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# Assessment of Knowledge and Practices Regarding Occupational Health and Safety among Small-Scale and Informal Woodworkers in the Fako Division, Cameroon

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**Abstract:** Occupational injury is widely acknowledged as a significant public health concern. There is a dearth of knowledge regarding occupational harm within the context of small-scale and woodworking firms in Cameroon. The objective of this study was to examine the knowledge and practices of woodworkers in Cameroon with the purpose of formulating suggestions for enhancement. This study employed a quantitative research design and targeted a sample of 223 workers. The participants were selected a snowball sampling approach was used to select participants from small-scale and informal wood processing enterprises located in the Tiko, Mutengene, Buea, Ekona, and Muyuka districts. Data collection was completed using a structured questionnaire. The results of the study indicated that most individuals engaged in woodworking were male, of a younger age, and possessed limited experience. These woodworkers primarily acquired their skills through apprenticeship programmes and were known to work extended hours. The respondents exhibited a notable lack of knowledge and adherence to workplace health and safety procedures. The study found a statistically significant association ($p<0.05$) between woodworkers' age, medium of training, job category and their knowledge of specific occupational health and safety (OHS) components. The study revealed that there is a strong association between the practise of specific occupational health and safety (OHS) components and various factors among woodworkers. These factors include the level of education, the medium through which they obtained training, their work experience, and the type of employment. Importantly, each of these factors individually contributes to the observed association. The study suggests that it is necessary to implement effective strategies to reduce the incidence of work-related injuries. This can be achieved by improving health and safety promotion initiatives, particularly through the provision of pre-employment occupational health and safety (OHS) training for newly hired employees. Additionally, it is important to ensure that workers are equipped with appropriate personal protective equipment, as well as necessary supplies such as suitable fire extinguishers and first aid kits.

**Keywords:** injury; education; training; equipment

## Introduction

An occupational injury is the term used to describe any unintended physical damage or harm to bodily tissues that occurs because of exposure during work activities [1]. Work-related injuries impose a substantial burden on individuals and society in terms of human welfare, social implications, and economic consequences. Despite a decline in occupational injuries over the past few decades, they continue to be a serious public health issue. Globally, a significant number of individuals, amounting to hundreds of millions, are employed in conditions that pose risks to their safety and well-being [5]. Work-related

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injuries have been recognised as a significant determinant of compromised health and potentially fatal illnesses in both developed and developing nations [6]. On a global scale, it has been estimated that there are around 270 million occupational injuries and 2 million fatalities annually across various productive sectors [6,7]. According to recent statistics, over 6,300 individuals lose their lives daily due to occupational illnesses or accidents [8].

The processing of wood is a significant economic endeavour in the country of Cameroon. Woodwork can be defined as the practise, artistic expression, or professional occupation involving the manipulation and craftsmanship of wood materials. Woodwork is predominantly conducted by two coexisting sectors: the large-scale wood enterprises that have strong ties to global markets, and the small and medium-sized enterprises (SMEs) that operate with basic facilities and aim to supply finished products to the domestic market. The latter category mostly consists of informal entities that possess restricted technical and financial resources, minimal training, and primitive infrastructure (9,10). The forest sector contributed around 320 billion FCFA (equivalent to US$ 650 million) to the Gross Domestic Product (GDP) in the year 2004 [9].

Occupational health and safety (OHS) awareness/knowledge encompasses an individual's understanding of safety concerns and the potential risks that may affect both oneself and others within the work environment [11]. It is imperative for workers to possess the knowledge that they are entitled to in a working environment that ensures their safety and well-being [12]. Workers possess the right to receive comprehensive information regarding health and safety measures, as well as the authority to promptly cease work in the presence of any hazards to their well-being. However, it is incumbent upon both employers and workers to assume joint responsibility for ensuring a safe working environment devoid of any imminent threats [12].

Some studies have indicated low OHS knowledge scores among individuals working in the woodwork industry [13–15]. An investigation carried out amongst woodworkers in Nigeria unveiled that 33.3% of the woodworkers had shown awareness of a minimum of 5 risks, however 57.6% acknowledged the existence of a range of 6 to 10 hazards [14]. A comprehensive examination revealed that 23.1% of individuals possessed a low level of knowledge, 61.5% shown a moderate level of knowledge, and a mere 15.4% exhibited a high degree of knowledge. A significant proportion of woodworkers in the study exhibited limited understanding of the potential risks associated with sawmill dust and its impact on health [13]. A study conducted in Tanzania, reported a notable lack of awareness among wood machine operators about key aspects of ergonomics [17]. Additionally, it was found that workers at small-scale enterprises (SSEs) had limited proficiency as wood machine operators, with their abilities primarily obtained through on-the-job training. Research has shown that a considerable proportion of workers have knowledge on the potentially harmful properties of wood dust [16]. The same study reported that most of the respondents (95.9%) indicated that their primary sources of awareness were derived from personal experiences and training, whereas health education initiatives were identified as the least influential source.

