2 g / L); Low HDL cholesterolemia level (HDL less than 1 mmol / L or 0.4 g / L in the male or less than 1.3 mmol / l or 0.50 g / l in the female); Mixed hyperlipidemia (total cholesterolemia greater than 6.2 mmol / l or 2.4 g / l and triglyceridemia greater than 2.3 mmol / l or 2 g / l); Hypertriglyceridemia (total cholesterolemia less than 6.2 mmol / L or 2.4 g / L and triglyceridemia greater than 2.3 mmol / l or 2 g / l). The tables and figures were made using Microsoft Excel software.

The Chi-square test was used to compare the percentages with a significance level of 5%.

3. Results

3.1. Socioprofessional Characteristics of the Population

Our study involved 746 medical records of workers representing 587 men (78.7%) and 159 women (21.3%) with a sex ratio of 3.7. The average age of workers was 46.57 ± 7.7 years (range 28 to 60 years). The administrative staff was predominant at 53.4% (Table 1).

Table 1. Socioprofessional characteristics of the population studied.

	N	%
Age		
< 30	4	0.5
30 – 40	171	22.9
40 – 50	265	35.5
> 50	306	41.1
Sex		
Males	587	78.7
Females	159	21.3
Professional Category		
Administrative*	398	53.4
Technicians **	181	24.3
Drivers and others	167	22.4

* Staff spending most of their time sitting in front of visual display terminals.
** Field operators responsible for technical interventions and maintenance on installations.

3.2. Prevalence and Profile of Dyslipidemia

In our study, the prevalence of dyslipidemia were estimated at 60.3%. Pure hypercholesterolemia was the most common (64%) followed by hypo HDLemia and mixed dyslipidemia of 16.4% and 12.9% respectively (Table 2).

Table 2. *Distribution of workers according to lipid balance disturbances (n = 450).*

	n	%
Number of disturbed parameters		
1 parameter	205	45.6
2 parameters	171	38
3 parameters	61	13.6
4 parameters	13	2.8
Dyslipidemic profile		
Pure hypercholesterolemia	288	64
Mixed hyperlipidemia	58	12.9
Hypo HDLemia	74	16.4
hypertriglyceridemia	27	6
Isolated Hyper LDLemia	3	0.7
Combination of FDRCV*		
0	14	3.2
1	63	14
2	155	34.4
2 and more	218	48.4

Dyslipidemia was isolated in 72% of cases, combined with another cardiovascular risk factor such as arterial hypertension (20.2%), diabetes (7.1%) and ischemic heart disease (1.1%).

3.3. Factors Associated with the Dyslipidemias

Dyslipidemia was significantly more common among overweight (overweight and obese) subjects, high blood pressure, and among subjects with more than two cumulative risk factors (Table 3).

Table 3. Factors associated with the dyslipidemias.

	Dyslipidemia		p
	Yes	**No**	
Professional Category			
Administrative	253 (56, 2)	145 (49)	
Technicians	99 (22)	68 (23)	Ns
Drivers and others	98 (21, 8)	83 (28)	
Alcohol consumption			
yes	125 (27, 8)	93 (31, 4)	Ns
No	325 (72, 2)	203 (68, 6)	
Practice of physical activity			
Yes	101 (22, 4)	53 (17, 9)	Ns
No	349 (77, 6)	243 (82, 1)	
Body mass index			
< 18	3 (0, 7)	5 (1, 7)	
18-25	123 (27, 3)	138 (46, 6)	< 0.01
25-30	209 (46, 4)	100 (33, 8)	
> 30	115 (25, 6)	53 (17, 9)	

4. Discussion

The classification used to define the dyslipidemic profiles in our study, as Ferrieres J notes, is rather caricatural and does not reflect the subtleties of the pathophysiology of dyslipidemias [22]. However, it is a pragmatic approach to better manage the various lipid abnormalities in daily practice. The major role of dyslipidemias as a risk factor in the genesis of cardiovascular disease has been clearly demonstrated in epidemiological surveys of population cohorts around the world [23-26].

The prevalence of the dyslipidemias in our study was 60.3%. This prevalence is well above the data reported by Agoudavi K and Balaka A in Togo and those of Gao Y found in the workplace in China [20-21, 27]. High prevalences have been described in the general population in Africa, thus testifying to the ubiquitous nature of the phenomenon [9-10, 15, 28, 29-30]. At the root of this scourge is the nutritional transition that has accompanied the rapid and poorly controlled urbanization of our tropical countries and characterized by the passage of a monotonous diet, rich in starch and fiber, low in fat and a physically active life to a high-calorie diet and a sedentary lifestyle [5, 20]. The predominance of the hypercholesterolemias in our study is similar to those reported in the workplace by Balaka A et *al.* in Togo, Mbaye A and *al* in Senegal and also comparable to the findings of the STEPS Togo 2010 survey [12, 20-21]. The dyslipidemias were significantly associated with the arterial hypertension and with the overweight (overweight and obesity), this last association being frequently reported by some authors in the literature [30-32]. This reveals the complexity of cardiovascular pathology where, apart from the traditional risk factors (age, gender and heredity), behavioral factors such as diet, sedentary lifestyle and obesity are intertwined in a vicious circle, on which are grafted professional and psychosocial factors that are emerging in the workplace [33]. Hence the need to put in place, within the framework of decent work advocated by the International Labor Organization (ILO), real prevention programs focusing as much on occupational risks as on cardiovascular diseases with a particular emphasis on promoting a healthy lifestyle, including regular physical activity and a balanced diet [34].

5. Conclusion

This work completed in professional environment shown the reality of dyslipidemias where they are dominated by the pure hypercholesterolemias and associated to other factors of risks like high blood pressure, overweight and sedentary lifestyle. This observation should motivate the implementation of prevention programs at national level and relayed in the workplace. These programs should take into account the recommendations of the WHO, with a focus on promoting a healthy and balanced diet and a healthy lifestyle. If the nutritional transition seems to mainly explain the phenomenon in the general population, in professional environment the influence of certain occupational factors such as the psychosocial risks, work in prolonged sitting position were evoked but could not be evaluated because of the descriptive nature of our study. Thorough later studies should be undertaken to seek the occupational factors associated with the dyslipidémies in professional environment. However in margin of that, the implementation of prevention programs at national level and relayed in professional environment proves to be necessary to fight against this plague whose socio-economic consequences are priceless. These programs should take into account the recommendations of WHO; with an accent on the promotion of a healthy and balanced food just as a good hygiene of life.

Conflict of Interest Statement

The authors declare that they have no competing interests.

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