

# Knowledge, attitude, and practice of sugarcane crushers towards hand injury prevention strategies in India

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## Abstract

**Introduction**—Injuries of the hand have an enormous impact on hand function and on quality of life. Occupational injuries are a major cause of morbidity and mortality in India and their incidence has been steadily increasing. Sugarcane crushers produce juice using dangerous procedures.

**Objective**—The objective of this study was to determine the knowledge, attitudes, and practices among sugarcane crushers in India and thus assist in the formulation of effective preventive strategies.

**Setting**—A block (area) in the Vellore District, South India (population 100 000).

**Subjects and methods**—All sugarcane crushers living in this area (n = 32) were included. A single observer, using a questionnaire, conducted personal on-site interviews.

**Results**—Carelessness was involved in 63% of injuries. Sixteen per cent felt that machines with improved safety features are required; 40% supported the use of special gloves, although 19% considered them a hindrance. Eighty eight per cent did not consider the long duration of work as a risk factor and 38% were fatalistic (God's will); 50% thought the injuries were due to "bad luck".

**Conclusion**—Sugarcane crushers do not perceive the need for safer equipment. To overcome fatalistic views, and persuade this group to take other safety measures, safety education will need to take into

## consideration their socioeconomic and educational status.

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Keywords: occupational injury; hand injury; sugarcane crushers

Occupational injuries are a major cause of morbidity and mortality in most parts of the world and in India their incidence has been steadily increasing.<sup>1</sup> A previous study indicated that hand injury was the commonest occupational or domestic injury event, constituted 24% of 855 records reviewed. In Denmark, the incidence of occupational hand injuries was 1.7%, with the highest incidence among employees in the production and building industries.<sup>2</sup>

## Subjects and methods

A cross sectional survey of sugarcane crushers was conducted.<sup>3</sup> These workers produce juice from sugarcane using methods that place them at high risk for hand injuries. Data obtained from the Block Development Office identified all sugarcane crushers living in the Kaniyambadi Block in the Vellore District, South India (population 100 000).

All sugarcane crushers with no previous hand injury were included.<sup>4 5</sup>

A questionnaire was developed and validated on five cases. A single observer, using this questionnaire, conducted on-site interviews and photographed the sugarcane crushing machinery.

## Results

Most (93%) crushers were operated singly—each labourer operating an individual unit (fig 1). Of these, 40% had pursued the same profession for more than four years.<sup>6</sup> All used roller machines and most used both hands.

Fifty six per cent worked for more than 12 hours every day and 34% worked for more than eight hours, although only 12% considered duration as a risk factor. Instead, being injured was considered to be due to bad luck by about half and just over one third felt injuries were "God's will". Carelessness was thought to be the cause of injury by 63%.

In spite of this, most (84%) agreed that attentive and careful behaviour can reduce injuries. Only 16% thought that safer machines were required. Even though nearly one half of the workers accepted that hands could be caught in the conveyor belt, only 28% agreed that covering the belt with a mesh would be

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Figure 1 Sugarcane crusher with single operator showing no safety features.

Table 1 Attitudes and practices of sugarcane crushers towards hand safety

	No (%)
Cause of injury	
Bad luck	16 (50)
God's will	12 (37)
Unknown	4 (12)
Attentive and careful behaviour avoids injuries	27 (84)
Safer machines reduce injuries	5 (16)
Machines can be designed to be safer	18 (56)
Gloves not used for routine work	32 (100)
Working with poor illumination	25 (78)
No safety measures implemented	29 (91)

useful (see table 1 for attitudes and practices of the workers to hand safety).

Altogether 40% thought special gloves would be useful, whereas 19% thought they would be a hindrance, and none had tried gloves because of their cost. Only 28% agreed to try them even if they were provided free. All thought some prevention training could reduce injury morbidity.

### Discussion

Sugarcane crushers work in self employed independent units, usually in stalls at public places. Most are poor and not well educated; only 44% were literate. None had been injured in the recent past, thus making their perception regarding injuries unbiased.<sup>4</sup> All were right handed and it was the right hand that was more liable to injury.<sup>6</sup>

The guard plate designed to prevent injury while inserting sugarcane is inadequate. As well, the conveyor belt tended to slip off while the machine was running and thus could cause injury. Nevertheless, only about 16% of the study population perceived a need for safety improvements in their equipment, and this may have been influenced by the likely cost of doing so in view of the fact that all were self financed businesses. Repetitive work for a long time has been shown to increase carelessness and injuries.<sup>7,8</sup> About 56% of the population worked for more than 12 hours every day, though not constantly crushing cane. However, most did not consider the long work day to be a risk factor.

### LIMITATIONS

The small sample makes it important to validate these findings in a larger group.

### Key points

- Occupational injuries are a major cause of morbidity and mortality in India.
- Sugarcane crushers are a high risk occupational group for hand injuries.
- Sugarcane crushers do not perceive the need for safer equipment.
- Injury prevention schemes should take into consideration the socioeconomic and educational status of the group they wish to address.
- High risk labourers need to be made aware that occupational safety is their right and not a privilege.

### Implications for prevention

This cross sectional study suggests the need for more education about safety in this work situation. The study population seems to have accepted these injuries as inevitable and appear unaware of safety measures.

A more promising solution is to have the government provide local repair shops; these would provide upkeep to the machinery and also provide modifications known to enhance the machine's safety.

Labourers in high risk occupations need to be made aware that occupational safety is their right and not a privilege.

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