A key observation was made regarding the absence of PPE in most wood businesses [17]. According to the study, only 5% of the industries surveyed possessed specialised masks, while the remaining majority either utilised improvised facilities or lacked any protective measures altogether. Furthermore, research indicates that the utilisation of face masks among the workers was limited [19]. The primary factors contributing to the workers' non-compliance with safety measures were primarily attributed to forgetfulness or the perception that such devices were inconvenient or unnecessary [19]. The utilisation of PPE in wood processing industries is often characterised by suboptimal adherence and unsuitable practises. A study in Malaysia also observed comparable results in their investigation amongst workers in the wood and bamboo industries [20]. According to the survey, most of the workers were found to be neglecting the use of personal protective equipment. Research conducted in Nigeria has revealed that the utilisation of personal protective equipment (PPE) among workers is below 15% and 5% [15,21]. The non-utilization of PPE has been associated with factors such as forgetfulness, affordability, inconvenience, and the perception that PPE is unnecessary.

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There is a lack of essential information required to initiate remedial measures. The inherent characteristics of the informal economy pose significant challenges for governments in gathering crucial statistics required for implementing appropriate remedial measures. Given that a substantial portion of small-scale woodworking activities in Cameroon occurs within domestic settings, public areas, streets, and open-air environments, workers involved in such practises face inadequate access to essential health and welfare services, as well as limited social protection measures. The latter circumstance poses significant challenges for inspectorates in conducting inspections and investigations on working conditions, as well as in disseminating information and providing guidance to individuals in need [12]. The lack of either comprehensive recordkeeping or reporting systems presents a challenge in accurately evaluating the extent of occupational injuries and diseases within the woodworking profession.

Moreover, a large number of small-scale woodworking firms' function within deteriorated infrastructures, exhibiting deficiencies in sanitary facilities, access to potable water, and inadequate waste disposal systems. Woodworking inherently produces a significant amount of waste, primarily in the form of sawdust. In cases where there is a lack of appropriate waste management practices, this waste is often disposed of by open-air burning. This practise of burning wood waste in the open air contributes to air pollution, posing a potential health risk to the local people residing near the affected area [22]. Woodworking operations result in the production of hazardous compounds that are dispersed far distances from their source and subsequently accumulate in soil and water bodies. Additionally, these activities can lead to physical harm to structures, including the formation of fractures in walls and the deterioration of buildings. The demarcation between working conditions and living conditions frequently becomes blurred, and both are intricately linked to overarching the issues of poverty and underdevelopment. The correlation between job dangers and substandard living situations can intensify the health complications experienced by individuals employed in the informal timber sector. Limited information is available regarding the context in Cameroon, which primarily encompasses small-scale and unregulated woodworking enterprises. Consequently, it is imperative to examine their level of familiarity with occupational health and safety protocols, as well as their adherence to OHS guidelines during implementation.

**Research Design and Methodology**

The present study was a quantitative, cross-sectional investigation carried out among a sample of small-scale woodworkers in the Fako division of Cameroon. The study was conducted in five prominent towns (Tiko, Mutengene, Buea, Ekona, and Muyuka) within the Fako division of the Southwest Region of Cameroon. These towns are known to host a substantial proportion (over 80%) of the small-scale processing firms in the area, which mostly engage in wood-related activities such as re-sawing, furniture manufacture, and integrated wood processing. In addition, the selection of this area for the study is motivated by the absence of prior research conducted to investigate the difficulties encountered by woodworkers engaged in small-scale and informal woodworking practices. The Division is now witnessing a rise in both human population and building activities, both of which have notable implications for woodworking activities and the safety of personnel involved in this field.

The study focused on woodworkers employed in small-scale and informal firms within the Fako region of Cameroon as the target demographic. the city presently has a population of 444,269 individuals, with a population density of 216 persons per square kilometer [23]. To enroll participants for the current study, it was necessary for respondents to meet the following criteria: being employed as a woodworker within small-scale or informal firms and expressing a willingness to participate. The researchers employed snowball sampling strategy to gather participants from the informal small-scale wood processing sectors located in the Fako region of Cameroon. In this scenario, due to the absence of a comprehensive database and the likelihood that many small and informal woodshop workers are unregistered, the collection of referrals was sought from individuals who had already been identified as belonging to this group.

