



Respiratory and Non-respiratory Symptoms/Signs in Exposed Camphor Industrial Workers in Aba, Abia State, South East Nigeria

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Abstract

Respiratory and Non-respiratory symptoms/sign in exposed Camphor industrial workers in Aba, Abia State, South East Nigeria, were studied. 100 selected Igbo women, working in Camphor industry for over 15 years were studied and they constitute the test group. They were compared with control subjects not exposed to Camphor or any known air pollutants. Both subjects were aged 25-50 years and weighed between 50-70 kg. Respiratory symptoms studied include dry unproductive cough, productive sputum cough, running/nasal congestion, sneezing, breathlessness, wheeze and chest pain. Non-respiratory symptoms investigated include feeling hot, general body pain, waist pain, internal heat, night fever, excessive sweating, occasional vomiting, abdominal ache, heat rashes, insomnia and blood pressure. The study lasted 3 months and was carried out using questionnaires and other necessary instruments after obtaining their consents. Results obtained showed that all respiratory symptoms in the study subjects (test) were highly significant when compared with control subjects ($P < 0.001$). In non-respiratory symptoms, vomiting, abdominal ache and blood pressure in both the test and control were not statistically significant ($P > 0.05$), others were statistically significant when the test subjects were compared with control ($P < 0.05$). It was concluded that Camphor has significant effects on respiratory and non-respiratory symptoms/signs in exposed Camphor industrial workers.

1 Introduction

Occupational hazards are witnessed in workers from different walks of life with industrial workers facing the most of its effects. The cumulative effects could in turn affect their respiratory system leading to occupational respiratory disease. Factors predisposing industrial workers to respiratory diseases include heavy, short or prolonged exposure to different gases, chemicals such as pesticides, camphor fumes and even dust such as wood dust. Respiratory symptoms including nasal congestion, cough, chest tightness, and wheezing due to constant prolonged unprotected inhalation of wood smokes have been recorded¹.

Smokes and fumes inhalation are reported to have deleterious effect on the pulmonary functions. These smokes and fumes come from cigarette sticks, heated oil, wood combustion, dust,

sand mining and gases. They are usually inhaled during the process of heating, mining and manufacturing. The various researchers reported that anthropometric parameters like age, height, weight and race are important factors that affect pulmonary functions².

Though there are reports of harmful effects of dust, asbestos, smokes, powdered tobacco snuff and Camphor fumes inhalations on the respiratory function by various authors, Tredaniel *et al* (1994)³, Wells (1994)⁴, Okwari (2005)⁵, Osim (1992, 1998a,b)⁶⁻⁸, Maduka *et al* (2009)⁹ and Mmehibe *et al* (2018)¹⁰, there are paucity of reports on respiratory and non-respiratory symptoms/signs on Camphor industrial workers. This study therefore was aimed at investigating respiratory and non-respiratory symptoms/signs in Camphor industrial workers in Aba, Abia State, South East Nigeria.

2 Materials and methods

2.1 materials

Materials used in this study include weighing balance, non-stretchable meter rule, scissors, stethoscope, sphygmomanometer, questionnaires and wooden back chair.

2.2 Methods

Respiratory and non-respiratory symptoms/signs in exposed 100 selected Igbo women aged between 25-50 years, working in Camphor industry for over 15 years in Aba, Abia State, South East Nigeria, were studied. These groups constitute the test group. They were matched with control group who were mainly civil servants and traders. These workers are usually exposed to the risks of inhaling unquantified doses of Camphor fumes in the course of their work.

Subjects were educated on the importance of the study and informed consent obtained. Weight and height were measured

using weighing balance and meter rule. Blood pressure was obtained using sphygmomanometer in sitting position. Questionnaires administered were filled and returned.

2.3 Statistical analysis

Results were Presented as mean±SEM. Data were analyzed using student t-test with the aid of SPSS15.0 excel computer software. P<0.05-0.001 was considered significant.

4 Results

Table 1 showed percentage prevalence values of respiratory symptoms/signs in control and test subjects. All the percentage prevalence in the test were highly significant when compared with control subjects.

Table 2 also showed percentage prevalence in the test and control subjects. All except vomiting, abdominal ache and blood pressure were statistically significant (P<0.005-0.001).

