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## Factors Affecting Job Fatigue In Informal Sector Workers : A Systematic Review

Hubaybah<sup>1)</sup>, M Ichbat Fadli Azim<sup>2\*)</sup>, Budi Aswin<sup>3)</sup>, La Ode Reskiaddin<sup>4)</sup>, Ismi Nurwaqiah Ibnu<sup>5)</sup>  
<sup>1,2,3,4,5)</sup> Program Studi Ilmu Kesehatan Masyarakat, Universitas Jambi, Jambi

\*Corresponding Author

Email : [ichbatfadli@gmail.com](mailto:ichbatfadli@gmail.com)

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### Abstract

Work fatigue is a problem that must be prioritized, work fatigue is the second contributor to the number of work accidents after traffic accidents. The high number of informal workers allows high accidents in the workplace. The purpose of this study is to discuss the factors that influence fatigue in informal sector workers. This research is a descriptive study with a systematic review method. The literature search strategy uses a prism flow chart, and inclusion and exclusion criteria. The databases used include: PubMed, DOAJ, Science Direct, Taylor and Francis, and Google Scholar. Of the 25 articles, all of them used cross-sectional research. The average type of informal work obtained from the 25 articles is labor. Overall, the journal articles obtained discuss the factors that affect work fatigue in informal sector workers. Age, nutritional status, workload were found to affect work fatigue in informal sector workers. Meanwhile, working period, working hours and work environment were not found to be related to the incidence of CTS in informal sector workers.

**Keywords:** Fatigue, Risk Factor, Systematic Review, Informal

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## INTRODUCTION

International Labour Organization (ILO), there are 250 million workplace accidents each year, with two million workers dying from work-related accidents or illnesses. About 32% of the world's workers experience fatigue as a result of the work they do (ILO, 2016). Based on BPJS Ketenagakerjaan data, in 2018 there were 114,148 accidents at work and in 2019 there were 77,295 cases. This shows a decrease in accident cases that occur at work by 33.05% (Kemnaker, 2020) .

Occupational fatigue is a feeling of weakness or decreased ability to perform work that results from excessive mental, emotional, or physical activity. According to Tarwaka there are several factors causing the occurrence of work fatigue some of which are bad habits such as smoking, decreased physical fitness, psychological problems, gender, health status, Working Time, nutritional status, workload, age, and problems in the work environment (Tarwaka, 2004)

According to data records from the Central Statistics Agency (BPS), the number of informal workers reached 78.14 million in February 2021, an increase of 2.64 million from 77.68 million in August 2020. Although the number increased, the proportion of informal workers actually fell from 60.47% to 59.62%. This happened because the proportion of formal workers increased from 39.53% to 40.38%. and the number of formal workers increased by 2.15 million in February 2021, reaching 52.92 million (Central Statistics Agency (BPS), 2021).

Informal sector jobs in this study are: lumpia skin makers, tailors, frying section workers, production workers, cage administrators, fishermen, project workers, online motorcycle taxi riders, furniture makers, Transport Workers, cracker makers, foundry workers, ship repair workers and mine workers. Overall, the research article obtained discusses related to factors that affect work fatigue in informal sector workers.

## RESEARCH METHODS

The study strategy used is descriptive with systematic review method which is literature review. A Literature review is a comprehensive overview of previous research on a particular topic. The overview presents the reader with what is known and what is unknown about a topic, thus establishing the reason or need for a new investigation through the actual research that accompanies the literature review(Denney , 2013).

The population in this study are international and national research articles contained in the PubMed, DOAJ, Taylor & Francis, Science Direct and Google Scholar databases related to the title of the study, namely factors affecting work fatigue in informal sector workers.

The sample in this study is 25 research articles consisting of 5 international research articles and 20 national articles that meet the criteria for further review.

