



Analysis of Predisposing Factors Related to Compliance With the Use of Personal Protective Equipment in the Textile Industry

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<p>Track Record Article</p> <p>Accepted: 9 October 2023 Revised: 1 November 2023 Published: 18 December 2023</p> <p>How to cite : Nugrahani, N. A., & Astuti, D. (2023). Analysis of Predisposing Factors Related to Compliance With the Use of Personal Protective Equipment in the Textile Industry. <i>Contagion :Scientific Periodical of Public Health and Coastal Health</i>, 5(4), 1284–1295.</p>	<p style="text-align: center;">Abstract</p> <p><i>Indonesia is a developing country in all industrial sectors, including the textile industry. The Sari Warna Asli Tekstil II Company is a textile industry that produces everything from cotton to ready-made clothing. The Sari Warna Asli Tekstil II Company experienced work accidents caused by several reasons, including a lack of discipline and a need to understand the importance of using complete personal protective equipment. This study aimed to determine predisposing factors related to compliance with the use of personal protective equipment. This research uses an analytical observational method with a cross-sectional approach. This research was conducted at the Sari Warna Asli Company II, which is located at street Randusari, Teras, Dusun I, Randusari, Boyolali, Boyolali Regency, Central Java. This research will be conducted from September to October 2023. The population in this research is all employees in the spinning section of the Sari Warna Asli Tekstil II Company, totalling 914 people. The sampling technique used was the incidental sampling technique, obtaining a sample of 100 people. Primary data collection uses a questionnaire. Data analysis for this study used bivariate analysis with the chi-square test. Data was analyzed using the Statistical Product and Service Solution (SPSS) version 20 software. The research results showed that there was a relationship between knowledge and compliance with the use of personal protective equipment (p-value = 0.000), there was a relationship between working period and compliance with the use of personal protective equipment (p-value = 0.000), and there is no relationship between education and compliance with the use of personal protective equipment (p-value = 0.567). It is recommended that companies should increase regulations related to occupational safety and health programs because some employees still do not comply with using personal protective equipment and continue to make efforts to increase employee knowledge.</i></p> <p>Keywords: Compliance, Education, Knowledge, Personal protective equipment, Working period</p>
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INTRODUCTION

Indonesia is one of the countries rich in natural resources. This potential triggers development in all sectors, one of which is the textile industry sector. The textile industry sector and textile products are one of the leading industrial product commodities in Indonesia, which is growing and becoming an important part of the development of the world as a whole because it is one of the largest absorbers of labor in Indonesia. Employment will increase, but it also impacts the increase in the number of potential hazards to the workforce (Pangestu et al., 2019).

Occupational safety and health (OSH) is one of the maintenance programs in the company. The implementation of occupational safety and health programs for employees is very important because it aims to create a safety system and work unity by involving elements of management, labour, conditions, and an integrated work environment to increase productivity and reduce work accidents (Terziev et al., 2020; Park et al., 2023).

Compliance with personal protective equipment can protect the body against the dangers of work accidents and technically can reduce the severity of work accidents. Personal protective equipment (PPE) does not eliminate or reduce existing hazards, it only reduces the amount of contact with hazards by placing barriers between labour and hazards. Adherence is a positive behaviour of a person with a disease in achieving therapeutic goals. Obedience is a form of human behaviour that obeys the rules, orders set, procedures, and discipline that must be carried out (Komalig et al., 2019).

According to Lawrence Green's theory (1980), 3 main factors influence obedient behaviour, and obedient behaviour is influenced by 3 main factors: predisposing, enabling, and reinforcing factors. A predisposing Factor is a factor that facilitates or predisposes to the occurrence of a person's behaviour. These factors include knowledge, length of service, and level of education.

Based on research Ariyanto (2023) stated that there was a relationship between knowledge and compliance with the use of personal protective equipment (p-value=0.004). Individual knowledge cannot be separated from the level of education, the higher the education, the level of knowledge will increase, likewise in the behaviour of using personal protective equipment in industrial workers, the worker's education is related to the level of knowledge towards understanding the use of personal protective equipment. The higher the worker's education, the better the behaviour of using personal protective equipment (Riana, 2021).

