DIPONEGORO MEDICAL JOURNAL
(Jurnal Kedokteran Diponegoro)
Online : http://ejournal3.undip.ac.id/index.php/medico
E-ISSN : 2540-8844
Volume 10, Number 4, July 2021

EFFECT OF COUNSELING ON KNOWLEDGE ATTITUDE AND BEHAVIOR OF TEXTILE INDUSTRY WORKERS ABOUT NIHL

Armabar Dwipantara Sasongko[1*], Dwi Marliyawati[2], Kanti Yunika[2], Zulfikar Naftali[2]
[1] Undergraduate Program, Faculty of Medicine, Diponegoro University, Semarang, Indonesia
[2]Department of Otorhinolaryngology-Head & Neck Surgery, Faculty of Medicine, Diponegoro University, Semarang, Indonesia
* Corresponding Author : Email: armabaroky@students.undip.ac.id

ABSTRACT

Background: Noise Induce Hearing Loss (NIHL) is a work accident which has a high incidence rate of workers in the manufacturing industry nowadays. Attitudes and obedience behavior of manufacturing workers in using personal noise protective equipments are influenced by their knowledge about NIHL. **Objective:** This study examines the effect of providing health counseling on the knowledge, attitudes, and behaviors of textile industry workers regarding NIHL. **Methods:** This research method used quasi-experimental, with a one group pretest-posttest design. Intervention of this research was a health counseling, leaflets, modules, and lectures about NIHL. The subjects of this study were 35 workers of textile factories. Consecutive sampling were used. The level of knowledge, attitudes, and behavior were obtained through questionnaires before intervention and two weeks after the intervention was carried out. This research was located in one of the textile factories in Semarang Regency in 2020. Statistical analysis used Wilcoxon test, Fisher test, and Kolmogorov-Smirnov test. **Results:** The result of this research show that there was an increase in the mean score of subjects's knowledge, attitudes and behavior. Statistical analysis show there is a significant differences between knowledge scores (p value < 0,05), attitudes scores (p value < 0,05), and behavior scores (p value < 0,05) before and after being given health education. **Conclusion:** The mean score of knowledge, attitudes and behavior of workers after being given information about noise induced hearing loss is higher than before being given a counseling.

Keywords : *attitudes, behavior, knowledge, leaflets, lectures, modules, NIHL, personal protective equipments*

INTRODUCTION

Noise induce hearing loss (NIHL) is hearing loss caused by loud noise over a long period of time and is usually caused by noisy work environments.[1] The Centers for Disease Controls and Prevention (CDC) data in 2018 found that 1 in 3 adults in the world have hearing loss due to noise of varying severity.[2] Hearing loss in NIHL is deaf to sensory deafness.Factors that can affect a worker become more prone to NIHL include: high intensity of exposure to noise, high frequency, long exposure to noise, and drugs of a muscular nature.[1]

Noise is an undesirable sound and causes workplace health problems in some countries around the world.[3] Data from The Centers for Disease Controls and Prevention (CDC) in 2015, mentioning that about 82% of cases of noise due to employment occur in manufacturing industry workers.[2] In Indonesia, through the Regulation of the Minister of Health of the Republic of Indonesia No.Kep-70/MEN/2016 sets the Noise Threshold Value (NTV) for 8 hours of work per day is 85 dBA.[4]

Every company in Indonesia has a general training of Occupational Health and Safety (OHS) given to each new worker who enters.[5] OHS training contains information and knowledge to workers on how to use PPE and hazards in the work environment and how to save themselves. In practice, worker non-compliance in the use of Personal Protective Equipment (PPE) is one of the causes of high cases of accidents and diseases due to work.[6] Worker knowledge affects worker compliance. Health counseling practices have been widely used to increase public knowledge. Counseling plays an important role to increase the degree of knowledge about what health risks workers face in order to be able to change the attitudes and behaviors of workers in complying with the procedures of Equality and Work Health. Based on some of these problems, researchers intend to conduct studies on the influence of counseling on changes in the level of knowledge, attitudes, and behavior of textile industry workers who are at high risk of suffering from NIHL.