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The sampling strategy consisted of two steps. Initially, the websites were identified and selected, and then, respondents were recruited from these platforms. The recruitment of workers present at the research location was conducted due to the limited workforce available in the specific area being studied. The current study employed a structured questionnaire as a means of data collection from participants. The researcher administered the questionnaire in-person amongst the workers at their respective woodshops. The questionnaire utilised consisted of two distinct sections. The study examines the socio-demographic and economic features of individuals and their knowledge and safety practices related to health and safety.

The questionnaire was initially created in the English language and afterwards translated into French. It was then translated back into English to prepare for analysis. To establish the accuracy and consistency of the data, a data collection instrument in the form of face-to-face questionnaire administration, where the items were presented to the respondents orally and the researcher assumed the responsibility of completing it on behalf of the respondents. The feedback and opinions obtained from the collected data were utilised to enhance the data collection instruments. All research assistants who were enlisted to participate in this study possessed a minimum of a bachelor's degree and had prior expertise in quantitative data collecting. Additionally, they demonstrated proficiency in English, Pidgin English, and French languages, which are the languages spoken at the study sites. A pilot study was conducted to assess the general content, content validity, and thoroughness of the questionnaire. The valuable recommendations and criticisms obtained from the pilot study were subsequently integrated into the final survey instrument.

The process of quantitative data analysis was initiated by performing coding on all the responses obtained from the items on the structured questionnaire. The process of data entry and cleaning was conducted using Microsoft Excel. Subsequently, the data was transferred to Statistical Package for the Social Sciences (SPSS) version 17.0 for Windows, which is a software programme developed by the Centers for Disease Control and Prevention (CDC) located in Atlanta, Georgia, USA. Descriptive statistics were employed to provide a summary of the demographics of the respondents and other categorical data. This included calculating means and standard deviations for continuous variables, as well as determining percentages for categorical variables. Bivariate analyses were conducted to assess the degree of correlation between determinant factors. The assessment of knowledge and practice was conducted by employing the odds ratio, accompanied by a 95% confidence interval (CI). The occupational health and safety difficulties encountered by woodworkers were determined by identifying variables that exhibited statistical significance at a p-value $< 0.05$.

## Results

A total of 223 respondents participated in the study. With respect to the distribution of ages among the respondents, the average age was found to be 28.2 years, with a standard deviation of 9.3. The findings indicate that the wood-working industry in the Fako division of Cameroon has a significant gender imbalance, with males comprising the majority (97.8%). Fifty percent of the participants (50.2%) possessed a primary education, whereas 20.6% had acquired technical training. The findings indicated that almost all (98.6%) received formal training in woodworking. The majority (90.0%) of individuals who underwent woodwork training obtained it through apprenticeship, whilst a smaller proportion (10.0%) received instruction through technical education. A sizeable proportion of individuals, specifically 36.8%, were engaged in permanent employment, while an additional 33.2% were occupied in apprenticeship positions. About half (45.3%) of the participants had a job experience of five years or less, while 26.5% had a work experience ranging from 6 to 10 years.

**Table 1.** Respondents' socio-demographic characteristics in study sites (N=223).

| Characteristics of woodworkers | Frequency | Percentage |
|---|---|---|
| **Age (in years)** | | |
| 15-19 | 35 | 15.7 |
| 20-29 | 99 | 44.4 |
| 30-39 | 64 | 28.7 |

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| | | |
|---|---|---|
| 40-49 | 16 | 7.2 |
| 50 and more | 9 | 4.0 |
| **Sex** | | |
| Male | 218 | 97.8 |
| Female | 5 | 2.2 |
| **Level of educational** | | |
| Never attended school | 13 | 5.8 |
| Primary | 112 | 50.2 |
| Secondary | 48 | 21.5 |
| Technical (CAP, Probatoire, BAC and specialised training) | 46 | 20.6 |
| Others (University education) | 4 | 1.8 |
| **Medium of training** | | |
| Apprenticeship | 197 | 90.0 |
| Technical education | 22 | 10.0 |
| **Work experience (years)** | | |
| 1-5 | 101 | 45.3 |
| 6-10 | 59 | 26.5 |
| 11 and above | 63 | 28.3 |
| **Job category** | | |
| Apprentice | 74 | 33.2 |
| Temporal workers | 15 | 6.7 |
| Permanent workers | 82 | 36.8 |
| Working-owners | 52 | 23.3 |

The study revealed that approximately a quarter (26.5%) of participants possessed a comprehensive understanding of the concept of occupational health and safety. Moreover, 16.6% of participants demonstrated the ability to accurately describe OHS as the practice of limiting risks, accidents, and injuries. Among the participants who possessed an understanding of the concept of Occupational Health and Safety (OHS), about two-thirds (66.1%) reported receiving information from their supervisors. Additionally, a smaller proportion of respondents (30.5%) stated that they acquired knowledge about OHS during their professional or technical training. Most respondents (91.9%) indicated that they had not received any OHS training in their workplace.

