



## Analysis of the Protective Measures for Workers of Tea Industry in Pakistan

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### Authors' contributions

This work was carried out in collaboration between all authors. Authors MT and SR designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SS and MR managed the analyses of the study. Author HT managed the literature searches. All authors read and approved the final manuscript.

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### ABSTRACT

Tea is used almost all over the world and is brewed from the tea plant *Camellia sinensis*. Manufacturing of tea involves several labor intensive processes. The main risks posed are from unguarded machinery, chemical, and biological agents as well as unfavorable working conditions like high temperatures. This research study is an attempt to examine the preventive and protective measures relating to health and safety of the workers adopted in Tea industry in Pakistan.

**Objectives of Study:** To assess the preventive measures adopted for the workers and to make recommendations for their better occupational safety.

**Materials and Methods:** It was a cross-sectional descriptive study.

**Results:** Our results show that the mean age of workers was  $31.22 \pm 8.55$  SD years and all of them were literate. Stress at work was noted in 11 (17.2%) workers. Among all respondents, 37 (57.8%)

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were using face masks and gloves while 25 (39.1%) were using only face masks. Only one person was using ear plugs.

**Conclusion and Recommendations:** Generally, the workers were not taking adequate measures to prevent themselves from occupational hazards. Hence, there is an urgent need to look into the matters by the management to improve the working conditions.

*Keywords: Preventive measures; workers in tea industry; risk management.*

## 1. INTRODUCTION

Tea is an indispensable beverage and is used all over the world. It is brewed from the tea plant *Camellia sinensis*. Manufacture of tea involves several labor intensive processes. Like in any other employment sector, workers in the tea factories run an equal if not higher risk of being injured as a result of the type of work they do. The main risks to the workers of this industry are unguarded machinery in the factory, chemical, and biological ingredients as well as unfavorable working conditions like high temperatures [1]. The tea industry faces challenges in ensuring occupational safety and health because of the management's mindset is that it does not accept safety as a business liability [2]. Inhaling tea dust causes to both acute and chronic respiratory symptoms. Accidents are caused due to unsafe acts or practices. They are also caused on account of unsafe conditions of equipment or materials [3]. The health and safety of all employees is closely linked to the company's productivity in all workplaces. At some tea processing factories, main attention is paid on taking maximum output from the workers without caring their safety [4]. As long as there are no serious accidents, occupational health and safety policies and practices are not opted. Threats to employees' safety are not removed timely because accident-prone areas are not identified and prior care is not taken to prevent the occurrence of fatal accidents [5]. It is therefore important that the conditions that pose threat to the safety and health of the workers are identified and addressed properly [6]. Workplace safety and health has a great impact on the productivity of the entire manufacturing activity [7]. For a labor intensive industry like tea, where the laborers are illiterate, unskilled and malnourished and also striving for enhancing productivity, safety and health of workers need to be given top priority [8]. Though the tea industry in Pakistan is not recognized as a major health-threat to its workers, yet it poses a serious safety and health hazards [9]. So it is necessary to follow a mechanism that reflect true picture of the safety and health of the workers of tea industry [10].

Workers in the tea planting industry are exposed to a variety of occupational health and safety hazards [11]. The main risks to the life of workers at tea factories are uncovered machinery, chemical and biological ingredients as well as unfavorable working conditions like high temperatures [12]. The workers are not properly trained to prevent any eventuality. Even they do not know what type of risks is involved in their working environment [13]. In spite of creating a healthy and risk-free working condition, management mostly focuses on how to take maximum output from workers within working hours [14]. Even Government Departments dealing environmental issues do not force the management to take precautionary measures for the safety of workers [15]. Similarly, there is no compensation package for the workers to be injured during any mishap [16].

A lot of studies have been conducted on the occupational hazards facing by workers of tea industry at international levels. However, no study has so far been conducted on preventive measures for workers of tea industry in Pakistan. So this study is designed to collect data about preventive measures in order to develop strategies for improving occupational safety, better working environment in Tea industry of Pakistan.

### 1.1 Objective of Study

The objectives of the study are stated as under:-

- (i) Assess the preventive measures adopted for the workers of Tea industry in Pakistan.
- (ii) To make recommendations for better occupational safety and health measures for workers of factory.

## 2. RESEARCH METHODOLOGY

It was a cross-sectional descriptive study conducted to analyze the protective measures in specific area of tea industry of Haroonabad, District Bahawalnagar, Pakistan. The workers of this Factory were taken as population of the

study and 60 workers were included in this study through random sampling. The duration of study was one month. Data was collected through a semi-structured questionnaire, which was finalized after pre-testing. SPSS software was used for analyzing data and drawing empirical results.

### 3. RESULTS

The mean age of respondents was  $31.22 \pm 8.55$  SD years. The minimum age recorded was 20 years and maximum was 51 years, the mean education was  $7.41 \pm 2.3$  SD years. The minimum education recorded was 5 years and maximum was 14 years, the mean job duration was  $11.27 \pm 5.46$  SD years. The minimum job duration recorded was 3 years and maximum recorded was 25 years whereas the mean overtime working hours were  $2.92 \pm 1.0$  SD hours. The minimum extra working hours were 2 and maximum was 6 hours. 14 (21.9%) were frequently absent from duty while 50 (78.1%) were most of the time present on duty.

