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# Woodworking injuries: A comparative study of work-related and hobby-related accidents

## *Accidents liés au travail du bois : étude comparée des accidents de travail et de loisir*

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**Abstract**

The primary objective of this study was to describe the injury characteristics and demographics of patients injured during woodworking activities, upon their arrival to the emergency department in a regional of France where this industry is prevalent. The secondary objective was to compare patient and injury characteristics for work-related and hobby-related accidents. A cohort of 87 patients who had suffered a woodworking accident over a two-year period was evaluated; 79 were available for follow-up. The context and circumstances of the accident, nature and location of the injuries and patient demographics were recorded. Hobby-related accidents accounted for two-thirds of the accidents (51/79). Most of the injured workers were either loggers (35%) or carpenters (46%). The hand was injured in 53 cases (67%). Work-related accidents resulted in significantly more serious consequences in terms of hospital stay, work stoppage, resumption of work or retraining than hobby-related accidents. For the workplace accidents, 86% occurred on new machines; more than 25% of the machines involved in accidents at home were over 15 years. Sixty-eight per cent of workers were wearing their safety gear, while only 31% of those injured during recreational woodworking wore the appropriate gear. Several elements of prevention should be improved: information about the need to maintain the equipment, protect the worker with suitable clothing, and learn which maneuvers are considered hazardous. Safety gear should be regularly inspected in the workplace.


*Keywords:* Prevention; Accidents at work; Accidents at home; Woodworking; Hand trauma

**Résumé**

Le but principal de cette étude était de réaliser une étude descriptive des lésions et des patients blessés lors du travail du bois dans une région impliquée dans cette industrie. L'objectif secondaire était de comparer les lésions et les patients entre les accidents de travail et de loisir. Une cohorte composée de 87 patients victimes d'accidents liés au travail du bois pendant deux années consécutives a été évaluée. Le cadre, les circonstances de l'accident, la nature des lésions, leur siège, ainsi que les caractéristiques socioprofessionnelles des patients étaient répertoriés. Les accidents de loisirs représentaient deux tiers des accidents (51/79). Deux grands types de professions étaient concernés : les bûcherons (35 %) et les menuisiers (46 %). Le siège des lésions était la main dans 53 cas (67 %). Les accidents de travail entraînaient des conséquences significativement plus lourdes en termes de durée d'hospitalisation, d'arrêt de travail, de gêne à la reprise ou de réorientation professionnelle, comparativement aux accidents domestiques. Dans les accidents de travail, 86 % des machines étaient récentes, pour les accidents de loisir, plus de 25 % des machines avaient plus de 15 ans. Soixante-huit pour cent des travailleurs portaient une tenue de travail sécurisée, alors que, parmi les accidents de loisirs, 31 % des blessés portaient une tenue adaptée. Plusieurs éléments de prévention devraient être améliorés : l'information sur la nécessité d'entretenir son matériel, de se protéger avec une tenue adaptée, et d'apprendre les gestes considérés comme dangereux. La tenue de travail protectrice devrait subir un contrôle plus régulier sur le lieu de travail.


*Mots clés :* Prévention ; Accident du travail ; Accident domestique ; Travail du bois ; Traumatisme de la main

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## 1. Introduction

Woodworking can be a dangerous activity, whether performed in the workplace or at home as a hobby. Few studies have described woodworking injuries [1–4]. The first step towards injury prevention is an epidemiological description of the injuries that occur. In the workplace, the risks, target audience and responsibility for prevention have been defined by occupational medicine and public health surveillance groups such as the INVS in France [5]; however, this same level of information does not exist for hobby-related injuries.

The primary objective of this study was to describe the injury characteristics and demographics of patients injured during woodworking activities, upon their arrival to the emergency department in a region of France where this industry is widespread. The secondary objective was to compare patient and injury characteristics for work-related and hobby-related accidents.

## 2. Material and methods

A cohort of 87 patients injured during woodworking activities over a two-year period was evaluated in a trauma unit within a University Hospital that is a member of FESUM (European Federation of Emergency Hand Services). Patients were included no matter when or how treatment was provided (surgery immediately in emergency room or later on in the operating room). Of these 87 patients, seven were lost to follow-up and one refused to answer questions about the injury circumstances. As a consequence, 79 patients were available for this study.

The following items were recorded: accident context (workplace or home), injury circumstances (number of hours worked before injury occurred, duration of fasting, adverse environmental conditions [e.g. working in a tree, outside work when less than 0 °C], type of machine used, alcohol intake, type of clothing worn), nature and location of the injuries, along with the patient's social and occupational characteristics (training in task being performed). Evaluation of injury recovery was carried out using a simple subjective questionnaire with four outcome levels:

- no sequelae;
- moderate sequelae;
- significant sequelae;
- severe sequelae.

Statistical analysis was performed with the XLSTAT® software (Addinsoft, New York, NY, USA). Quantitative variables were compared with Student's *t*-test after having confirmed that the assumption of normality had been met for both cohorts. Qualitative variables were compared using the Chi-square test. The threshold for statistical significance was set at 5%.

## 3. Results

Sixty-five percent of the injuries occurred while doing woodworking as a hobby and 35% in the workplace. All but two in the "work-related injury" subgroup were men. Most of the injured workers were either loggers (35%) or carpenters (46%). The majority of injuries (63.3%) occurred on the left side.

The hand was injured in 53 cases, lower limb in 16, upper limb in 5 and the head or torso in 5. In half of the injuries, multiple tissues were affected: tendon, bone, skin, nerve and blood vessels. Only one of the above-listed structures was injured in 12 cases. In 23 cases, a finger, toe or limb (leg in one case) were severed (traumatic amputation). The hand injuries consisted of 4 simple wounds, 33 complex wounds and 22 traumatic amputations, including 5 double-finger amputations and one transmetacarpal amputation. Of the 32 fingers severed during the accident, 21 were surgically amputated and 11 were replanted; three of the replanted fingers had to undergo secondary amputation (failures). More precise analysis of the hand injuries showed that if only one finger was injured (32 patients), it was usually located on the radial side of the hand (Fig. 1); when multiple fingers were injured (21 patients), the middle ones were primarily involved (Fig. 2). In the 21 patients with multifinger injuries, a total of 58 fingers were injured or an average of 2.8 per patient.

There was a significant difference in the average age of the two sub-populations ($P < 0.0001$). More patients who suffered a work-related injury were under 40 years of age, while those who were injured at home tended to be over 40 years of age (Fig. 3).

In terms of occupation, 60% of those injured at home worked in jobs other than manual labor or were unskilled workers, while 68% of those injured on the job were professional woodworkers. There was a significant difference between these two subgroups in terms of specific training for the task being performed at the time of injury ($P < 0.0001$) (Fig. 4 and Table 2). Among those who suffered a hobby-related injury, 13


Fig. 1. When only one finger is affected (32 patients, 60%), it is usually on the radial side.