



ANALYSIS OF WORK FATIGUE AMONG WORKERS IN THE FORMAL AND INFORMAL SECTORS IN CENTRAL JAVA

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Abstract

Physical and mental fatigue resulting from continuous work over an extended period without sufficient rest. Work fatigue can affect workers in all sectors, both informal and formal, but several factors influence the fatigue levels in each sector. Informal sector workers typically operate in irregular conditions, without fixed working hours, and work for extended periods to meet their livelihood needs. Meanwhile, formal sector workers often have more regular working hours and definite rest periods. However, formal sector workers may also experience similar fatigue due to high job demands, pressure from superiors, or tight deadlines. The consequences of fatigue can lead to serious physical and mental health issues, such as stress, anxiety, sleep disturbances, and even depression. Therefore, it is crucial for workers in both sectors to pay attention to their health and well-being and take measures to prevent fatigue and cope with work-related stress. The research employed a quantitative method with a cross-sectional approach. There were 122 respondents, comprising 61 from the informal sector and 61 from the formal sector. The research findings indicated that the level of fatigue experienced by workers in both sectors was severe, with 78 (63.9%) of informal sector workers predominantly facing this fatigue

Keywords: Fatigue, Informal, Formal, Workers

Introduction

The Indonesian Central Statistics Agency defines the informal sector as formal establishments employing 5 to 19 workers, while formal establishments employ 20 to 100 workers. However, the informal and formal sectors exhibit different approaches to safety management. Safety standards, such as formal operations and safety practices, appear to be poorer in the informal sector compared to formal establishments. Other studies indicate that human resources in the informal sector are inferior to those in formal establishments, including aspects like job division and supporting professions. ^[1] Workplace environments in most small enterprises are generally more precarious than in larger companies, and the implementation of safety regulations and laws may be less effective in comparison. In Indonesia, utilizing labor force surveys, researchers have found that the informal sector employs between 61% to 70% of the total workforce. ^[2]

Fatigue can be defined as "an unpleasant physical, cognitive, and emotional symptom described as an unrelenting impact despite the process of energy recovery." Fatigue can be induced by excessive mental and/or physical demands, although the analysis of fatigue tends to focus on the physical aspects. ^[3] The prevalence of work-related fatigue has been reported to range from less than 10% to over 40%. ^[4] Work-related fatigue is a significant issue as it can affect the performance, safety, and health of workers. Physical fatigue disrupts physiological variables such as heart rate, blood lactate, or

oxygen intake. In contrast to physical fatigue, mental fatigue is not associated with these disruptions, although a specific role of the brain has been indicated in mental fatigue.^[5] Therefore, assessing fatigue in workers in both the formal and informal sectors is essential to maintaining overall productivity.

Fatigue, as a psychophysical consequence of typical job-related stress situations, can have negative impacts on worker safety and workplace security. The effects of fatigue are said to manifest in decreased attention and memory, reduced responsiveness, increased risk-taking behavior, and diminished problem-solving abilities.^[6] In an epidemiological study of the general population in Japan, 12.2% of adult men and 14.6% of women reported symptoms of insomnia (difficulty initiating sleep, difficulty maintaining sleep with trouble returning to sleep, and waking up early with difficulty resuming sleep), and 3.2% of men and 4.2% of women also suffered from daytime disturbances.^[7]

Fatigue and drowsiness can increase the risk of accidents in both the formal and informal sectors. In line with this, an analysis of 44 incident reports attributing the impact to human error as a contributing factor found that 86% of the accidents analyzed had sleep disturbances as the largest contributing factor (34%), including disruptions in sleep quality characterized by feelings of insufficient sleep, waking up at specific times, daytime sleep, altering sleep schedules, and environmental factors.^[8] Insomnia not only causes difficulties at night but also disrupts daytime functioning with the accumulation of fatigue and a reduction in memory and attention, potentially leading to a decrease in the quality of life. Insomnia in workers, in particular, reduces work efficiency and job satisfaction and increases the incidence of injuries and work-related issues such as absenteeism, absence, and early retirement, resulting in direct and indirect financial losses.^[9] The aim of this research is to assess the fatigue levels of workers in the informal and formal sectors.