Research Norvalinda et al., (2023) stated that there was a relationship between length of service and discipline in using personal protective equipment (p-value=0.037). New workers tend not to be used to using personal protective equipment when working, so they feel uncomfortable and end up not using it. This is different from old workers who are used to working using personal protective equipment (Puji et al., 2017). The longer workers work, the more careful they will be because they understand the risks of working if they are not careful (Suganda, 2021).

Based on preliminary study survey data, work accidents occurred in the spinning section of the Sari Warna Asli II company in 2022, and as many as 18 workers experienced work-related accidents. Work accidents are caused by employees not paying attention to occupational health and safety, employees needing to be more careful while working, and a lack of discipline and understanding of the importance of using complete personal protective equipment.

This research will be conducted on spinning employees of Company Sari Warna Asli Textile II, a company engaged in the textile industry. There are 2 spinning parts, namely

spinning I and spinning II which total 419 people. In this spinning section, the process of spinning cotton into yarn occurs. Employees in the spinning department, often referred to as "spinners," have a major role in running the spinning machines and ensuring the production of quality yarn. They must monitor the machine, replace depleted yarn bobbins, and keep it running properly (Eke et al., 2021).

Spinning parts often involve processes that produce dust and harmful particles in the air. Airway management is an important factor in maintaining worker health. Besides that, the use of appropriate Personal protective equipment is also very important to protect workers from hazards (Tumram, 2020). This study aims to determine the relationship between working life and compliance with the use of Personal protective equipment on employees of the spinning section of Company Sari Warna Asli Textile II.

METHOD

This study used an analytical observational method with a cross-sectional approach. This research was conducted at the Sari Warna Asli II Company, which is located at street Randusari, Teras, Hamlet I, Randusari, Boyolali, Boyolali Regency, Central Java. This research will be conducted from September to October 2023.

The population in this study is all employees of the spinning section of Company Sari Warna Asli Textile II, which amounts to 914 people. The sampling technique uses incidental sampling techniques obtained from 100 people. Data collection is carried out during regular company meetings.

This study analyzed predisposing factors related to compliance with personal protective equipment use, predisposing factors studied include knowledge, length of service, and education level. The instruments used in this study were questionnaires and checklists of compliance with using Personal Protective Equipment. A questionnaire of 24 items that has been tested for feasibility. This knowledge questionnaire tests employees' knowledge of Personal Protective Equipment. The compliance checklist for using personal protective equipment determines whether employees are compliant with using predetermined personal protective equipment.

The Reliability Statistics table shows that Cronbach's Alpha value is 0.835, greater than 0.60 (> 0.60), so the questionnaire with 34 respondents is considered reliable or can be used repeatedly in tests with the same data. The independent variables of this research are knowledge and work experience. Meanwhile, the dependent variable is compliance with the use of personal protective equipment.

Data analysis using the software Statistical Product and Service Solution (SPSS) version 20 Consists of univariate analysis using frequency distribution to find out the picture of each variable, bivariate analysis using the Fisher exact test, and chi-square test to find out the factors related to the dependent variable. The processed data is presented in the form of tables and then narrated.

The research has undergone an ethical review procedure and received approval from the research ethics committee Faculty of Health Sciences of the University of Muhammadiyah Surakarta Number. 016/KEPK-FIK/IX/2023.