**Table 2.** Respondents' understanding of the concept of OHS and OHS training received (N=223).

| Variables | Frequency | Percentage |
|---|---|---|
| **Understanding of the meaning of the term occupational health and safety** | | |
| Yes | 59 | 26.5 |
| No | 164 | 73.5 |
| **Definition of occupational health and safety** | | |
| Minimising risk/accidents/injury | 37 | 16.6 |
| Taking responsibility to safeguard only oneself | 19 | 8.5 |
| Do not know the correct definition | 167 | 74.9 |
| **Source of OHS information** | | |
| Professional training | 18 | 30.5 |
| Health and safety training workshop/seminar | 2 | 3.4 |
| Supervisor | 39 | 66.1 |
| **Have received formal training on health and safety** | | |
| Yes | 18 | 8.1 |
| No | 205 | 91.9 |
| **If yes, content or scope of training receive** | | |
| Safe operation of work equipment | 5 | 27.8 |

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| | | |
|---|---|---|
| Maintenance of work equipment | 2 | 11.1 |
| The use of personal protective equipment uses | 11 | 61.1 |

In relation to the respondents' fundamental understanding of the utilisation and advantages of PPE, it was found that a significant majority (96.9%) possessed the awareness that employees are not required to bear the cost of PPE provided by their employers. An overwhelming majority (99.6%) demonstrated knowledge of the obligation for workers to use PPE in accordance with the prescribed guidelines and circumstances. All participants reported possessing knowledge on the appropriate methods, timing, and locations for donning PPE including dungarees, gloves, dust masks, earplugs, goggles/safety glasses, safety boots, and hard helmets. Majority of participants (93.3%) shown awareness regarding the correlation between lung issues and the absence of dust masks, while 87.4% possessed information regarding the protective role of earplugs in preventing hearing impairment.

**Table 3.** Knowledge of the use and benefits of using PPE (N=223).

| Variables | Frequency | Percentage |
|---|---|---|
| **Whether employee/worker should pay for PPE provided at work** | | |
| Yes | 7 | 3.1 |
| No | 216 | 96.9 |
| **Who is supposed to wear PPE where required?** | | |
| All workers | 222 | 99.6 |
| Supervisors | 1 | 0.4 |
| **The use of dust mask protects workers against** | | |
| Lung problems | 208 | 93.3 |
| I do not know | 15 | 6.7 |
| **The use of earplugs protects against** | | |
| Hearing loss | 195 | 87.4 |
| I do not know | 28 | 12.6 |

The research findings indicate that a significant proportion (84.3%) of the participants expressed agreement with the notion that user manuals should be provided for all work equipment. A notable percentage (57.8%) demonstrated the ability to accurately identify what constitutes a user handbook. Approximately 73.1% of the participants showed awareness regarding the imperative nature of adhering to the requirement of utilising a user manual prior to operating any equipment or machinery. The findings indicated that 62.3% of the participants understood that the responsibility for cleaning PPE lies with both the employer and the worker. The investigation further indicated that 80.7%, believed that the responsibility of controlling and repairing equipment within the workplace lies solely with individuals who possess the necessary competence. Approximately one-third of the participants (30%) exhibited a lack of awareness of the inadvisability of utilising outdated equipment in the workplace, which consequently exposes workers to potential hazards.

