

THE IMPACT OF INFORMATION EDUCATION COMMUNICATION (IEC) OF OCCUPATIONAL SAFETY AND HEALTH AGAINST KNOWLEDGE AND SAFE WORK ATTITUDES OF CAR WASHING WORKERS IN TEMBALANG, SEMARANG CITY

Juniawan Ikbal, Yuliani Setyaningsih and Hanifa Maher Denny
Diponegoro University, Semarang City, Central Java Province, Indonesia

ABSTRACT

To be able to change the quality of safe work behavior of a worker is to conduct occupational safety and health education through the approach of information education and communication in order to get workers to stop high-risk behavior at work and replace it with safe or low-risk behavior. The aim of the study is to analyze the impact of information education and communication on safety and occupational health to improve the knowledge and safe working attitude of car washing workers in the Tembalang area of Semarang City. This research method uses quasi experiment with pre-test post-test, sample selection with a total sample of 60 respondents (30 intervention respondents and 30 control group respondents). There is a significant difference when p value <0.05 . The results of the study found pretest knowledge among control treatments $p = 0.937$, pretest-posttest treatment $p = <0.003$, pretest-posttest control $p = <0.037$, posttest between control treatment $p = <0.013$, difference between pretest-posttest between treatment and control $p = <0.001$. Variable pretest attitude among control treatments $p = 0.963$, pretest-posttest treatment $p = <0.001$, pretest-posttest control $p = <0.883$, posttest between control treatments $p = 0.042$, difference between pretest-posttest between control treatments $p = <0.018$. There are significant differences knowledge and attitudes of respondents before and after the intervention. This means that the provision of information communication and education on safety and occupational health can increase the knowledge and safe working attitude of car washing workers.

KEYWORDS: Knowledge, Attitude, Safety Behavior, Educational Information Communication, Car Washing.

INTRODUCTION

Work is said to be safe if workers can avoid risks that arise at work.¹ One of the occupational safety and health efforts is to maintain work environment factors within the safe and healthy limits so as not to cause illness or accidents due to work.² Work accidents are generally 80% caused by unsafe work behavior, 20% unsafe working conditions or environment and other factors. Like not following work procedures, safety regulations, and not using personal protective equipment.³

The International Labor Organization in 2015 said that 1 worker in the world dies every 15 seconds due to work accidents while 160 workers experience illness due to work. Every day 6,300 people die from work accidents and occupational diseases. More than 2.3 million deaths per year and 317 million accidents occur to workers. Behavioral approach is needed in an effort to improve work

safety (behavior based on safety).⁴ Factors that influence the process of change in the formation of human behavior, including internal and external factors.

The Transmigration and Population Office of Central Java Province recorded that the number of work accidents during 2018 dropped significantly compared to the previous year. In 2018 work accidents in the Central Java region reached 1,468 work accidents. That number is reduced 48% from 2017 which recorded as many as 3.083 incidents.⁵

The Labor Social Security Administration Agency notes that in 2017 the number of work accidents was reported to reach 123,041 cases, during 2018 reaching 173,105 cases. Every year, BPJS Employment serves 130 thousand cases of work accidents, from minor cases to fatal cases. Among the cases handled, dominated by minor occupational accident cases in the informal sector work environment.⁶ One of the small and medium business units that are often found in the Tembalang area of the city of Semarang is car washing. The development of the number of vehicles, especially cars from year to year is increasing significantly making businesses car wash is increasing.

Hydraulic car wash job is one job that has the potential to experience occupational diseases, injuries and even accidents if the workers do not work safely. The results of interviews of car wash workers in several car washes in the Tembalang area, it is known that almost all workers have experienced health complaints due to work. Lack of access to information about occupational safety and health is one of the factors workers behave in unsafe work conditions.

The need for the application of occupational safety and health education with an information, educational, and communication approach to make some changes in behavior and strive for workers to stop high-risk behavior and replace it with safe behavior. The information and education communication process is expected to be able to increase the awareness and attitude of workers in carrying out work processes safely.

Based on the description above, the researcher is interested in raising the research title: The Impact of Information, educational, and Communicational Interventions on Occupational Safety and Health Education against Knowledge and Safe Work Attitudes of Car Washing Workers in Tembalang, Semarang City.

METHODS

The research design used in this study was a quasi-experimental study with a non equivalent control group design which designed with pretest and posttests^{7,8}. This study uses an intervention group and a control group. The intervention group is car wash workers in the Tembalang area of Semarang City. The control group is washing workers in Pudhak Payung area of the Semarang City. The two regions are the areas that have many car wash business units in the city of Semarang. The intervention group will be given K3 education information communication in the form of operational standard safe work

procedures and safety briefing for 30 days. The control group was not given any treatment. Measuring variables in this study were conducted twice, namely pretest and posttest. Then the measurement results will be compared.

