

## Occupational Stress Impact on Mental Health Status of Forest Workers

<sup>1</sup>Majid Lotfalian, <sup>2</sup>Seyed Fazlollah Emadian, <sup>1</sup>Nahid Riahi Far,  
<sup>1</sup>Maryam Salimi and <sup>3</sup>Fatemeh Sheikh Moonesi

<sup>1</sup>Faculty of Natural Resources,  
Sari Agricultural Sciences and Natural Resources University, Sari, Iran  
<sup>2</sup>Faculty of Forestry and wood Technology,  
Gorgan University of Agriculture and Natural Resources, Gorgan, Iran  
<sup>3</sup>Psychiatry and Behaviour Sciences Research Center,  
Mazandaran University of Medical Sciences, Sari, Iran

**Abstract:** Stress is a kind of physical or psychological exhaustion caused by actual or superficial problems. When pressures in working environment build up, a considerable impact on body and mind can be developed. This condition may lead the worker in to a harmful accident and bring about a dangerous situation. In many countries forestry is one of the toughest and most difficult types of occupation. Working in forest is intensive and involves a high degree of risk. Operating chainsaw and skidder are known as two most stressful occupations in forest. In order to study effect of occupational stress on mental health of forest workers, a research was conducted on the workers of two companies Mazandaran Wood and Paper Manufactory and Nekachob Wood Technology using GHQ-28 questionnaire (General Health Questionnaire). Furthermore, in order to investigate and compare forest workers under impact with greater details, control group was also considered. Kroskal-Wallis test showed that there was a significant difference between target and control groups in terms of mental health at 99 percent statistical levels. Working conditions and occupational stress had negative impact on mental health of both chainsaw and skidder operators so seriously that they showed symptoms like anxiety, nervousness, lack of sleep, etc.

**Key words:** Chainsaw Operator % Skidder Operator % Job Stress % Mental Health

### INTRODUCTION

Stress is a kind of physical or psychological exhaustion caused by actual or superficial problems [1]. Stress is actually a psychological or physiological reaction and it happens when the individual feels threatened [2]. When occupational stress becomes overwhelming, it may place so much impact on body and mind of the person that eventually cause an accident or injury. At this level of occupational stress, the worker may experiences grave consequences such as physical and mental exhaustion, lack of concentration, loss of memory, mistake in judgment, self-physical exploitation, depression, frequent absenteeism, repetitive accidental injury, low productivity and greater work expense [3].

Occupational safety is a law with broad implications and several distinctive links, which in general protects and secures body and mind of workers in all occupations with maintaining their well being in the best possible manner; it prevents harmful factors to have negative effects on workers' health and provides an appropriate working environment that suits the workers physical and mental needs and in one word match the job with the workers [4].

Forestry is one of the toughest and riskiest types of occupation in many countries. Although there are clear evidences that indicate that health and safety of the forest workers can be secured and protected, but a disappointing rate of accident and job related illness and premature retirement associated with this job reported all over the world [4] indicates that health and safety are still a critical issue in forestry occupation.

Forest related jobs are known as a heavy duty and rather unhealthy which are usually performed under difficult and adverse circumstances [5]. An ideal working condition is a type of environment that is not only harmless from health standpoint, but also it enhances physical and/or mental health status as well as safety of the workers involved [6].

Most of the studies conducted on forest workers were job-related physical illnesses and safety issues. Performing research in an occupational stress is crucial because this factor has an important negative impact on job satisfaction. Studies have shown that occupational stress is strongly correlated with job satisfaction and quality of life [5].

Inoue [7] studied psychological aspects of the occupational stress in forest workers operating on five different equipments [7]. He observed that psychological impact of various equipments on the workers was not equal. He also noticed that the workers experienced the highest degree of stress when they were employed temporarily and on contractual basis. Axelson [8] investigated effects of mechanization improvement and ergonomic development on workers health and job safety in Sweden forest. In 1990 frequency rate of accident related to chainsaw and harvesting equipments were 63 and 17 cases, respectively. Between 1970 and 1990 ergonomics progress and improvement of safety standard lowered the risk for chainsaw and other harvesting machine operations by 48% and 70%, respectively. Moreover, hand shivering and white hand disease were also reduced significantly among chainsaw operators during that period. Nevertheless, 50% of the harvesting machine operators were still suffering from the injuries associated with symptoms of repetitive stress.