**Table 4.** Knowledge of OHS relating to work equipment and maintenance (N=223).

| Variables | Frequency | Percentage |
|---|---|---|
| **Whether all work equipment should have a user manual** | | |
| Yes | 188 | 84.3 |
| No | 35 | 15.7 |
| **Understanding of respondents' literacy level of a user manual** | | |
| A user manual is a written instruction showing how to check the equipment before operating it | 47 | 21.1 |
| A user manual is a written instruction showing how to operate the equipment safely | 82 | 36.8 |
| I do not know what a user manual is | 94 | 42.1 |

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| | | |
|---|---|---|
| **Whether a worker is supposed to operate equipment without a user manual** | | |
| No worker | 163 | 73.1 |
| Supervisors only | 60 | 26.9 |
| **Personal protective equipment put at the disposal of the workers should be cleaned by** | | |
| Both the employer and employees | 139 | 62.3 |
| Employer only | 71 | 31.9 |
| Employees only | 13 | 5.8 |
| **Who is supposed to control and repair equipment at the workshop?** | | |
| A competent person | 180 | 80.7 |
| Workers | 16 | 7.2 |
| Supervisor | 27 | 12.1 |
| **Reason for the non-use of obsolete equipment at work** | | |
| It exposes workers to danger | 153 | 68.6 |
| It is cheaper | 70 | 31.4 |

The average knowledge score for all respondents, as determined by 16 questions, was found to be 9.9 (SD=2.1). The study revealed that 45.3% of the respondents had an inadequate understanding of occupational health and safety (OHS). In relation to the provision of OHS training by employers, a mere 3.6% of the respondents reported receiving regular OHS training. Only 6.7% of the respondents indicated regular training on the proper use of personal protective equipment (PPE) and, 26.5% of respondents indicated that their employers occasionally furnished them with OHS guidelines It is noteworthy that a significant majority, specifically 74.4% of the respondents, reported never having received any information from their current employer regarding the potential hazards associated with their work and the corresponding risks to their health.

**Table 5.** Employers' practice involving OHS training (N=223).

| Employers' practice of OHS training | Not at all | Sometimes | Always |
|---|---|---|---|
| Provided training on health and safety to employees | 69.1 | 27.4 | 3.6 |
| Provided training on the use of PPEs to employees | 62.3 | 30.9 | 6.7 |
| Have provided information to employees about the hazards of work and their risks to their health | 74.4 | 21.5 | 4.0 |
| Provided OHS guidelines in workshops | 61.0 | 26.5 | 12.6 |

The study also evaluated the practices of respondents regarding the utilisation of PPE that was provided to them as employees. The findings indicated that 37.3% of respondents, reported consistent access to PPE. One-third (33.2%) of individuals consistently utilised the personal PPE offered to them. These included gloves, goggles, dust masks, earplugs, safety boots, and hard helmets, in situations where it was necessary. In the study, it was found that around 48.9% of the participants consistently utilised dust masks in areas where wood dust was generated. Additionally, 29.6% of the respondents reported consistently wearing gloves during wood planning activities whilst, 21.5% of the participants said that they consistently wore earplugs in environments characterised by high levels of noise. Furthermore, it was uncovered that 38.1% of the total sample, consistently engaged in the practice of reusing gloves, even in instances where the gloves were visibly soiled.

**Table 6.** Respondents' practices relating to the use of PPE provided (N=223).

| Variables | Not at all | Sometimes | Always |
|---|---|---|---|
| The provision of PPE to workers | 27.4 | 35.0 | 37.7 |
| Whether workers' pay for PPE provided at work | 48.9 | 36.8 | 14.3 |
| How often they use PPE where/when recommended | 12.6 | 54.3 | 33.2 |
| The use of dust mask where wood dust is produced | 10.3 | 40.8 | 48.9 |

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| | | | |
|---|---|---|---|
| The use of gloves when planning wood | 22.0 | 48.4 | 29.6 |
| The use of ear protectors (ear plugs) where/when there is high noise | 45.7 | 32.7 | 21.5 |
| Required to reuse gloves even when they are dirty | 37.2 | 24.7 | 38.1 |

With regards to work maintenance, equipment, and OHS practices in the workplace, 35.4% of the respondents abstained from utilising outdated equipment throughout their job activities. Over a third of participants (39.9%) reported engaging in machine operation without consulting the accompanying user manual and, one-third of respondents (33.6%), indicated that their devices are consistently supervised and maintained by individuals possessing the necessary expertise.

**Table 7.** Respondents' practices of OHS relating to work equipment and maintenance.

| **Respondents' practices of OHS relating to work equipment and maintenance** | **Not at all** | **Sometimes** | **Always** |
|---|---|---|---|
| The use of outdated/obsolete equipment | 40.4 | 24.2 | 35.4 |
| The operation of machines without user manuals | 24.2 | 35.9 | 39.9 |
| The checking of equipment/machines for proper functioning before usage | 11.7 | 35.0 | 53.4 |
| The control and repair of equipment by an expert/competent person | 13.0 | 53.4 | 33.6 |

The findings indicate that half (48.9%) of the participants who were interviewed reported engaging in regular cleaning practices to remove wood dust from the floor. majority of the respondents (64.1%) consistently reported having sufficient working and storage space in their workshop. Additionally, 35.9% of the participants reported consistently having access to and utilising waste receptacles. Regarding the management of waste, particularly wood dust, a majority of 61.9% consistently opt to sell wood dust for the purposes of fuel and fertiliser. This is followed by 25.1% who consistently chose to dispose of the wood dust at a designated dumping ground.