POPULATION AND RESEARCH SAMPLE

1. Population

The population is all units in the observations that will be carried out and have certain characteristics.⁹ The population in this study were car wash workers in the Tembalang area of Semarang, total of 30 people and car wash workers in the Pudhak Payung area of Semarang City totaling 30 people. The total study population was 60 respondents.

2. Samples

The sample is a portion of the representative studied, from the number of characteristics measured and owned by the population.¹⁰ The number of samples in this study used a total sampling of 30 respondents in the treatment group and 30 respondents in the control group.

The total sample was 60 respondents. The sampling technique used was Purposive sampling, it's a sampling technique based on certain considerations.

3. Research Instruments

The instruments used in this study were questionnaires and poster media

4. Data Analysis

Univariate analysis is used to determine the frequency distribution, bivariate analysis using the Shapiro-Wilk test, Independent T-test, Mann Whitney Test, Wilcoxon and Paired T- test.¹¹

RESULT

1. Characteristics of Respondents

The number of the most age group is <20 years. The number of treatment group was 53.3% and the control group was 50.0%. The highest level of education is SMA / SMK / STM. The treatment group was 67.7% and the control group was 78.6%. The highest level of education is SMA / SMK / STM. The treatment group was 76.7% and the control group was 80.0%. The maximum service period is > 1 year. The treatment group was 53.3% and the control group was 50.0%. The length of work per day is at most > 8 hours/day. The treatment group was 63.3% and the control group was 66.7%.

2. Difference in Knowledge of Safe Work of Respondents Before and After Information Education Communication Interventions on Work Safety and Health for Car Wash Workers

Table 1. Descriptive, Normality and Difference in Respondents' Knowledge Before and After Intervention

Neck Pain	Group	Mean ± SD	P value [¿]
Pre	Treatment	11,97 ± 1,75	0,103*
	Control	11,93 ± 1,51	0,134*
Post	Treatment	12,73 ± 1,64	0,078*
	Control	11,63 ± 1,69	0,111*
Difference	Treatment	0,77 ± 1,31	0,000
	Control	-0,30 ± 0,75	0,000

Note: * Normal ($p > 0.05$); ¿Shapiro-Wilk

Table 1 shows the increase in the average value of knowledge of the treatment group from 11.97 to 12.73 and the control group from 11.93 to 11.63. The normality test of the knowledge variable with Shapiro-wilk pretest in the treatment group $p = 0.103$ (normal distribution data) control group pretest $p = 0.134$ (data were normally distributed). Posttest

treatment group $p = 0.078$ (normal distributed data), posttest control group $p = 0.111$ (normal distributed data). Difference in pretest-posttest in treatment group $p = 0,000$ (data not normally distributed), difference in pretest-posttest in control group $p = 0,000$ (data not in normal distribution).

Table 2. Analysis of Respondent Knowledge Before and After Intervention

Knowledge	Group		p
	Treatment	Control	
Pretest	11,97 ± 1,75	11,93 ± 1,51	0,937 ^{§*}
Posttes	12,73 ± 1,64	11,63 ± 1,69	0,013 ^{§*}
p	0,003 ^{¶*}	0,037 ^{¶*}	
Difference	0,77 ± 1,31	0,30 ± 0,75	<0,001 ^{‡*}

Note: * Significant ($p < 0.05$); § Independent t; ‡ Mann Whitney; ¶ Paired t

Table 2 shows the analysis of respondents' knowledge before and after the intervention. Differences in the mean value before the intervention (pretest) of knowledge between the treatment and control groups $p = 0.937 > \alpha = 0.05$ (Independent T-test), meaning that there are significant differences. The difference in the average value of respondents' knowledge of the treatment group before and after the intervention $p = <0.003 < \alpha = 0.05$ (Paired T-test), meaning that there are significant differences. The difference in the average value of knowledge of the control group respondents before and after the intervention $p = 0.037 < \alpha = 0.05$ (Paired T-test), meaning that there are significant differences. After the intervention (posttest) the difference in the average value of knowledge between the treatment and control groups $p = <0.013 < \alpha = 0.05$ (Independent T-test), meaning that there are significant differences. Difference in the pretest-posttest average value between the treatment group and the control group $p = <0.001$ (Mann Whitney Test), meaning that there are significant differences.