## RESULTS AND DISCUSSION

### Results

Obtained 25 research articles that meet the inclusion criteria, based on the topic of systematic review, namely factors that affect work fatigue in informal sector workers. Twenty-five research articles used this type of cross sectional research. Most of the research designs used are quantitative research designs. The types of informal jobs obtained from the 25 research articles are : lumpia skin makers, tailors, frying section workers, production workers, cage administrators, tempe craftsmen, fishermen, project workers, online motorcycle taxi riders, furniture makers, Transport Workers, cracker makers, foundry workers, ship repair workers and mine workers. Overall, the research article obtained discusses related to factors that affect work fatigue in informal sector workers. The findings were grouped by research area as follows:

**Tabel 1. Article Search Results By Region/Country**

No	Region/Country	Number Of Articles
1	Indonesia	23
2	Afrika Selatan	1
3	Amerika Serikat	1
<b>Total</b>		<b>25 Articles</b>

### Discussion

#### 1. Age

Based on the results of systematic reviews, 16 out of 25 studies that examined the relationship of age with work fatigue in informal sector workers, 9 articles stated that there was a relationship between age or age with work fatigue in informal sector workers, while 7 studies stated that there was no relationship between age and work fatigue.

The effect of age on work fatigue is generally because the physiological functions of the body change with age, which affects a person's physical endurance and ability to work. People with a relatively young age can do heavy work and vice versa, if people with a relatively old age then the ability to do heavy work is reduced because they get tired quickly and are not flexible in performing tasks that affect their performance.

The results of research conducted by Wahyu et al (2017) obtained the p-value with a significance value of 0.008 ( $\alpha = 5\%$ ) which means that there is a relationship between age and the level of work fatigue in workers of lumpia skin making section in Kranggan Village , Central Semarang District (Wahyu Kusgiyanto, 2017). In the old age range, another study said that the percentage of individuals over the age of 45 years as much as 57.6% more susceptible to fatigue than

individuals under the age of 45 years. So in the study it was concluded that a person under the age of 45 years is considered a young age who is able to do work with heavier loads compared to old age. This research is in line with the study conducted by Nidia et al (2018) obtained the p-value of 0.032 ( $<0.05$ ). This means that there is an effect of age on fatigue in workers. A similar study was also conducted by Queenta et al (2021) that there is a relationship between age and work fatigue in workers with a PR value = 1,913 shows that age has a 1,913 times greater risk of experiencing high fatigue compared to workers who experience low fatigue(Hehanussa, 2021).

The results of a study conducted by Masni (2021) also show that age is a risk factor for work fatigue. Obtained value of  $p=0.047 < 0.05$ . This is thought to be because in old age muscle work has decreased, affecting the quality of fatigue in workers. This is also due to the fact that in people with the old age category there have been changes in body tissues, where the older a person's age, it will cause the body's strength to decrease so that it quickly feels fatigue(Simanjuntak, 2021).

Based on the study of studies it is known that with increasing age the body's resistance and working capacity of a person can cause changes. This is why 9 studies state that there is a relationship between age and work fatigue because it is directly related to muscle strength when working. Seven studies stated that there was no possible relationship because a person's age was not directly related to work fatigue but there were other causal factors such as; mental health, history of illness, monotonous work and health status.

## **2. Nutritional Status**

Based on the results of systematic reviews that the author did, 12 of 25 studies that examined the relationship of nutritional status to work fatigue in informal sector workers, 7 articles stated that there was a relationship between nutritional status to work fatigue in informal sector workers, while 5 articles stated there was no relationship. The seven articles concluded similar results, namely that nutritional status is one of the factors that affect work fatigue in informal sector workers.

Good nutritional Status is one of the characteristics of good health, thus allowing the creation of a productive workforce. Nutritional Status is one of the causes of fatigue. Well-nourished workers have better work ability and physical endurance, and vice versa. In a state of malnutrition, heavy workload will interfere with work, reduce efficiency and physical endurance, and susceptible to disease, thereby accelerating the occurrence of fatigue. A person's nutritional Status can be known from the BMI (Body Mass Index) value( Innah M, 2021).

