# Health problems of mill operators in a tropical African population

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**Summary**

**The study reports a questionnaire based survey on mill operators in a large market in Ibadan, Southwest Nigeria. One hundred and twenty respondents, 65 males and 55 females aged between 18 and 65 years were interviewed and noise measurements were done at various work stations.**

**Health problems reported by these workers include headaches 73%, backache 53% and respiratory symptoms such as cough 37% rhinitis 63% and wheezing 13%. Thirty four respondents (28%) reported a difficulty in hearing mostly due to tinnitus. Four complained of deafness. Twenty-three (19%) had raised blood pressure of 140/90Hg and above. In spite of the high levels of dust in the work environment only 15 (13%) of workers used a face cloth to cover their noses.**

**Noise levels at the work stations ranged from 88 - 90dB from smaller machines and 101 - 105 dB for larger machines. None of the workers used hearing protection in any form.**

**Health education of workers and the provision of low cost protective equipment may alleviate the suffering of these workers.**

**Key-words:** *Noise, Dust, Mill workers, Respiratory symptoms, Occupational.*

**Résumé**

L'objet de cette étude est de rapporter une étude basée sur un questionnaire pour des opérateurs de moulin dans un grand marche à Ibadan sudouest du Nigeria. Cent vingt sondés, 65 du sexe masculin et 55 du sexe féminin âgés entre 18 et 65 ans ont été intérrogés et on avait fait le mesurage du bruit dans des stations de travail diverses.

Problèmes sanitaires annoncé par ces ouvriers sont : maux de tête 73%, mal de dos 53%, et des symptômes respiratoire tels que la toux 37%, rhinite 63% et sibilance respiratoire 13%. Trente quatre interrogés soit 28% avaient annoncé du mal a entendre principalement attribuable au acouphène. Quatre se sont plaint de la surdite, vingt trois soit 19% avaient augmentation de la tension artérielle de 140/90mm Hg et plus.

En dépit du niveaux élevé des poussières dans le milieu du travail 15 seulement soit 13% des ouvriers ont utilisé une étoffe de la figure pour couvrir leur nez.

Les niveaux du bruits dans les stations du travail est entre 88 - 90 db des petites machines et 101 - 105 db dans des grandes machines. Aucun des ouvriers portaient aucune sécurité d'ouie.

Education sanitaire pour des ouvriers et la provision des équipments de sécurité è bas prix pourrait alleger la souffrance de ces ouvriers.

## Introduction

Workers in small-scale industries especially in the informal sector constitute the neglected masses in Nigeria. Many of these workers are self-employed and engage in industrial activities within their living premises, in public premises such as markets or along the roadside. The work environment in the informal sector is characterized by poor environmental control where workers are exposed to hazardous conditions without any form of protection of their health.[1]

Mill operators constitute a small part of the large workforce in the informal sector. They are engaged in the milling of vegetables and food grains like corn millet and yam and are located predominantly in markets where they work in noisy and dusty conditions. Several studies carried out among flour mill workers[2] and workers who handle food grains[3] have shown a preponderance of respiratory symptoms. These studies were carried out in regulated and sheltered work places. The work premises of mill operators is unregulated and unsheltered. This study was designed to describe the environmental hazards of workers in this trade and to determine perceived health problems experienced by these workers.

## Methodology

The study was conducted in Bodija market, a large food market in Ibadan, South West Nigeria Mill operators in the market are in two categories, those who provide the service for wet milling of peppers, tomatoes and onions and the other for dry milling of yam, corn and pepper. These operators are located in two distinct areas of the market. The leaders of the trade union of these groups of workers were approached to solicit their support for the study. Workers were informed about the procedures involved in the study during a routine meeting of the union. Participation in the study was voluntary.

Each participant completed a questionnaire to provide his personal characteristics and information on the type of work done, length of time engaged in the job, presence of symptoms of ill health and injuries sustained in the last year.

The noise level at the work station was measured using a type 2 digital integrating sound level meter CEL 269 (CEL Instruments U. K.)

Data collected were analysed with Epi Info version 6.0

## Results

A total of 120 mill operators participated in the study, 65 males and 55 females. Their ages ranged from 13 - 65 years. Their mean age was 41 years. The majority 113 (94%) were Yoruba. Their personal characteristics are shown in Table 1.

### *Occupational data*

For the majority, 75(63%) milling was the only job they were engaged in while 36 (30%) were also petty traders and 9 (8%) were students. Seventy-one respondents (51%) had been engaged in the job for 10 years or less and 19 (16%) for over 20 years. The mean number of years engaged in the

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**Table 1 Socio-demographic characteristics of mill operators in Ibadan N - 120**

| | | |
|---|---|---|
| **Age** | | |
| < 20 | 5 | 4% |
| 21 - 30 | 21 | 18% |
| 31 - 40 | 27 | 23% |
| 41 - 50 | 34 | 28% |
| 51 - 60 | 28 | 23% |
| < - 60 | 5 | 4% |
| **Marital status** | | |
| Single | 12 | 10% |
| Married | 101 | 84% |
| Separated | 2 | 20% |
| Widowed | 5 | 4% |
| **Educational attainment** | | |
| None | 29 | 25% |
| Primary | 48 | 40% |
| Secondary | 25 | 21% |
| Other e.g. Islamic | 14 | 12% |
| No response | 2 | 2% |
| **Smoking history** | | |
| Current smoker | 11 | 9% |
| Ex smoker | 14 | 12% |
| Never smoked | 95 | 79% |
| **No of years engaged in the jobv** | | |
| < - 1 | 5 | 4% |
| 1 - 10 | 66 | 55% |
| 11 - 20 | 26 | 22% |
| > 20 | 19 | 16% |
| No response | 4 | 3% |