Arcury and Quandt [9] described how to identify and standardize job and environment related risk factors for farm workers [9]. They pointed out that after reviewing the related articles they educated the workers and their families regarding their occupational injuries and illnesses. A study conducted research on forest workers in Indonesia with the main purpose of improving the workers living and working condition [10]. The investigators identified important factors that were effective on the workers' job satisfaction. They found out that out of all the workers, 92 were satisfied, but the remaining 177 were not. In another study conducted in Turkey with the main purpose to educate the forest workers about their occupation related health issues and job safety as well as problems associated with their working conditions [5].

The researchers concluded that the workers physical, mental and social status was worse relative to what they had observed among the Japanese workers. Some researchers studied the relationship between employment status of forest workers i.e., permanent, part-time or daily basis, in South Korea and their physical, mental or behavioural problems [11]. They found out that the less stable was the workers employment status, the more physical, mental or socio-behavioural problems such as addiction to narcotic drugs they suffered.

Almost the entire harvesting operation of a forest stand including felling, logging and extraction is one of the most dangerous types of occupations. Among all these operations, chainsaw and skidder operation are the most stressful of all. That is why chainsaw operators are allowed to start the occupation only after completing a training program [12].

After trees are felled, they are pulled away by special heavy duty machines such as skidders from inside the stand to an area outside the stand. In this process the entire activity has not only important economic and technical, but it also deserves special management attention. Actually, it is the latter aspect that actually provides justification for studying psychological impacts of the entire harvesting operations on forest workers.

The main purpose of this study was to determine the impact of chainsaw and skidder operation on physical and mental health status of the forest workers.

## **MATERIALS AND METHODS**

**Study Area:** In this study the forest workers of two companies; Neka Choob Wood Technology and Wood and Paper Manufactory of Mazandaran were used as target groups. The main reasons for choosing the workers of these two companies were their long years of experience and the tremendous loads of their daily work. Neka Choob Wood Technology is located near Neka, a northern city of Iran. The workers of this company were from district 1 and 2 of the company's forest called Zarandin and Estakhrposht, respectively. Wood and Paper Manufactory of Mazandaran is located near Sari, another northern city of Iran.

**Research Methodology:** In this research, GHQ-28 questionnaire was used in order to evaluate mental health status of the forest workers. This questionnaire was designed and developed by Goldberg [13] to assess mental health status. The form had 28 questions and each

question had 4 distinct scores from 0 to 3. The workers could only choose only one of the 4 scores. Thus, the overall score could theoretically range from numbers 0 to 84. The cut of point is 23. The questionnaire was designed to measure four physical or mental symptoms such as anxiety, sleeping disorder, social dysfunction and depression. The minimum age of the workers to qualify to fill this form was 15 and education level of the workers wasn't a limiting factor. Thus, even the workers with no education were qualified to complete the form. A total score of below 23 would mean that the worker was mentally healthily. On the contrary, if the total score was above 23 then the worker wouldn't be considered as healthy [13]. Statistical population included two groups of 50 forest workers. The first group was the target group in which there were 29 chainsaw operators and 21 skidder operators. Occupational stress impact on these workers was thought to be very high. The second group was actually the control one which included workers like vehicle drivers, assistant to chainsaw operators, security guards, etc. The level of occupational stress for the workers in control group appeared to be no way near that ones in the target group.

The control group in this study was for comparison purposes and completeness of this study, otherwise the information derived from questionnaires of the workers in the target group would have been sufficient to assess occupational stress effects on the workers' mental health.