Method

This research is a quantitative study with a cross-sectional approach. The total number of respondents is 122, consisting of 61 respondents from the informal sector and 61 respondents from the formal sector, selected through simple random sampling. Data collection for demographic information was done using a questionnaire. The fatigue assessment instrument utilized a reaction timer, while sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) questionnaire, developed by the University of Pittsburgh School of Medicine. This questionnaire is globally recognized for evaluating sleep quality and consists of 10 questions assessing various aspects of sleep quality.^[10] The questionnaire is widely used in various settings and has been translated into many languages, including Indonesian.^[11] The research has been approved by the Research Ethics Committee for Health, Faculty of Health Science, Universitas Dian Nuswantoro, with reference number No: 148/EA/KEPK-Fkes-UDINUS/II/2022.

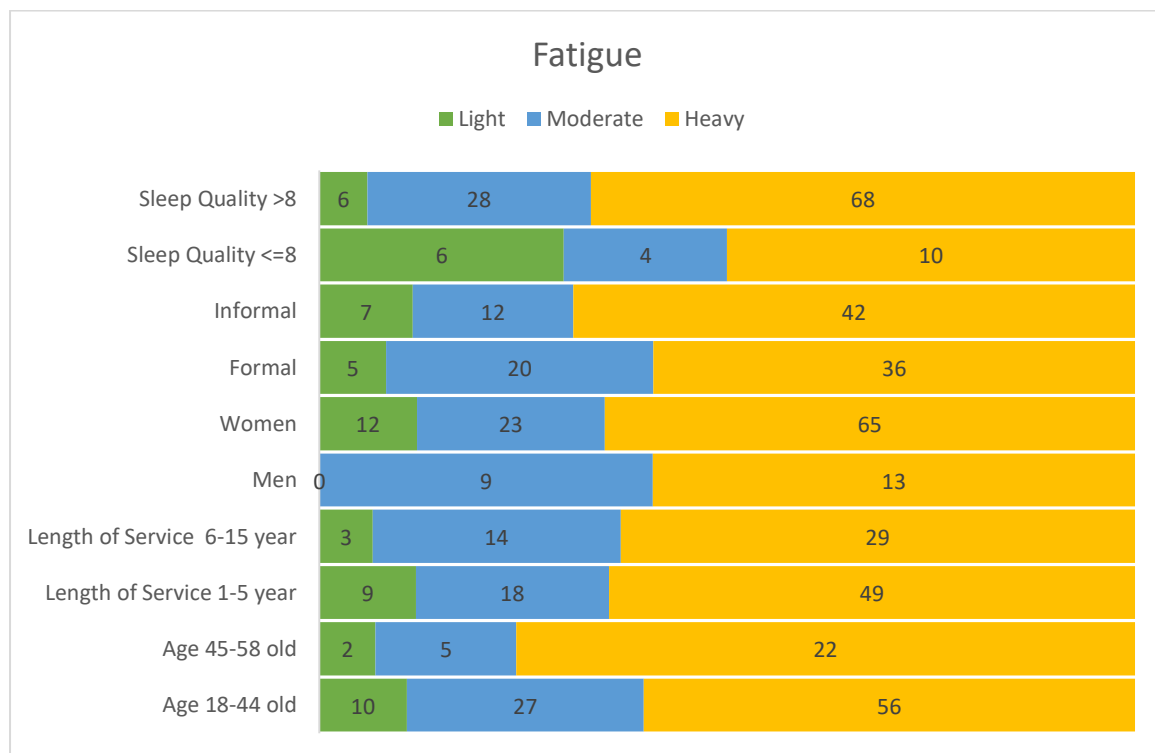
Results

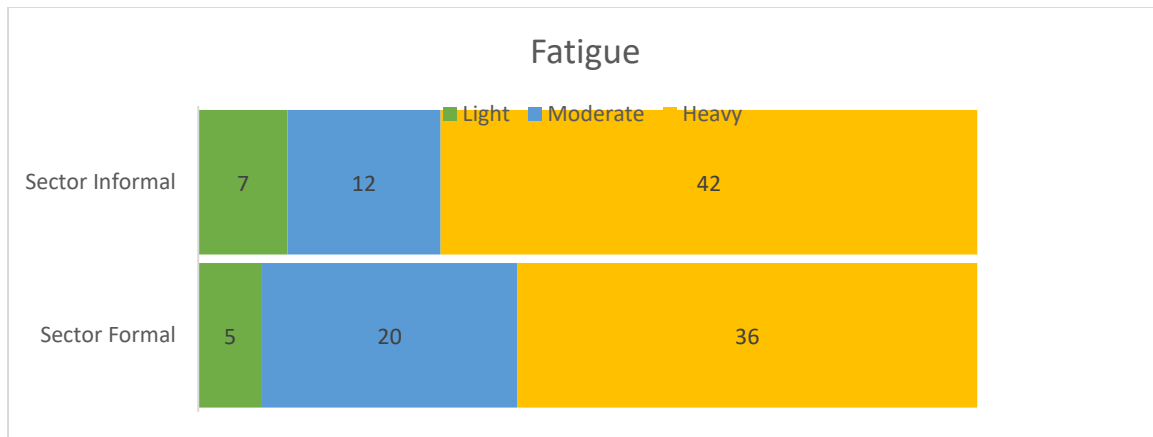
1. Respondent Characteristics

The univariate analysis results from the 112 respondents in this study yielded data related to respondent characteristics, including age, length of service, gender, sleep quality, and fatigue. The data on the number of workers comprised 61 respondents each from the formal and informal sectors. The obtained age data ranged from a minimum of 18 years to a maximum of 39 years. The length of service data ranged from a minimum of 1 year to a maximum of 31 years. Respondent characteristics data related to age, length of service, gender, type of employment, sleep quality, and fatigue are presented in Table 1. The highest age group was in the ≤ 40 years category, accounting for 76.2%.

Table 1. Frequency distribution of respondent characteristics in the formal and informal sectors

| Variabel | n | (%) | Mean ± SD | p | OR dan CI 95% |
|--------------------------|-----|------|-----------------|--------|------------------|
| Age | | | | | |
| ≤44 old | 93 | 76.2 | 35.89 ± 9.24 | 0.30 | 2.07 (0.80-5.35) |
| >44 old | 29 | 23.8 | | | |
| Length of Service | | | | | |
| ≤ 5 year | 76 | 62.3 | 7.25 ± 7.33 | 0.51 | 0.94 (0.44-2.01) |
| >5 year | 46 | 37.7 | | | |