RESULT

Table 1. Characteristics of Respondents

Characteristic	n	%
Age		
Early adulthood (26 – 35)	42	42
Late adulthood (36 – 45)	32	32
Early seniors (46 – 55)	11	11
Late seniors (56 – 65)	15	15
Total	100	100
Years of service		
Long working period	93	93
New work period	7	7
Total	100	100
Working part		
Blowing C	5	5
Carding C	7	7
Drawing C	9	9
Mekanik	2	2
Packing	4	4
Quality control	2	2
Ring Frame C	42	42
Roving C	6	6
Winding C	23	23
Total	100	100
last education		
Elementary School	20	20
Junior High School	25	25
Senior High School	55	55
Total	100	100

Based on Table 1, it is known that most respondents are in early adulthood, namely the age of 26-35 years, as many as 42 people (42%), and the respondents are at least the age of early elderly, namely 46-55 years, as many as 11 respondents (11%). Spinning workers have a long working period of 93 people (93%) and a new working period of 7 people (7%). Respondents worked the most on ring frame C, as many as 42 people (42%), and respondents worked the least on mechanical parts, as many as 2 people (2%), and Quality control as many

as 2 people (2%). Most respondents had the last high school education as many as 55 people (55%), and respondents had the lowest elementary education level as many as 20 people (20%).

Table 2. Distribution of knowledge frequency, length of service, level of education, and compliance with personal protective equipment use

Variable	n	%
Knowledge		
Knowledge is not good	3	3
Good knowledge	97	97
Total	100	100
Years of service		
Long working period	93	93
New work period	7	7
Total	100	100
Level of Education		
Elementary School	20	20
Junior High School	25	25
Senior High School	55	55
Total	100	100
Compliance with the use of personal protective equipment		
Not obey	8	8
Obedient	92	92
Total	100	100

Based on Table 2, it is known that respondents have the best knowledge, which is 97 people (97%). Respondents have the longest working period, 93 people (93%), and respondents must comply with using personal protective equipment as many as 92 people (92%). Most respondents had a high school education level of 55 people (55%).

Table 3. The Relationship of Knowledge, Length of Work, and Education Level with Personal Protective Equipment Use Compliance

Variable	personal protective equipment compliance				Total		p-value
	Disobedient		Obedient		n	%	
	n	%	n	%			
Knowledge							
Knowledge is not good	3	3	0	0	3	3	0,000
Good knowledge	5	5	92	92	97	97	
Years of service							
Long working period	4	4	89	89	93	93	0,000
New work period	4	4	3	3	7	7	
Level of education							
Elementary School	2	2	18	18	20	20	0,567
Junior High School	3	3	22	22	25	25	
Senior High School	3	3	52	52	55	55	

Based on table 3. The results of the analysis of related factors showed that knowledge (p-value $0.00 < 0.05$) and length of service (p-value $0.00 < 0.05$) had a relationship with compliance with the use of personal protective equipment in employees of the spinning section of Company Sari Warna Asli Textile II. In contrast, the level of education (p-value $0.567 > 0.05$) had no relationship with the compliance of the use of personal protective equipment in employees of the spinning section of Company Sari Warna Asli Textile II.

DISCUSSION

Personal Protective Equipment Compliance

Worker safety and health is a very important aspect in the world of work. Workers often face various risks and hazards that can endanger their physical health during employment. Personal protective equipment is one of the most important ways to protect workers from these risks. Personal protective equipment is designed to reduce the likelihood of injury, exposure to hazardous materials, and the risk of certain work-related illnesses. Although personal protective equipment is available, its effectiveness depends on how much workers use it consistently and correctly. Compliance with personal protective equipment is a key step in ensuring the protection of workers in the workplace. Non-compliance with personal protective equipment can have serious consequences. Workers who do not use personal protective equipment properly or neglect it can face a higher risk of injury, exposure to hazardous materials, and even work-related illnesses (Damtie et al., 2020).

Personal protective equipment not only protects individual workers but also positively impacts the world of work as a whole. By reducing the risk of injury and illness, using personal protective equipment can reduce worker absenteeism due to illness or injury, increasing productivity. In addition, companies that prioritize worker safety by providing appropriate personal protective equipment will build a good reputation in the eyes of employees and the public. This can help companies win and retain a quality workforce and create a more positive work environment. However, it is important to remember that using personal protective equipment is only effective if used correctly. Workers should be trained to wear, clean, and care for personal protective equipment. In addition, companies should be actively involved in ensuring the availability of appropriate personal protective equipment and monitoring workers' compliance with its usage policies. Overall, using personal protective equipment is an important step in maintaining worker safety and health in various work environments (Mandhari et al., 2020).