Table 1: Percentage prevalence of respiratory symptoms/signs in control and test subjects

Respiratory symptoms/signs	Percentage prevalence in control (n=100)	Percentage prevalence in test (n=100)	P-value
Dry unproductive cough	15(15%)	45(45%)	**
Productive sputum cough	13(13%)	40(40%)	**
Nasal congestion	6(6%)	41(41%)	**
Frequency of sneezing	5(5%)	30(30%)	**
Breathlessness	4(4%)	25(25%)	**
Wheeze	3(3%)	20(20%)	**
Chest pain	4(4%)	40(40%)	**

**=P<0.001 vs control; Statistically significant

Table 2: Percentage prevalence of non-respiratory symptoms/signs in control and the test subjects

Non-respiratory symptoms/signs	Percentage prevalence in control (n=100)	Percentage prevalence in the test (n=100)	P value
Feeling hot	12(12%)	70(70%)	**
Body pain	3(3%)	62(62%)	**
Waist pain	4(4%)	56(56%)	**
Internal heat	2(2%)	50(50%)	**
Night fever	10(10%)	14(14%)	*
Excessive sweating	12(12%)	38(38%)	**
Insomnia	5(5%)	61(61%)	**
Vomiting	3(3%)	4(4%)	NS
Abdominal ache	4(4%)	5(5%)	NS
Prickly body rashes	6(6%)	27(27%)	**
Blood pressure	120/70mmgh	130/80mmgh	**

**=(P<0.005-0.001) vs control; Statistically significant. NS=not statistically significant

5 Discussions

The present study investigated respiratory and non-respiratory symptoms/signs in Camphor exposed industrial workers in Aba, Abia State, South East Nigeria. Respiratory symptoms/signs frequently associated with the workers studied include dry unproductive cough, productive cough with sputum, running nose/nasal congestion, frequent sneezing, breathlessness, wheeze and chest pain. Non-respiratory symptoms studied include feeling hot, general body pain, waist pain, internal heat, night fever, excessive sweating, insomnia, vomiting, abdominal ache, body rashes and blood pressure.

Results obtained showed that all the respiratory symptoms in the study group (test) were highly significant when compared with control group ($P < 0.001$). The highest percentage prevalence being dry unproductive cough (45%), followed by productive cough with sputum (40%). Nasal congestion and sneezing constituted 41% and 30% respectively. Breathlessness (25%), wheeze (20%) and chest pain (40%) were observed. In the non-respiratory symptoms, feeling hot has the highest percent prevalence (70%), followed by body pain (62%), insomnia (61%), waist pain (56%), internal heat (50%), excessive sweating (38), body rashes (27%) and night fever (14%) were observed.

The symptoms were statistically significant when compared with control ($P < 0.005-0.001$). However, vomiting, abdominal ache and blood pressure in the test and control subjects were not statistically significant ($P > 0.05$). These findings agreed with those of Doll and Peto (1985)¹¹, Bosan and Okpai (2004)¹², Veiter and Frisher (2000)¹³, Jinadu (1988)¹⁴. Although these authors reported high percentage prevalence in respiratory symptoms, their works were not on Camphor.

Maduka et al (2009)¹⁰, not only reported high percentage prevalence in respiratory symptoms, sneezing constituted 55.4% and their work was on powdered tobacco snuff. The present study has dry unproductive cough (45%) and feeling hot (70%) as highest respiratory and non-respiratory symptoms, respectively. It is therefore concluded that Camphor/Camphor fumes have significant effect on respiratory and non-respiratory symptoms/signs in occupationally exposed Camphor industrial workers.

6 Conclusion

The study was conducted for Respiratory and Non-respiratory symptoms/sign for workers working in Camphor industry in Aba, Abia State, South East Nigeria. The findings demonstrated that Camphor has significant effects on respiratory and non-respiratory symptoms/signs in exposed Camphor industrial workers.

7 Competing interest

Authors have agreed and declared that no competing interest.

8 Authors contribution

MFO carried literature review and experimental, ADN, AEA and NEE, where responsible for statistical work, calculations and typesetting of data and gained workers concept. All authors read and approved the final manuscript.

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