| Gender | | | | | |
| Men | 22 | 18 | - | 0.08** | 1.28 (0.50-3.30) |
| Women | 100 | 82 | | | |
| Work | | | | | |
| Formal | 61 | 50 | - | 0.04* | 2.00 (0.76-5.27) |
| Informal | 61 | 50 | | | |
| Sleep Quality | | | | | |
| Baik ≤ 8 | 20 | 16.4 | 8.89 ± 3.0 | 0.30 | 2.07 (0.80-5.35) |
| Buruk > 8 | 102 | 83.6 | | | |
| Fatigue | | | | | |
| Light | 12 | 9.8 | 713.48 ± 264.42 | - | - |
| Moderate | 32 | 26.2 | | | |
| Heavy | 78 | 63.9 | | | |





Discussion

This research aims to identify indicators of work fatigue among workers in the formal and informal sectors in Indonesia. Based on the research hypothesis, there seems to be no significant relationship between fatigue and the type of job in both the formal and informal sectors. The findings of this study indicate that the level of fatigue experienced by workers in both sectors is at a high level, with 78 (63.9%) workers, predominantly from the informal sector, experiencing severe fatigue. The informal sector, particularly in developing countries, has not implemented adequate and safe work standards, supporting the results of this research in line with previous studies. The majority of workers are female, consistent with the findings reported in this study. The highest number of female workers in both the informal and formal sectors aligns with previous research, where women are more dominant in the production of spring rolls. ^[12]

One of the research findings indicates that within the 1-5 years of work experience, 49 (64.5%) workers experience severe fatigue, with the majority being informal sector workers, totaling 40 (65.6%) workers. Workers with this length of service are still in the adaptation phase and may not feel confident enough to suggest changes in the work environment, tending to stick to their routine tasks. This aligns with previous research indicating that work experience does not significantly impact work fatigue. ^[12]

Conclusion

The conclusions drawn from this research are as follows:

- a. Both the formal and informal sectors predominantly have workers experiencing severe fatigue.
- b. In the formal sector, there are more workers experiencing moderate fatigue compared to the informal sector, where severe fatigue is dominant.

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