DIPONEGORO MEDICAL JOURNAL
(Jurnal Kedokteran Diponegoro)
Online : http://ejournal3.undip.ac.id/index.php/medico
E-ISSN : 2540-8844
Volume 10, Number 4, July 2021

METHOD

This type and method of research is quantitative research and quasi experiment with pre-posttest one group design. The interventions provided were counseling using leaflets, modules, and lectures. Counseling with lecture method is done using power point, and done 1 time interactively for approximately 30 minutes. The lecture material displayed on the power point is an explanation of the information contained in the module and leaflet.The target population is textile factory workers with noisy exposure of more than 85 dB.

Sample selection used consecutive sampling method. The sample worked on a pre-test questionnaire right before the intervention. Post tests were carried out two weeks after all the subject got the interventions.

The samples that were respondents to this study have met inclusion criteria including age range, noisy work environment, mandatory use of Personal Protective Equipment (PPE) at work and exclusion criteria including disease history and literacy ability.

Researchers divided four variables on respondents who were suspected of confounding variables in this study. Researchers classified the age of the subject into 2 categories, namely the young category that is less than 36 years old and the old category for respondents who are 36 years of age or older. The length of employment of all respondents ranged from 1 to 35 years of work, then the researchers divided the length of work into two categories, namely newterm categories that have a working period of 5 years or less and the longterm category for respondents who have a working period of more than 5 years. The last education of the research subject is divided into 3 levels of education, elemenatary school level (ES), junior high school level (JHS), and dominated by the high school level (HS).

Data analysis of the results of the study was conducted with univariate and bivariate analysis using Wilcoxon signed rank test to see the relationship of counseling to changes in the level of knowledge attitudes and behaviors. Bivariate analysis of the influence of confounding variables on changes in knowledge of behavioral attitudes using Fisher Exact Test & Kolmogorov-Smirnov Test with a confidence level of 95%. This research has obtained an ethics permit from the Health Research Ethics Commission of the Faculty of Medicine, Diponegoro University.

RESULTS

This research was conducted at PT. Apac Inti Corpora located in Bawen, Semarang Regency, Central Java, Indonesia.The research was conducted from September to October 2020.Characteristics of respondents can be seen in table 1.

Table 1. Characteristics of the study subject

Variable	Study subject (n=35)
Age (years)	39,1±9,7
Gender	
- Male	10 (28,6%)
- Female	25 (71,4%)
Length of employment	19,8±9,6
Last education	
- Elementary school	4 (11,4%)
- Junior high school	12 (34,3%)
- High school	29 (54,3%)

Table 1 shows there are a total of 35 research subjects. The majority of the study subjects were female.The age range of the study subjects was 19 to 52 years. The results of changes in knowledge variables before and after health counseling on NIHL can be seen in the following tables.

Table 2. Descriptive analysis of changes in respondents' knowledge

Changes	Frecuency	Percentage(%)
Increased	16	45,7
Unchanged	19	54,3
Decreased	0	0
Total	35	100

In table 2, out of a total of 35 respondents, 16 (45.7%) were obtained. people whose knowledge scores increased after counseling and 19 (54.3%) people who have the same score between before and after being given interventions.

DIPONEGORO MEDICAL JOURNAL
(Jurnal Kedokteran Diponegoro)
Online : http://ejournal3.undip.ac.id/index.php/medico
E-ISSN : 2540-8844
Volume 10, Number 4, July 2021

Table 3. Descriptive analysis of changes in respondents' attitude scores

Changes	Frequency	Percentage(%)
Increased	28	80
Unchanged	7	20
Decreased	0	0
Total	35	100

Based on table 3, the increase in attitude score after counseling occurred in the majority of respondents, namely 28 (80%) people from all respondents.

Table 4. Descriptive analysis of changes in respondent's behavior scores

Changes	Frequency	Percentage(%)
Increased	21	60
Unchanged	6	17
Decreased	8	23
Total	35	100

Based on table 4, there is a variation on changes in behavior score that occurs after counseling, where there are 21 (60 %) respondents who experienced an increase, 6 (17%) respondents did not experience any increase or decrease, and there were 8 (23%) respondents who experienced a decrease in behavioral scores after being given interventions.

The analysis of results from bound variable scores before and after inteventions can be seen on the table 5.