Based on a study conducted by Asri et al (2020), the result of p-value = 0.004 ( $p < 0.05$ ) means that there is a significant relationship between nutritional status and work fatigue in Tempe craftsmen in Rajawali Village, East Jambi District, Jambi city in 2020(Ainun A, 2020). This is in line with research conducted by Iskandar (2020) that there is a significant relationship between nutritional status to work fatigue (p-value = 0.013) and obtained  $or=1.810$ , which means that thin nutritional status is a risk factor with the level of work fatigue in respondents compared to normal nutritional status and fat(Iskandar, 2020).

The results of a study conducted by Ulfah et al (2020) also found that nutritional status factors were related to work fatigue (p-value = 0.031). Good nutritional Status positively affects the working capacity of workers. Conversely, poor nutritional status causes low work endurance or slowing down so that it becomes an obstacle for workers in carrying out their activities(Ulfah Aryani, 2020).

Based on research conducted by Birthda (2018), the p-value of 0.013 was obtained so that there was a relationship between nutritional status and work fatigue. This is because many workers have abnormal nutritional status (underweight or obese). People with nutritional status ranging from thin and obese tend to need more energy to move than people with normal nutritional status. In addition, excessive nutritional status can also affect the decrease in body functions, such as muscles,

lungs and other organs, making the body work harder to compensate, thus becoming a cause of fatigue (Birthda, 2018).

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Based on a review of studies known nutritional status affects work fatigue. This is why 7 studies that state there is a relationship between age and work fatigue because nutritional status can affect work productivity in order to avoid work fatigue. Five studies stated that there is no possible relationship because nutritional status is not directly related to work fatigue but there are other causal factors such as; strong immune system, and high morale.

### **3. Working Time**

Based on the results of systematic reviews, 13 out of 25 studies that examined the relationship of years of work to work fatigue in informal sector workers, 11 studies stated that there was no relationship between years of work to work fatigue in informal sector workers. Only 2 studies have confirmed the relationship of length of service to work fatigue. This means that experienced workers or with a long period of work do not show clinical symptoms of fatigue resulting from their work.

Based on a study conducted by Eva et al (2018), the  $p$ -value of 0.039 was obtained, which means that there is a significant relationship between the period of work to work fatigue. Based on field surveys that have been carried out, it was found that workers who have worked over 1 year experience more work fatigue compared to workers who work less than 1 year.

This research is in line with research conducted by Rizkiyah et al (2021) that there is a relationship between the factors of working time affecting work fatigue obtained results ( $p$ -value = 0.006). The length of service in workers with types of work that tend to be monotonous will affect the state of the muscles that work statically. The length of service will affect the stamina of the worker's body, so it will decrease the body's resistance

This is not in line with research conducted by Iriyani et al (2021) which states that there is no significant relationship between the factor of working time to work fatigue. The length of Service is a factor that affects the skills in working in the company. The longer the working period will make workers more adaptable and increase work experience

The factors that cause workers to work long hours have nothing to do with fatigue, and are caused by people's habits at work that accustom the body to work. On the other hand, although new people work, the physical and mental burden of work is very heavy, and the activity outside of working hours is very heavy, and the risk of work fatigue is very high

There is also a study that states that there is no relationship between working time to work fatigue conducted by Indrawati (2018). Based on statistical tests obtained the value of  $p = 0.126$  ( $p > 0.05$ ), so statistically there is no relationship between the period of work with work fatigue.

Workers who work long hours do not feel tired because they are used to their daily work, while respondents who have a new working period feel tired because younger respondents are not used to the specified working hours. Company Based on a study study, it is known that working time can affect work fatigue. This is why 2 studies that state there is a relationship of working time with work fatigue because the longer the work period there will be repetitive movements continuously over a long period of time so that it can affect work fatigue. Eleven Studies stated that there was no possible relationship because someone with a long period of work was used to the job.

#### **4. Working Load**

Based on the results of systematic reviews, 13 out of 25 studies that examined the relationship of workload to work fatigue in informal sector workers, 11 studies stated that there was a relationship between workload and work fatigue in informal sector workers, while 2 studies stated that there was no relationship between workload and work fatigue. Based on the results of a study conducted by Setyo (2021), the  $p$ -value = 0.026 or  $P < 0.05$  is obtained, which means that there is a relationship between workload to work fatigue. This is because the more the amount of material that is lifted and moved as well as repetitive activities in a day by a workforce, it will more quickly experience fatigue.

