

## ENT Pathologies Screening in Woodworkers in Parakou, Benin

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### Abstract

Wood dust may induce health risks on exposed timber or wood workers, one of which is ENT disorders. This article aimed to detect ENT pathologies found among woodworkers in Parakou. It was a cross-sectional descriptive study carried out from 1<sup>st</sup> March to 31<sup>st</sup> May, 2012 in Parakou, North-Benin. It involved 703 carpenters and sawyers operating in timber workshops in Parakou, regardless of age and sex. The mean age of the wood-workers was  $26.14 \pm 7.77$  years. Their seniority in the timber profession was on average  $4.9 \pm 2.64$  years. All of them were males. It had been noticed that 01.6% of them did not comply with any safety measure for their protection. ENT pathology had been diagnosed in 60.3% of the timber workers. Rhinitis came first and affected 43.1% of the workers, followed by pharyngitis (14.1%). The histological nature of the only case of tumor observed in Parakou could not have been specified, as the patient refused to undergo anatomopathological examination. Measures should be taken to get Parakou timber workers to protect themselves.

### Keywords

Timber/Wood-Workers, Occupational Rhinitis, ENT Pathologies

### 1. Introduction

Timber dust may induce pathologies like respiratory disorders in particular, including ENT-related ones on exposed timber workers [1]. The carcinogenic effects of wood dusts are well-known for many years and their responsibility in nose and sinus cancers is well established [1]-[3]. Wood dust is also responsible for non-carci-

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nogenic diseases like rhinitises. Several studies had been globally dedicated to non-carcinogenic respiratory pathologies induced by occupational exposure to wood dust [4] [5].

In Africa where the working conditions are different from those of developed countries in which most of the studies are conducted, few articles have been devoted to the diseases induced by occupational exposure to wood dust. In Benin, up to this day, any study of screening of ENT disease among woodworkers has been realized. This one was carried out in order to screen the ENT pathologies found among Parakou timber workers in the north of Benin.

## 2. Methods

The study was a cross-sectional study with descriptive purpose based on a collection of prospective data. It was conducted from 1<sup>st</sup> March to 31<sup>st</sup> May, 2012 in the District of Parakou. The target population consisted of carpenters and sawyers working in workshops in Parakou, regardless of age and sex. In Parakou, carpenters and sawyers work in open-air workshops spread out over the town, by the streets or in empty compounds.

Using membership register, all the 749 wood-workers who were members of the three trade unions of the town were selected for the study. However only 703 wood-workers were included in the study; 46 wood-workers refused to participate because according to them, the study would disturb their work and was not profitable for them.

Data were collected, on the one hand, through an individual questionnaire submitted to timber workers, and on the other hand, through the ENT clinical examination of the latter. The clinical examination had particularly explored the ear canal and the eardrum with an otoscope, then the nasal cavity by means of anterior rhinoscopy as well as the oropharynx.

The studied variables were socio-demographic data (age, sex, type of timber work, seniority in the profession), ENT history, presence of ENT pathologies and the suggested diagnosis. Epi-info 3.5.1 software was used for the processing of collected data.

## 3. Results

### 3.1. Socio-Demographic Profile of Participants

The 703 timber workers selected for the study based on inclusion criteria were all males. There were 607 carpenters (86.3%) and 96 sawyers (13.7%). The mean age of the timber workers was  $26.14 \pm 7.77$  years with extremes from 9 years and 60 years and a median of 26 years. Table 1 reports workers' distribution according to age.

Most of the timber workers (79.2%) were aged from 15 to 34 years. Only 9.8% were 34 year old and above.

### 3.2. Respondents' Seniority in the Profession

The respondents' seniority in wood work was on average  $4.9 \pm 2.64$  years with extremes of 1 month and 25 years. The median was 5 years. Table 2 represents the distribution of the investigated workers according to their seniority.

### 3.3. Knowledge of the Risks Related to Timber Professional Activity and Protection Measures

Among the 703 respondents, 549 (78.1%) were aware of the risks related to their professional activity and 154

Table 1. Distribution of wood-workers according to age.

	Number	Percentage (%)
Under 15 years	77	11
15 - 24 years	244	34.7
25 - 34 years	313	44.5
35 - 44 years	59	8.4
45 years and above	10	1.4
Total	703	100.0

Under 1 year	18	2.6
1 - 5 years	259	36.8
6 - 10 years	237	33.7
Above 10 years	189	26.9
Total	703	100.0

(21.9%) ignored about them. However 582 timber workers *i.e.* 81.6% did not observe any safety measure for their protection. A bib was used as a protection measure by 117 timber workers (16.6%). The other protection measures used (1.8%) were glasses and a headset, each by one timber worker. Two timber workers used a combination of the three protection measures.

### 3.4. History of Morbidity among the Respondents

Out of the 703 respondents, 315 (44.8%) reported having suffered at least once from an ENT pathology. Table 3 summarizes the distribution of wood/timber workers according to ENT pathological history.

Almost nine wood workers out of ten had a previous history of rhinitis.