Based on preliminary surveys, it was found that there were still employees who were not compliant in using personal protective equipment, so there were still several work accidents. Non-compliant workers can be affected by many factors. According to Srinath et al., (2022), research related to the symptoms of discomfort encountered by health workers who wear personal protective equipment are headaches which include doffing headaches, mental disorders, and excessive sleepiness that affect their performance. The age of health workers also has a significant correlation with all symptoms.

According to Lawrence Green's theory (1980), 3 main factors influence obedient behavior, obedient behavior is influenced by 3 main factors, which include predisposing factors, enabling factors, and reinforcing factors. A predisposing Factor is a factor that facilitates or predisposes to the occurrence of a person's behaviour. These factors include knowledge, length of service, and level of education.

Knowledge is the first step in ensuring compliance with personal protective equipment. Workers need to have a good understanding of the risks and hazards that exist in their workplace (Verbeek et al., 2020). This includes knowledge of the personal protective equipment appropriate for a particular situation. With adequate knowledge, workers may know potential hazards and how to protect themselves.

The Working Period is an influencing experience in increasing one's knowledge. Working period can describe his experience in mastering his field of duty, in general, officers with a lot of work experience do not need guidance compared to officers with little experience, for example, the longer someone works in an organization, the more experienced so that the way it works will be better (Fairyo et al., 2018).

The length of work of a person affects the experience gained. The longer the working period, the more experience a person has to understand the work situation better. Then, it can be assumed that the more professionally a person performs his job, the more skilled and proficient (Utami et al., 2020). The length of service determines the characteristics of workers. Workers can better understand the environmental conditions of the workplace if their working period is long. For this reason, the introduction of the work environment to workers is needed because it affects the compliance of the use of personal protective equipment (Fairyo et al., 2018).

Education is one of the predisposing factors that influence behaviour in a person. Education is a fundamental factor for motivating behaviour or providing personal reference in an individual's learning experience. So, a person's level of education determines the breadth of knowledge and how that person behaves and behaves. A person with low education will find it difficult to absorb innovations, making it difficult to achieve changes as expected. The education referred to in this case is formal education obtained at school (Rahmawati et al., 2022).

The Relationship between Knowledge and Compliance with Personal Protective Equipment Use in Company Sari Warna Asli Textile II Spinning Section Employees

Knowledge is something basic in a person to carry out daily activities, with good knowledge, a person can apply it in everyday life. Knowledge of personal protective equipment usage is the first step in ensuring compliance with PPE use. Workers need to have a good understanding of the risks and hazards that exist in their workplace (Verbeek et al., 2021). With adequate knowledge, workers will know potential hazards and how to protect themselves.

Based on Fisher's exact analysis, a p-value of 0.000 ($p < 0.05$) can be interpreted as a relationship between knowledge and compliance with the use of PPE in employees of the spinning section of Company Sari Warna Asli Textile II. Data obtained from as many as 97 people have good knowledge, 92 compliant with using personal protective equipment. Employees with good knowledge are influenced by several things, one of which is that the company has tried to increase its employees' knowledge several times.

According to Hatami et al., (2022) in their research related to evaluating the effectiveness of occupational safety training education interventions on textile industry workers in Borujerd, Iran. The results suggest that appropriately developed educational intervention programs improve workers' safety practices.

This research is in line with research conducted by Saliha et al., (2018) show a relationship between knowledge and compliance with the use of personal protective equipment among Company workers. Hutama Karya Manado-Bitung Toll Road construction project (p-value=0.016).