**Table 8.** Respondents' practice relating to housekeeping (N=223).

| **Respondents' practices relating to housekeeping** | **Not at all** | **Sometimes** | **Always** |
|---|---|---|---|
| The cleaning of wood dust on the floor | 4.5 | 46.6 | 48.9 |
| Have ample working and storage space at the workshop | 4.0 | 31.8 | 64.1 |
| Have and use waste receptacle at the workshop | 40.0 | 23.8 | 35.9 |
| **How waste most especially wood dust is managed at the workshop?** | | | |
| Selling the wood dust to be used as fuel and fertilizer | 27.4 | 10.8 | 61.9 |
| Disposing at dumping ground | 14.8 | 60.1 | 25.1 |
| Abandoning the wood dust to accumulate on the workshop floor. | 92.8 | 4.0 | 3.1 |

The average practice score for all participants was 32.1 (SD=4.4). The study revealed that almost one-fourth of the participants (25.6%) exhibited suboptimal practices.

Findings of the univariate logistic regression showed that knowledge of selected OHS aspects was significantly associated with woodworkers' age group ($p<0.01$), level of education ($p=0.047$), medium of training ($p=0.010$), work experience ($p<0.01$) and job category ($p=0.018$). On multivariable analysis, knowledge of selected OHS aspects was independently associated with woodworkers' age group ($p<0.01$), medium of training ($p=0.018$), and job category ($p=0.023$) (Table 9).

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**Table 9.** Association between woodworkers' socio-demographic characteristics and knowledge OHS in Fako division (N=223).

| | Knowledge of OHS | | Unadjusted | P-Value | Adjusted | P-Value |
|---|---|---|---|---|---|---|
| | Poor | Good | Odd ratio (95% CI) | | Odd ratio (95% CI) | |
| **Age group** | | | | | | |
| <=19 yrs | 74.3 | 25.7 | 1 | | 1 | |
| 20-29 yes | 37.4 | 62.6 | 4.84(2.05-11.44) | 0.000 | 4.56(1.89-11.00) | <0.01 |
| 30 yrs and more | 42.7 | 57.3 | 3.88(1.63-9.22) | 0.002 | 02.06(0.72-5.88) | 0.179 |
| **Level of education** | | | | | | |
| Never attended school | 61.5 | 38.5 | 1 | | 1 | |
| Primary | 52.7 | 47.3 | 1.44(0.44-4.66) | 0.546 | 1.20(0.35-4.16) | 0.773 |
| Secondary | 37.5 | 62.5 | 2.67(0.76-9.41) | 0.127 | 2.02(0.53-7.61) | 0.301 |
| Technical* | 30.4 | 69.6 | 3.66(1.02-13.18) | 0.047 | 2.30(0.57-9.24) | 0.241 |
| Other* | 50.0 | 50.0 | 1.60(0.17-15.27) | 0.683 | 0.314(0.02-5.36) | 0.423 |
| **Medium of training** | | | | | | |
| Apprenticeship | 28.4 | 71.6 | 1 | | 1 | |
| Technical education | 4.5 | 95.5 | 4.37(1.43-13.36) | 0.010 | 4.05(1.27-12.92) | 0.018 |
| **Work experience** | | | | | | |
| <1-5 | 53.5 | 46.5 | 1 | | 1 | |
| 6-10 | 30.5 | 69.5 | 2.62(1.33-5.16) | 0.005 | 2.15(0.98-4.73) | 0.05 |
| 11 -and above | 46.0 | 54.0 | 1.35(0.72-2.53) | 0.355 | 1.04(0.43-2.52) | 0.938 |
| **Job category** | | | | | | |
| Workers | 49.7 | 50.3 | 1 | | 1 | |
| Working-owner | 30.8 | 69.2 | 2.22(1.15-4.31) | 0.018 | 2.45(1.13-5.29) | 0.023 |

L= Lower, M= Moderate, H=High, Other*= University studies, Technical*= cap, probatoire, BAC and Specialised training, *statistically significant with p-value < 0.05.