There is a similar study, a study conducted by Aprilia et al (2018) on fishermen. Obtained  $p$ -value = 0.000, it can be stated that there is a significant relationship between workload and work fatigue. It is also explained that the greater the workload, the heavier the fatigue.

There is an inconsistent study conducted by Zsa Zsa Dwita et al (2021) obtained  $p$ -value = 0.097, which means that there is no relationship between workload and fatigue. This is because it is seen directly the workload of construction workers at work is not heavy or moderate, which workers look relaxed and not rushed by their work.

Based on a study study, it is known that workload can affect work fatigue. This is why 11 studies that state there is a relationship between workload and work fatigue due to the large workload of workers, and also with activities that are repeated continuously over a long period of time that can affect work fatigue. Two studies stated that there was no possible relationship because the workload received was not too heavy, seen with the attitude of the workers who looked relaxed in doing their work.

#### **5. Working Hours**

Based on the results of the systematic review, 11 of 25 studies that examined the relationship of working hours to work fatigue in informal sector workers, 6 studies stated that there was no relationship between working hours and work fatigue in informal sector workers. While 5 Studies stated that there is a relationship between working hours to work fatigue.

Based on research conducted by Rizal (2019), the  $p$ -value obtained from the statistical test results was 0.447 ( $>0.05$ ), which means that there is no significant relationship between working hours and work fatigue(22). This research is in line with research conducted by La Taha (2021). From the results of statistical tests using chi-square test obtained the value of  $p = 0.495$ , because  $p > 0.05$  it can be concluded that there is no relationship between the working hours of Pelni freight carriers with their work fatigue.

This is due to other factors, such as the shift of workers who often change working hours, companies often implement shifts to optimize work results and productivity, and set different working hours based on the needs of workers.

This is inversely proportional to the study conducted by Agustina (2019) obtained  $p$ -value = 0.024 which means that there is a significant relationship between working time and fatigue levels in online motorcycle taxi drivers in the East Jakarta area in 2019. This means that the more working time, the higher the fatigue level.

Based on a study study, it is known that working hours can affect work fatigue. This is why 5 studies that state there is a relationship of working hours with work fatigue because workers work more than 8 hours a day, lack of rest time that is less than 30 minutes, so it can affect work fatigue. Six studies suggest there is no possible link because they have implemented shift work to prevent job fatigue in informal sector workers.

#### **6. Working Environment**

Based on the results of systematic reviews, 7 of 25 studies that examined the relationship of the work environment to work fatigue in informal sector workers, 4 studies stated that there was no



relationship between the work environment to work fatigue in informal sector workers. While 3 other studies stated that there is a relationship between the work environment to work fatigue.

Based on research conducted by Aulia (2019), the results of the Spearman correlation test showed a number of 0.688 which indicated that there was a strong relationship between noise and work fatigue. Spearman correlation test results also showed a correlation coefficient of 0.519, which means that the temperature has a moderate correlation with work fatigue(25).

This is in line with research conducted by Rizkiyah et al (2021), the results showed that there was a relationship between temperature and work fatigue (p-value=0.005). Workers exposed to Hot working environments in the work environment are subjected to thermal strain or thermal strain. This is the influence of the body on the workload of the working environment. The results showed that there is a significant relationship between temperature and work fatigue.

Based on a study of studies known work environment can 36 affect work fatigue. This is why 3 studies that state there is a relationship between the work environment and work fatigue because workers work in noisy and hot work environments that can affect work fatigue. Four studies suggested there was no possible link because of wearing personal protective equipment (PPE) to reduce the impact of noise such as ear plugs and ear muffs.

## CONCLUSION

Based on a systematic review of 25 research journals, it can be concluded that age, nutritional status, and workload are factors known to affect work fatigue in informal sector workers. Factors such as length of Service, working hours and work environment are not factors that affect work fatigue in the informal sector.

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