The Relationship between Working Period and Compliance with Personal Protective Equipment Use in Company Sari Warna Asli Textile II Spinning Section Employees

The Working Period is an influencing experience in increasing one's knowledge. The length of service can describe his experience in mastering his field of duty. The length of work of a person affects the experience gained. The longer the work period, the more experience a person has to understand the work situation better (Utami & Sillehu, 2020). Workers can better understand the environmental conditions of the workplace if their working period is long. For this reason, introducing the work environment to workers is needed because it affects compliance with personal protective equipment (Fairyo et al., 2018).

Based on Fisher's exact analysis, a p-value of 0.000 ($p < 0.05$) can be interpreted as a relationship between the length of service and compliance with the use of personal protective equipment in employees of the spinning section of Company Sari Warna Asli Textile II. Data

obtained shows that as many as 93 people have long working periods, 89 of whom are compliant with using personal protective equipment.

This research is in line with research conducted by Isnaeni et al., (2022) using the chi-square test to get a p-value of 0.000 ($p < 0.05$), which shows a significant relationship between working time and nurse compliance in using personal protective equipment at Bangkinang Hospital.

The relationship between education level and compliance with the use of Personal Protective Equipment in Spinning Section Employees of Company Sari Warna Asli Textile II

The level of education is a stage of education determined based on students' level of development, goals to be achieved, and willingness to be developed. The level of education affects attitude change. Higher education will make it easier for a person or society to absorb and implement information in daily behaviour and lifestyle.

Based on chi-square analysis, a p-value of 0.567 ($p > 0.05$) can be interpreted as no relationship between the level of education and compliance with the use of personal protective equipment in employees of the spinning section of Company Sari Warna Asli Textile II.

This research is in line with research conducted by Nolasarahwati (2019) using the Somers test to get a p-value of 0.761 ($p > 0.05$), which shows no significant relationship between the level of education and compliance with the use of personal protective equipment for Loom Section Workers at Company Delta Merlin World Textile II Karanganyar.

There is no relationship between education level and non-compliance with personal protective equipment because education does not directly affect the use of personal protective equipment but only affects the workforce's mindset. The way of thinking in question is that workers understand the dangers that exist in the workplace and how to overcome them, for example, by using complete personal protective equipment, but in its implementation, there are still workers who do not use complete personal protective equipment for reasons that disturb comfort so they cannot concentrate, limit space for movement and so on (Syam et al., 2020).

Companies, they should improve regulations related to the existing occupational health and safety program, especially in providing safe and comfortable personal protective equipment for workers. Efforts to increase knowledge can also be made by providing information in the form of training and pasting various pamphlets around the production site so that it is easily seen by workers passing by, in addition to providing information, they can also conduct periodic inspections or strict supervision and give punishment or punishment. Penalties can be in the form of reprimands or warning letters to deter workers. Supervision can

be carried out by the occupational health and safety section and assisted by the personnel manager.

The advantage of this study is that data collection of samples is carried out simultaneously, so it takes little time. The limitation of this study is that the checklist of compliance with the use of personal protective equipment is carried out by the respondents themselves so that the respondents themselves can manipulate them.

CONCLUSION

This research concludes that there is a relationship between knowledge and compliance with the use of personal protective equipment (p-value=0.000), there is a relationship between length of service and compliance with the use of personal protective equipment (p-value=0.000), and there is no relationship between education and compliance with the use of personal protective equipment (p-value=0.567).

Suggestions For further research, further research needs to be carried out on factors related to compliance with the use of personal protective equipment so that other factors related to compliance with the use of personal protective equipment can be known. For workers, it should raise awareness of always being compliant in using personal protective equipment and be able to remind other workers if some need to be more compliant in using personal protective equipment. Companies should improve regulations related to existing occupational health and safety programs, especially in providing workers with safe and comfortable personal protective equipment. Efforts to increase knowledge can also be made by providing information in the form of training and posting various pamphlets around the production site so that they are easily seen by workers passing by. Apart from making efforts to provide information, you can also carry out regular inspections or close supervision.

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