3. Differences in Respondents' Safe Work Attitudes Before and After Information Education Communication Interventions on Work Safety and Health for Car Wash Workers.

Table 3. Descriptive, Normality and Difference in Respondents' Attitudes Before and After Intervention

Neck Pain	Group	Mean ± SD	P value [¿]
Pre	Treatment	7,73 ± 1,20	0,002
	Control	7,70 ± 1,21	0,011
Post	Treatment	8,47 ± 0,97	0,005
	Control	7,73 ± 1,31	0,013
Difference	Treatment	0,73 ± 0,91	0,000
	Control	0,03 ± 1,13	0,029

Note: * Normal ($p > 0.05$); ¿Shapiro-Wilk

Table 3 shows the increase in the average value of attitude in the treatment group from 7.73 to 8.47 and the control group from 7.70 to 7.73. The normality test of attitude variables with Shapiro-Wilk, pretest treatment group $p = 0.002$ (data not normally distributed) control group $p = 0.011$ (data not normally distributed). Treatment group posttest $p = 0.005$ (data not normally distributed) Posttest control group $p = 0.013$ (data not normally distributed). Difference in pretest-posttest treatment group $p = 0.000$ (data not normally distributed), Difference in pretest-posttest control group $p = 0.029$ (data not normally distributed).

Table 4. Analysis of Respondents' Attitudes Before and After Intervention

Knowledge	Group		p
	Treatment	Control	
Pretest	7,73 ± 1,20	7,70 ± 1,21	0,963 [‡]
Posttes	8,47 ± 0,97	7,73 ± 1,31	0,042 ^{‡*}
p	<0,001 ^{†*}	0,883 [†]	
Difference	0,73 ± 0,91	0,03 ± 1,13	0,018 ^{‡*}

Note: * Significant ($p < 0.05$); § Independent t; ‡ Mann Whitney; ¶ Paired t, † Wilcoxon

Table 4 shows the analysis of respondents attitudes before and after the intervention. The difference in the average value of the attitude before the intervention (pretest) between the treatment and control groups $p = 0.963 > \alpha = 0.05$ (Mann Whitney Test), meaning there is no significant difference. After the intervention (posttest) the difference in the average value of attitude between the treatment and control groups $p = 0.042 < \alpha = 0.05$ (Mann Whitney Test), meaning that there is a significant difference. Difference in the average value of the attitude of respondents in the treatment group before and after the intervention $p = < 0.001 < \alpha = 0.05$ (Wilcoxon Test), meaning that there are significant differences. The difference in the average value of the attitude of respondents in the control group before and after the intervention $p = 0.883 > \alpha = 0.05$ (Paired T-test), meaning that there is no significant difference. Difference in the difference between the pretest-posttest mean

values between the treatment group and the control group $p = <0.018$ (Mann Whitney Test), meaning that there are significant differences.

DISCUSSION

Based on the age group in this study, the most average age group in both groups was <20 years (51.7%). Age has an influence on the incidence of accidents due to work, work performance increases with age and decreases towards old age.¹² The level of education in the treatment and control groups are mostly SMA/SMK/STM respectively (78.3%). In dealing with work, someone educational background influences the mindset that affects the process of absorbing changes in workers' behavior.¹³ The number of working period in the treatment group is mostly > 1 year (53.3%) in the control group (50.0%). One of the factors that influence the occurrence of work-related accidents is work experience, the level of alertness of a worker to workplace accidents becomes good in line with the length of time someone works at his workplace. (65.0%).

Knowledge is the result of knowing and occurs after sensing something, starting from sight, hearing, smell and touch.¹³ Before intervention, different tests are conducted between the treatment and control groups to determine whether the knowledge of the two groups is equal or not. Based on the results of the test (Independent T-test) there was no significant difference between the treatment and control groups. This means that the initial conditions of knowledge between the two groups are not equal.

After the intervention of information education communication on occupational safety and health to increase the safety of respondents' work knowledge, a different test is carried out. Paired T- test of the pretest-posttest knowledge of the treatment group had a significant average difference ($p = <0.003$). Pretest-posttest control group knowledge (Paired T-test) there is a significant difference in the average of knowledge ($p = 0.037$). There was a significant difference in knowledge between the treatment and control groups (Mann Whitney Test) after the intervention ($p = <0.001$).

Before the intervention, the two groups had the same work safety knowledge. After the intervention of information education communication on occupational safety and health there was an increase in average knowledge. The treatment group from 11.97 to 12.73. The control group from 11.93 to 11.63. The difference in pretest-posttest knowledge in the treatment group (0.77) is greater than the control group (0.30). This means that there is an influence of information education communication interventions on occupational safety and health to increase the safe work knowledge of car wash workers.