**Table 1. Frequency distribution of respondents sustained accidental injury**

<b>Sustained accidental injury</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	4	6.2
No	60	93.8
<b>Total</b>	<b>64</b>	<b>100</b>
<b>Type of accidental injury</b>	<b>Frequency</b>	<b>Percentage</b>
Finger cut	3	75
Laceration to finger	1	25
<b>Total</b>	<b>4</b>	<b>100</b>

Out of fourteen absent from duty, 8 (57.1%) stated that reason of absence was their children issues, while 5 (35.7%) said that the reason was their sickness and 1 (7.2%) told that the reason of their absence was their parents' problems. 8 (12.5%) suffered disease during working and 55 (87.5%) were healthy. Out of 8 respondents who suffered different diseases during work, 2 (25%) thought that disease was worsened due to job and 6 (75%) negated this contention. 40 (62.5%) respondents developed health problems and 24 (37.5%) did not develop any health problem since they were employed. Out of total 64 respondents, 11 (17.2%) felt stress while 53

(82.8%) respondents did not feel any stress during.

**Table 2. Frequency distribution of respondents adopting preventive measures**

<b>Against tea dust</b>	<b>Frequency</b>	<b>Percentage</b>
Face mask	25	39.1
Face mask & gloves	37	57.8
No prevention	2	3.1
<b>Against noise</b>	<b>Frequency</b>	<b>Percentage</b>
Ear plugs	1	1.6
No prevention	63	98.4
<b>Against humidity and increased temperature</b>	<b>Frequency</b>	<b>Percentage</b>
Covering of body parts	63	98.4
No prevention	1	1.6

### 4. DISCUSSION

Tea industry has been the most neglected area in terms of policies and procedures to improve health and safety of workers. Tea workers are exposed to a variety of health and safety hazards like respiratory problems because of tea dust, headache and vertigo due to intolerable noise, eye sight problems due to inadequate light, and injuries due to unguarded machinery and unfavorable working conditions like high temperatures and humidity levels [17].

This study was conducted to assess the preventive measures taken by the workers and authorities to protect against the health and safety hazards to which the tea factory workers were exposed.

The mean age of respondents was  $31.22 \pm 8.55$  SD years and of them was literate. This might be due to the company's policy of recruiting a worker who had studied at least to primary level. The mean job duration was  $11.27 \pm 5.46$  SD years. That shows workers commitment to their work as well as better working conditions.

In this study, amongst the respondents, 44 (68.7%) were workers and 10 (15.6%) were machine operators. Tea workers, like any other industrial workers are prone to diseases as well as accidents due to poor working conditions. In this study, 8 (12.5%) were suffering from work related diseases and their disease was worsened in 2 (25%) workers. Only 4 (6.2%) sustained

accidental injuries. Among them, finger cut was seen in 3 respondents and one sustained laceration to finger. Stress at work was seen in 11 (17.2%) of the workers.

Wearing proper uniform during working hours protects the workers from many physical as well as biochemical hazards. In this study, 50 (78.1%) respondents were wearing proper uniform while working.

Using personal protective equipment protects the workers from physical, chemical and biological hazards. 37 (57.8%) were using face masks and gloves while 25 (39.1%) were using only face masks to prevent themselves from hazards produced by tea dust. Unfortunately, only one worker was using ear plugs while the remaining was unaware of noise hazards. Most of the workers i.e. 63 (98.4%) were aware of high temperatures and humidity effects so they covered their body parts to avoid such hazards.

All basic facilities like adequate lighting, fencing around machines, ventilated rooms, food and catering and proper sanitation were provided. These reflect healthy signs for adoption of adequate preventive measures against occupational hazards.

## 5. CONCLUSIONS

In the present study, the workers were using no or less curative measures to prevent themselves from occupational hazards like tea dust, noise from machines and high or low humidity and temperatures. Hence, there is an urgent need to look into the matters by the concerned authority to improve the working conditions. Health education was also not given regarding the personal protection measures as well as there is dire need to reinforce it in the form of regular education programs and legislative laws. Keeping in view the hazards of tea dust it is advisable that the tea factory management, their workers and health officials should work together to adopt technical preventive measures such as well-ventilated work areas and workers should wear appropriate apparel, mask, safety goggles, gloves and ear plugs. These measures would help to identify susceptible workers in due time and improve the technical preventive measures that will decrease the risk of occupational hazards in the factory workers.

On the basis of the above conclusion we would like to make the following recommendations for

improving health and safety conditions of workers of tea industry: -

1. Income of both permanent and temporary workers should be increased so that they can lead comfortable and hygienic lifestyles and invest more in health and education.
2. The tea factory workers should be made aware of the importance of the health benefits of drinking clean and safe water, keeping their surroundings clean and free from dirt and stagnant water. The walls and machinery of the tea factory should be kept clean, machines should be fenced off and the floors, stairs and means of access should be of sound construction.
3. Proper training regarding personal protective equipment should be given to workers before operating the factory machines.
4. Protective equipment such as goggles or face shields, chemical-resistant gloves, aprons, ear plugs and respirators should be provided to the workers.
5. Rotation of duties can be undertaken to minimize the ill-effects to the workers.
6. Rehabilitation of sick and disabled tea workers should also be taken care of by the management of the tea factories.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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