### 3.5. Pathologies Diagnosed in the Respondents

Among the 703 respondents, 60.3% were diagnosed as carriers of an ENT disorder. Table 4 summarizes the distribution of respondent workers according to the diagnosed ENT pathology.

The main ENT pathologies diagnosed were rhinitis and pharyngitis.

## 4. Discussion

The wood-workers of our cohort were young with a mean age of 26.14 years. They were younger than their counterparts from Lille in France (mean age: 35.4 years), from Italy (mean age: 37.8 years) [6] [7]. The Parakou timber workers' young age could be explained by many factors: youthfulness of the Benin population in general, early school dropout and the fact that in Benin, many craftsmen or skilled workers leave their profession to perform other more profitable activities at the earliest opportunity. The great physical effort required by timber work in the developing countries due to lack of adequate tools for this work may justify the absence of female workers. In Lille, Frimat *et al.* reported 2% of female timber workers [6]. In a Lithuanian cohort, Smalyte *et al.* had found a higher female presence (29%) [8]. In the south-east of Nigeria, neighboring and developing country like Benin, Aguwa *et al.* reported 491 men and 50 women but the latter were busy with collecting and selling sawdust generated by men's work [9].

Nearly half of the workers indicated having ENT case history and among the reported pathologies, rhinitis came well ahead followed by anginas. The rate of ENT pathologies (associated or not with sawdust) detected in Parakou's timber workers based on the questionnaire and ENT clinical examination, was relatively significant (60.3%). An Italian study carried out in 2007 by Belvilacqua *et al.* in a population of timber workers, reported a 32.7% rate of ENT affections in timber workers [7]. This difference could a priori be associated with the absence of individual and collective protection among Parakou timber workers as is the case in the developed countries but also with the fact that all the ENT pathologies had been taken into account, whether related or not to timber work.

Rhinitises came first among ENT pathologies as well as ENT case history in Parakou timber workers. Rhinitis is a pathology which is often reported in timber workers [5]-[7] [9]. According to Garnier [10], rhinitis is one of the most common occupational diseases. As it causes little disability, it is often neglected by the concerned persons. It is generally misunderstood by physicians, whose knowledge of occupational pathologies and their causes is frequently insufficient. It is due not only to sawdust but also to timber-related allergens. In Parakou, rhinitis rate is close to the one of the developed countries [7] [11] [12]. It is significantly lower than the one found by Aguwa in Nigeria where timber workers are gathered in timber work markets consisting of poorly ventilated workshops and without any method for sawdust removal [9]. In Parakou, almost all the workshops are





Table 3. Distribution of wood-workers according to ENT history.

	Number (N = 315)	Percentage
Rhinitis	277	87.9
Anginas	22	7.0
Otitises	13	4.1
Sinusitis	3	1.0

Table 4. Distribution of wood-workers according to the diagnosed ENT pathology.

	Number (N = 701)	Percentage
Rhinitis	303	43.1
Pharyngitis	99	14.1
Ear wax	43	6.1
Deafness suspicion*	24	3.4
Average chronic otitis	10	1.4
Otitis externa	6	0.9
Acute otitis media	3	0.4
Nasal tumor**	1	0.1
No pathology screened	279	39.7%

\*Only with surgery. \*\*Histological examination not done, as the patient refused to do it.

installed in the open air, on street corners and isolated. This helps reduce substantially sawdust concentration in the air (which we did not measure), but at the expense of the environment.

A pharyngitis case had been found in 14% of timber workers in Parakou. In Italy, Veneti *et al.* reported 17.1% of pharyngitis cases and found a statistically significant relationship with sawdust [11].

The histological nature of the only tumor case observed in Parakou could not have been specified, since the patient refused to undergo the anatomic-pathological examination. However, we assume it was a non-malignant tumor considering its clinical characteristics, and not an adenocarcinoma. Moreover, in the studies where nasosinusal cancers in timber workers had been reported, workers have always been exposed for a long period. Thus, in their studies, Mayr *et al.* as well as Binibi *et al.* reported average exposure duration of 32.3 years in patients suffering from cancer associated with timber [13] [14]. The duration of average exposure of timber workers to sawdust in our study was 4.9 years, which does not give enough ground to associate the tumor observed to timber work.

We suspected 6% of deafness in timber workers, especially sawyers only. This deafness could be associated with a long and frequent exposure to noise insofar as only two patients among the workers protected themselves from noise.

In general, the other ENT pathologies screened in this study (ear wax and otitis) are not considered as an outcome of the exposure to sawdust.

## 5. Conclusion

ENT pathologies are relatively frequent among timber workers in Parakou. Among those pathologies, the most frequent ones are cases of rhinitis and sinusitis the relationship of which with wood work is well known. Everything still remains to be done as regards protection and prevention in this profession, both at individual and collective levels. At least wood workers should be encouraged to use dust masks; they should wet regularly the floor of their workshops to prevent the dust to be airborne. For this purpose, information and awareness/sensitization programmes should be implemented and protection standards imposed by public authorities.

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