Each question of the questionnaire was completed at the working site. If the question appeared sort of vague for the worker, it was explained and clarified to ensure that it was fully understood. To avoid any influence by adjacent workers already interviewed, a sufficient distance was maintained between them while the person was being interviewed. In addition to the questions in the questionnaire, two following questions were also asked independent of the questionnaire regarding job satisfaction and job safety:

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Do you fear or feel unsafe at work?			
A) No	B) Little	C) Much	D) very much
- Are you satisfied from your job? If your answer is no, explain.			
A) No	B) Little	C) Much	D) very much

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The gathered data from all individual workers were entered computer using Excel to get the totals. Then, the total scores associated with chainsaw operators, skidder operators and control were analysed using SPSS. Since the nature of the data was qualitative, the non-parametric Test of Kruaskal-Wallis was used for the analysis. Finally,

the respondents' answers to the two additional questions were expressed on percentage basis and descriptive manner, respectively.

## RESULTS

**Preliminary Results of the Questionnaire:** Based on the total score, 31 and 22 workers from their respective totals of 54 chainsaw operators and 41 skidder operators had mental problem. In the control group, from 50 forest workers, only 8 of them were having mental problem (Figure 1).

**Final Results of the Questionnaire:** The result has been summarized in Table 1. This table shows that at 0.001 statistical levels, there was significant difference between the target and control groups in terms of the workers' mental health. This meant that occupational stress had a significant impact on the forest worker's mental health. However, no significant difference was observed between the two groups of chainsaw and skidder operators in terms of their mental health.

**Job Safety and Dissatisfaction:** Ninety three percent of the chainsaw operators and 73% of the skidder operators were either "concerned" or "very concerned" from lack of safety in their occupation as chainsaw or skidder operators.

The unsatisfied workers complained that their low-paid salary doesn't correspond with their high-risk job. They further complained that as a result of their daily long working hours and lack of good meals, they were getting weak, tired and exhausted at work fast. Lack of a sound insurance, the superior's unfair and inappropriate attitude, inadequate respect from the contractor and the society as a whole was also mentioned by many of the forest workers to justify their job discontent.

The following four questions of the questionnaire were designed to find out more details about the workers' mental status:

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1-	Have you experienced anger or felt furious during the past month?			
A) No	B) A little	C) Much	D) Very much	
2-	Have you felt as being under continuous stress during the past month?			
A) No	B) A little	C) Much	D) Very much	
3-	Have you experienced feeling of fear or anxiety in the past month?			
A) No	B) A little	C) Much	D) Very much	
4-	Have you experienced sleeplessness as a result of getting worried during the past month?			
A) No	B) A little	C) Much	D) Very much	

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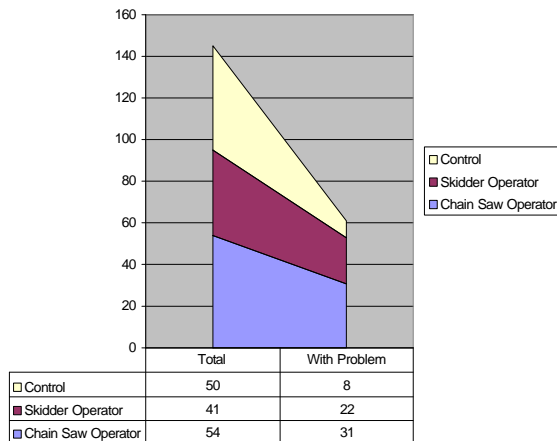


Fig. 1: Preliminary results of the questionnaire

Table 1: Results of Kruskal-Wallis test

Groups	N	Mean Rank
Chain saw operator	54	61.12
Skidder operator	41	66.51
Control group	50	36.21
Total	100	-
Test Statistics <sup>a,b</sup>		
Chi-square		25.112
Df		2
Asymp.sig.		.001

a Kruskal-Wallis Test

b Grouping Variable: Groups

Comparison of the result in two the groups of target and control revealed that the respondents' choice of answers to "much" or "very much" in the above four questions were as follows:

Question 1; 70% and 24%, respectively; question 2; 54% and 20%, respectively; question 3; 48% and 12%, respectively and question 4; 46% and 8%, respectively. Accordingly, it seemed obvious that relative to the control group, the target group were experiencing more of anger, furiousness, sleeplessness and anxiety and as a result were more sensitive.