According to the results presented in Table 10, the univariate logistic regression analysis revealed a significant association between the practice of chosen occupational health and safety (OHS) features and the level of education among woodworkers (p=0.048). A significant association was also found between the practice of selected OHS aspects and the medium of training among woodworkers (p=0.041). In the context of multivariable analysis, it was found that the degree of education among woodworkers (p=0.045), the media through which they received training (p=0.030), their work experience (p=0.032), and their job type (p=0.037) were all independently associated with the practice of specified occupational health and safety (OHS) components.

**Table 10.** Association between woodworkers' socio-demographic characteristics and practice of OHS in Fako division (N=223).

| | Practice of OHS | | Unadjusted | P-Value | Adjusted | P-Value |
|---|---|---|---|---|---|---|
| | L (%) | M/H (%) | Odd ratio (95% CI) | | Odd ratio (95% CI) | |
| **Age group** | | | | | | |
| 15-19 | 18.6 | 71.4 | 1 | 1 | 1 | |
| 20-29 | 22.2 | 77.8 | 1.40(0.58-3.35) | 0.450 | 1.22(0.50-2.97) | 0.666 |
| 30 and more | 28.1 | 71.9 | 1.02(0.43-2.44) | 0.957 | 0.78(0.26-2.34) | 0.663 |
| **Level of education** | | | | | | |
| Never attended school | 15.4 | 84.6 | 1 | | 1 | |
| Primary | 24.1 | 75.9 | 0.57(0.12-2.74) | 0.485 | 0.56(0.11-3.00) | 0.503 |
| Secondary | 47.9 | 52.1 | 0.20(0.04-0.99) | 0.048 | 0.17(0.03-0.96) | 0.045 |
| Technical* | 4.3 | 95.7 | 4.00(0.51-31.64) | 0.189 | 2.42(0.28-20.51) | 0.419 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Other* | 75.0 | 25.0 | 0.61(0.00-0.92) | 0.043 | 0.00(0.00->1E12) | 0.972 |
| **Medium of training** | | | | | | |
| Apprenticeship | 49.2 | 50.8 | 1 | | 1 | |
| Technical education | 18.2 | 81.8 | 8.34(1.10-63.47) | 0.041 | 9.77(1.24-76.79) | 0.030 |
| **Work experience** | | | | | | |
| <1-5 | 28.7 | 71.3 | 1 | | 1 | |
| 6-10 | 16.9 | 83.1 | 1.97(0.88-4.41) | 0.098 | 2.83(1.09-7.33) | 0.032 |
| 11 -and above | 28.6 | 71.1 | 1.01(0.50-2.02) | 0.985 | 1.83(0.67-5.00) | 0.235 |
| **Job category** | | | | | | |
| Workers | 22.8 | 77.2 | 1 | | 1 | |
| Working-owner | 34.6 | 65.4 | 0.56(0.28-1.09) | 0.090 | 0.38(0.16-0.94) | 0.037 |

L= Lower, M= Moderate, H=High, Other*= University studies, Technical*= cap, probatoire, BAC and Specialised training, *statistically significant with p-value < 0.05.

## Discussion

This study aimed to assess knowledge and practices regarding OHS issues among the woodworkers in Cameroon. Overall, participants had low levels of knowledge and did not practice OHS optimally and in alignment with the country's occupational and safety regulations.

Findings showed that the number of persons employed per workshop ranged from 1 to 13 which is not consistent with the 1-50 employees as specified in the initial definition of small-scale enterprises adopted in this study. This shows that businesses engaged in woodworking in the study area are mostly informal and operate on a small-scale consisting mainly of self-employed persons and lack the structural characteristics of formally run enterprises. These characteristics are vital in defining the extent to which they comply with OHS requirements. In the same way, the size of a workforce sampled in a previous Nigerian study showed that the number of woodworkers ranged from 1 to 21 per workshop [24].

The findings revealed that most woodworkers are male compared to female and had no impact on the self-reported injury rate (P>0.05). This implies that the workforce in the small-scale wood enterprises in the study sites is mostly male dominated. For instance, a cross-sectional study conducted in Malaysia among wood furniture and bamboo workers had almost all respondents being males, reflecting the low number of women employed in the wood industry [20]. Similar studies conducted among woodworkers in Ghana and Nigeria also showed that most of the respondents were males [24,25]. This may be explained by the fact that the work is hard and laborious since the Cameroon Labour Code does not exempt women from woodworking ventures. Furthermore, employing women would require meeting their specific OHS needs. This also means that women may be underrepresented in decision-making to put forward their challenges and defend their rights.