This study is related to Lian Agustina Setyaningsih's research that information, education, and communication helps to increase knowledge of commercial sex workers in preventing transmission of HIV AIDS.¹⁵ The results of this study are also in line with research by Khusnul Latifah and Irwan Budiono that found information, education, and communication with the role of the media can

increase students' knowledge about selection snacks for school.¹⁶ The results of another study by Anja Silja Spenser found that the process of health education through efficient information, education, and communication can increase adolescents' knowledge about the dangers of consuming alcohol.¹⁷

One of the factors that influence knowledge is exposure of the information, the information media that are planned to function provide knowledge to the recipient of the message. The message or information to be conveyed by the communicator, be it through print, electronic and outdoor media. The advantage of print media over other media is that it can be used in any innovative learning method, with the aim of increasing knowledge and is expected to change behavior in a positive direction. There is a difference in the average knowledge of respondents in the control group. This happened because respondents in the control group got work information from other sources during the intervention in the treatment group.¹⁸

Attitude is a thought, reaction or response that is still closed from someone to the stimulus or object, one's feeling to recognize certain aspects of the permanent environment. Attitude is an impetus for the occurrence of actions or behavioral changes.¹⁹ Before the intervention, first conducted a different test between the treatment group and the control group to find out whether the two groups have in common or not. The test results (Mann Whitney) there were no significant differences between the two groups. This means that the initial conditions of the attitude of the two groups are equal.

After the information, education, and communication intervention on occupational safety and health to improve the safety of respondent's work, a different test is conducted. The test results (Wilcoxon Test) pretest-posttests attitude of the treatment group there was a significant difference in the average ($p = <0.001$). Pretest-posttest control group attitudes (Wilcoxon Test) there was no significant difference in the average attitude ($p = 0.883$). There was a significant difference in attitude between the treatment group and the control group (Mann Whitney Test) after the intervention ($p = <0.018$). Before the intervention the two groups had the same safety work attitude. After the intervention of information, education, and communication on occupational safety and health there was an increase in the average attitude. The treatment group from increase from 7.73 to 8.47. The control group of 7.70 became 7.73. The difference between the test-post-test of the treatment group (0.73) was greater than the control group (0.03). This means that there is an influence of information, education, and communication interventions on occupational safety and health to improve the safe working attitude of car wash workers.

The attitude in a person will move the situation to act or react in certain ways with certain feelings in response to the object of the situation. Attitude is a cognitive, affective entity that has valence and integrity into broader patterns. According to Sarwono, a person's attitude reflects a simple pattern of behavior in order to adjust to the surrounding environment.^{12,20}

The results of this study are in line with Anja Silja Spenser's research that information, education, and communication has a positive impact on the attitudes of adolescent girls to be able to avoid consuming alcohol.¹⁷ The results of subsequent studies from Tindaon and Rotua Lenawati show that information, education, and communication can provide a positive attitude change in adolescents from previous attitudes about exposure to pornography.²¹ There was no difference in the average attitude of respondents in the control group. This happened because the control group did not get an information, education, and communication intervention on occupational safety and health.

CONCLUSION

1. The average age of the respondent in both the treatment and control groups are ≤ 20 years. The average education of respondents in both the treatment and control groups is SMA / SMK / STM. The number of working period of respondents in both the treatment and control groups is > 1 year. The length of work each day of the respondent both the treatment group and the control group more > 8 hours/day.
2. There was no difference in the mean of safety work knowledge before the information, education, and communication intervention of occupational safety and health between the treatment group and the control group ($p = 0.937$). There were differences in the mean of knowledge about safe work before and after the intervention in the treatment group ($p = <0.003$). There were differences in the mean of safe work knowledge before and after the intervention in the control group (0.037). There was a difference in the mean of safe work knowledge after the intervention between the treatment group and the control group ($p = <0.013$). information, education, and communication on occupational safety and health can increase safe work knowledge in car wash workers.
3. There was no difference in the mean of safe work attitudes prior to the information, education, and communication intervention of occupational safety and health between the treatment group and the control group ($p = 0.963$). There were differences in the mean of safe work attitudes before and after the intervention in the treatment group ($p = 0.042$). There was a difference in the average attitude after intervention between the treatment group and the control group ($p = 0.001$). There was no difference in the average safe work attitude before and after the intervention in the group control ($p = 0.883$). Information, education, and communication on occupational safety and health can improve the safe working attitude of car wash workers.

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