## DISCUSSION

This research showed that occupational stress resulted from chainsaw and skidder operations endangers the worker's health and eventually make them physically and mentally ill. During completing the questionnaire, it appeared that the longer the workers had worked in their job, the more apparent was the impact of job stress on them however, this couldn't be substantiated due to insufficient number of cases. Most workers were not satisfied with their occupation, because they considered

it too difficult relative to the low salary they received for it. They also complained for not being insured by their employer and believed that their job had to be classified as "difficult job" and compensated for accordingly with a higher salary level.

In their investigation, Gandaseca and Yoshimura [10] reported that 94% of the forest workers claimed that lack of sufficient salary was the main reason for their dissatisfaction and of course living in concrete housing in forest away from their own city or village in which they used to live prior to their occupation was another reason for their discontent. In another study conducted in Turkey, Yoshimura and Acar [5] added job difficulty, being away from family and lack of good meals as further reasons for forest workers job dissatisfaction.

Human is a social being and lives together with other people in communities. Having a good status and respect in society is desirable for individuals and gives them a tremendous amount of confidence. In this research it was noted that several quite a few workers didn't demonstrate a sufficient level of confidence in which case they put the blame on the contractors.

Number of hours of work per week is an important factor that can affect both physical and mental conditions of the workers. As the nineteenth century was getting over, in many countries number of hours per week was reduced. People were gradually convinced that excessive work may be harmful for their health. Throughout the twentieth century, the number of hours per week was reduced even further. Nevertheless, among European countries, British people are still working harder than other nations in the continent by working 45 hours per week. Germans, however, have the lowest working hours per week, which is 36 hours per week [2].

In this research, the number of working hours per week for the workers involved were 46; this is rather excessive in today's life, especially when difficult nature of the job and its negative impact on physical and mental health is also taken in to account. Most of the workers said that, after their daily work they were physically so exhausted that they only wanted to rest rather than sharing some time with their family. This situation brought feelings of discontent to the family of some of the workers [14].

Except for a few people who might have a better financial status, for most individuals, getting laid off means is loss of income. Most of the workers in this research were employed based on temporary contract and feared losing their job as a result of getting laid off. Obviously, this situation is by itself stressful and may

have undesirable long-term effect on their psychology. Kim *et al.* [11] studied mental status of the workers in South Korea. They found out that there was a strong correlation between the worker's mental health on one hand and their social status and employment stability on the other hand. Furthermore, Axelsson [8] reported that although mechanization and progression in ergonomics enhanced safety and reduced risk for people in their working environment, but they also brought with them some inevitable stress related consequences.

Today, it is a well known fact that working environment and variables including light, noise, music, length of working hours, frequency of break times, number of holidays or weekend off days and even climatic conditions, all have meaningful effect on productivity. For instance, noise pollution has a negative impact on physical health of people who work in such an environment. Too much noise also has harmful impact on mental health and can cause impatience, physical and psychological irritation, stress, lack of concentration and difficulty in communication [15]. One of the most stressful concerns the forest workers have is lack of a sound occupational safety at work; they feel that the threat for their life due to nature of the job they operate every day is real. This concern, if prolonged may cause mental problem. In this study, 93% of the chainsaw operators and 73% of the skidder operators said that they didn't feel safe at their work.

In many countries, job stress concerns are much more serious than job safety problems per se [8]. So, it is preferable to provide a type of working environment that can enhance job safety on one hand and mitigate job stress on the other hand.

Based on the results obtained from this research, it is recommended that employers and insurance administrators rank forestry-related occupations as high-risk jobs and hence consider appropriate benefit and adequate monetary compensation for it. This would bring about job satisfaction for the forest workers. Moreover, a better ergonomic arrangement which is physically and mentally suited for the workers can increase job satisfaction and decrease accident.

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