The age of the youngest and the oldest employees were 15 and 68 respectively with an average age of 28 years in the current study. This means that the woodworking enterprises in the study area employed mostly younger people. It can be assumed that this is due to the hard labour required which might naturally limit the employment of elderly people. The findings also revealed that the age of the woodworkers had a significant impact on the knowledge of selected OHS and self-reported injury rate (p<0.05). The current findings are consistent with another study which reported that young people are the ones who can withstand the hardships involved in the whole process of woodworking activities [17]. Most of the informal sectors and their operators are characterized by sole entrepreneurship, manual work, and very often tremendous endurance. Therefore, young, strong, and active people are needed for this line of work.

Regarding education levels, the findings showed that more than half of the respondents had no formal education or had completed only a primary level education. The analysis also revealed that educational level of the woodworkers had a significant association with the practice of OHS (P<0.05). It has been argued that being educated increases access to information, education, and communication materials, enables a better awareness of various workplace hazards, and ensures an understanding of safe work procedures and a better propensity to develop a positive attitude towards

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OHS at work [3]. These findings support the results of the previous studies that indicated that most woodworkers in small scale and informal enterprises in Nigeria and Ghana have completed only primary education, hence they are largely unskilled, requiring apprenticeship to do their job [14,26,27].

Findings of the current study have shown that an overwhelming majority of woodworkers were mainly trained through apprenticeship and had a statistically significant impact on the knowledge and practice of OHS ($p<0.05$). This implies that workers acquire their expertise through apprenticeship, and experience on the job are solely dependent on their trainer whose knowledge of OHS may be insufficient. The findings are in line with the study conducted in Kwara State-Nigeria which revealed that almost all the woodworkers in the study (91.3%) received their training through apprenticeship [13].

The findings showed that most of the respondents had worked for less than 5years and work experience was significantly associated with the practice of OHS ($p<0.05$). This implies that the small-scale enterprises in the study sites employ mostly first-time employees who have little or no experience. Therefore, regular training and close supervision is required given the fact that they are unfamiliar with their work environment and less likely to identify risks associated with the job. A survey conducted amongst carpenters noted a lower average year of work experience of 4.5 years and over 65.4% of the respondents had worked for five years [14]. In addition, another study conducted in Nigerian woodworkers reported higher average years of experience of 13.27±10.19 years though the statistically significant difference between these averages has not been verified [13].

The findings in the current study show that respondents' overall knowledge of OHS was poor. This implies that many respondents lack basic knowledge of OHS concepts, knowledge of the use of PPE, safe operation, and maintenance of work. A better understanding of OHS is associated with fewer violations and hence fewer accidents [28]. The lack of basic knowledge of OHS could further have been exacerbated by the low level of formal education of respondents thus mirroring results of previous studies carried out among woodworkers in Nigeria [13–15].

Current findings have revealed that most of the respondents have poor practices of OHS due to poor OHS training, inadequate provision and use of PPE, use of obsolete and poorly maintained work equipment, and poor housekeeping practices in the study sites. The implication is that most of the respondents were neither provided with PPE nor used safe equipment at work; for example, finding showed that they mostly used outdated equipment without safety guards and the equipment was mostly repaired by untrained persons. The current finding concurs with the previous research studies conducted in wood enterprises in Malaysia and Nigeria where poor practices of OHS among woodworkers were also reported [15,20,21]. Authors of these previous studies have indicated that woodworkers rarely use PPE such as face masks, protective goggle, hand gloves and boots for safety at workplace, which concur with current findings.

## Conclusion

The results of the study indicated a significant lack of adherence to health and safety requirements among woodworkers within the designated research area. The research findings presented provide evidence supporting the notion that possessing a comprehensive understanding and implementation of OHS might contribute to the development of a favourable safety culture within the workplace. A significant number of businesses have neglected to ensure that their staff had a sufficient level of awareness on health and safety matters. It is recommended that employers offer induction training on OHS to newly hired employees in order to equip them with the necessary knowledge and awareness of the potential health and safety risks associated with their respective professions. It is imperative for employers to ensure the provision of ongoing training to their staff regarding the significance and utilisation of PPE as well as electrical equipment. To enhance employee engagement and promote a sense of ownership, it is advisable to involve employees in the process of choosing suggested types of protective equipment. This can be achieved through a rotational system or by appointing representatives who will actively participate in the decision-

making process. In order to promote the utilisation of PPE, it is suggested that prizes be awarded to those employees who demonstrate the highest level of compliance.

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