**Table 2 Prevalence of symptoms among mill operators N = 120**

| Symptom | N (%) |
|---|---|
| Headache | 87(73%) |
| Backache | 64(53%) |
| Ache and pains | 99(83%) |
| Difficulty with hearing | 34(28%) |
| Tinnitus | 25(21%) |
| Cough | 44(37%) |
| Rhinitis | 76(63%) |
| Wheezing | 16(13%) |
| Difficulty with breathing | 13(11%) |

**Table 3 Prevalence of respiratory symptoms reported by operators of wet and dry mills**

| Symptom | Wet n = 32 | Dry n = 88 | Total n = 120 | Pvalue |
|---|---|---|---|---|
| Cough | 13(41%) | 31(35%) | 44(37%) | 0.74 |
| Rhinitis | 22(69%) | 54(61%) | 76(63%) | 0.59 |
| Wheezing | 3(9%) | 13(15%) | 16(13%) | 0.64 |
| Difficulty with breathing | 3(9%) | 10(11%) | 13(11%) | 0.98 |

trade was 11 years.

The study group comprised of 5 apprentices, and 115 qualified mill operators. Forty respondents (33%) use electric mills while 75 (63%) others had mills that were petrol or diesel driven. Eighty-four respondents (70%) were operators of dry mills and 32 (27%) operated wet mills mainly. The majority, 108 (90%) worked more than 8 hours every day mostly working throughout the market opening hours of 7.30a.m. - 6.30p.m. daily. One hundred and two respondents (85%) did not take any specific time off for break. Fifteen workers (13%) reported the use of protective equipment in the course of their job. This was mainly in the form of a cloth mask for dry milling.

### *Health problems*

Table 2 shows the symptoms reported by mills operators. Headaches and musculo skeletal problems were the most frequently reported symptoms. Eighty-seven (73%) reported frequent headaches, 64 (53%) reported backache and 99(83%) reported aches and pains in the body. These were followed by respiratory symptoms such as rhinitis (63%) cough (37%) and wheezing (13%). One mill worker reported that he had been diagnosed as an asthmatic. About one quarter of the study population, 34(28%) reported difficulty with hearing. Twenty-five of these complained of tinnitus, and five had other problems such as pain and discharge in the ears. Four respondents complained of deafness. One of them admitted that she was partially deaf from birth. None of these symptoms were associated with age, sex, or length of time engaged in the job $p > 0.05$. Table 3 shows that the occurence of respiratory symptoms did not differ significantly among wet and dry millers.

Sixty-six workers (55%) thought that their symptoms were related to the work they do. Sixteen workers (13%) reported an injury at work within the last one-year and eleven of these injuries were to the fingers. Seventeen workers (14%) reported that they had been diagnosed as hypertensive. However, blood pressure measurements taken during the survey showed that twenty-three workers (19%) had raised blood pressure of 140/90mm Hg and above. These comprised of 10 females and 13 males, a prevalence of raised blood pressure females of 18% and 20% among males. Noise levels of the machines ranged from 88 -90 dB in smaller machines and 101 - 105dB in the larger machines.

Health care for this group of workers was individual based and 69 (58%) of them patronize private clinics and hospitals when they take ill while 34 (28%) used nearby chemists.

## Discussion

A dominance of musculo-skeletal symptoms was observed in this study. These symptoms have been associated with heavy physical work demands.[4,5] Respiratory symptoms especially cough and rhinitis were also frequently reported. This observation may be the result of the extremely high dust levels especially in dry mills. Although dust levels were not measured, the magnitude of yam flour dust in the work environment was such that every item in the vicinity was covered with a layer of dust. This warranted the use of face cloths in 15(13%) workers. Pepper, the vegetable mostly used in wet grinding is a respiratory irritant in both wet and dry forms and would also contribute to the prevalence of respiratory symptoms among these workers. Sixteen workers (13%) complained of wheezing, an indication that some of the substances milled may produce allergy. It is noteworthy

that these symptoms were not related to age, sex, length of time engaged in the job or type of milling done. This is probably the consequence of continued exposure to high air-borne levels of these food substances. The prevalence of respiratory symptoms in this study is higher than those recorded in studies in the organised work setting.

Deacon and Paddle reported a prevalence of 8 - 13% for cough and 20% for rhinitis among food grain workers in the U. K.[3] A high prevalence of respiratory symptoms has been reported in dusty occupations in other unregulated workplaces in Nigeria. A survey of sawmill workers in Ife[6] reported a prevalence of 45.8% for cough and 67.8% for nasal stuffiness while a similar survey in Ibadan[7] reported a prevalence of 34% and 57% for cough and running nose respectively. As in this study, there were no measures for dust control in place.

Noise above 70dB causes vasoconstriction[8] and it has been suggested that noise exposure may be associated with raised blood pressure. In this study the prevalence of hypertension at 18% is slightly higher than that of the general population of 14.5%[9] and 10 - 12%[10] but is comparable to the prevalence among other occupational groups in Nigeria.[11-13]

Thirty-four workers (28%) reported hearing problems which was mostly tinnitus. Four complained of deafness. During the course of the interview, several workers noted that they had tinnitus in the first few years after starting the job but this wore off as they settled in the job. Noise was considered to be part of the job and workers soon got used to it. Although noise levels in this environment exceeded the acceptable limits of 90dB, this perception about the job may be responsible for the fact that none of the workers used hearing protection in any form.

The use of protective equipment among workforce in small-scale industries in Nigeria is poor. This has been observed among saw-mill workers[6,7] mechanics[14,15] and welders.[16] Health education of workers in these industries and the provision of low cost protective equipment can help to alleviate these problems. In this study, samples of disposable dust masks available in retail chemists were provided for participants. As there is no organized health and safety programmes for these workers, the use of protective equipment will continue to be voluntary.

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