Table 5. Bivariate analysis results of bound variable scores before and after inteventions

Variable		Mean	Mean difference	95% CI		
				Lower	Upper	*p*
Knowledge	Before	17,40	-1,23	16,75	18,05	0,000*
	After	18,63		18,30	18,95	
Attitude	Before	16,11	-1,55	15,56	16,67	0,000*
	After	17,66		17,24	18,07	
Behavior	Before	5,26	-0,68	4,58	5,94	0,024*
	After	5,94		5,29	6,69	

* Wilcoxon test

Based on table 5, showed that there was an increase in Mean Before counseling from the three variables both Knowledge Attitude and Behavior in respondents after being given interventions in the form of health counseling. The results of wilcoxon Changes analysis score of three variables include knowledge score ($p = 0.000 < 0.05$), attitude ($p = 0.000 < 0.05$), behavior ($p = 0.024 < 0.05$), so it can be concluded Ho rejected and Ha received. The results of the knowledge, attitude, and behavior score of textile industry workers on NIHL after being given interventions are higher than before they were given interventions.

This study analyzed the relationship bivariate of several variables of age, gender, and length of work that are suspected as confounding variables against changes of knowledge, attitude, and behavior scores. The results of bivariate analysis that has a p value of less than 0.025 will be carried out multivariate analysis. The results of bivariate analysis of confounding variables against knowledge are listed in table 6.

DIPONEGORO MEDICAL JOURNAL
(Jurnal Kedokteran Diponegoro)
Online : http://ejournal3.undip.ac.id/index.php/medico
E-ISSN : 2540-8844
Volume 10, Number 4, July 2021

Table 6. Result of bivariate analysis of confounding variables to change of knowledge

		Change of knowledge score					*p*	95% CI		OR	95% CI	
		Increase		Unchanged		Total		Lower	Upper		Lower	Upper
		n	%	n	%							
Age	Young	6	66,7	3	33,3	9	0,245*	1,59	1,90	3,2	0,649	15,775
	Old	10	38,5	16	61,5	6						
Gender	Male	6	60	4	40	10	0,454*	1,56	1,87	2,250	0,504	10,053
	Female	10	40	15	60	25						
Employment	Newterm	5	71,4	2	28,6	7	0,297*	1,66	1,94	3,864	0,634	23,531
	Longterm	11	39,3	17	60,7	28						
Education	ES	2	50	2	50	4	0,568§	2,19	2,67	-	-	-
	JHS	3	25	9	75	12						
	HS	11	45,7	8	54,3	19						

*Fisher Exact Test
§ Kolmogorov-Smirnov Test

Bivariate analysis results in table 6, there is only one variables that have a value of p < 0.25, so it can not be done multivariate analysis using logistic regression test. From the data, it is concluded that there is no confounding variable that affects attitude score changes after being given interventions.

Tabel 7. Result of bivariate analysis of confounding variables to change o

		Change of attitude score					*p*	95% CI		*OR*	95% CI	
		Increase		Unchanged		Total		Upper	Lower		Upper	Lower
		n	%	N	%							
Age	Young	7	77,8	2	22,2	9	1,00*	1,59	1,90	0,833	0,131	5,297
	Old	21	80,8	5	19,2	26						
Gender	Male	9	90	1	10	10	0,644*	1,56	1,87	2,842	0,296	27,255
	Female	19	76	6	24	25						
Employment	Newterm	6	85,7	1	14,3	7	1,00*	1,66	1,94	1,636	0,164	16,345
	Longterm	22	78,6	6	21,4	28						
Education	ES	4	100	0	0	4	1,00§	2,19	2,67	-	-	-
	JHS	9	75	3	25	12						
	HS	15	78,9	4	21,1	19						

*Fisher Exact test
§Kolmogorov-Smirnov test

Bivariate analysis results in table 7 is not obtained variables that have a value of p < 0.25, so it can not be done multivariate analysis using logistic regression test. From the data, it is concluded that there is no confounding variable that affects attitude score changes after being given interventions.

Bivariate analysis results in table 8 is not obtained variables that have a value of p < 0.25, so it can not be done multivariate analysis using logistic regression test. From the data, it is concluded that there is no confounding variable that affects behavior score changes after being given interventions.

DIPONEGORO MEDICAL JOURNAL
(Jurnal Kedokteran Diponegoro)
Online : http://ejournal3.undip.ac.id/index.php/medico
E-ISSN : 2540-8844
Volume 10, Number 4, July 2021

Tabel 8. Result of bivariate analysis of confounding variables to change of behavior

		Change of behavior score					*p*	95% CI		*OR*	95% CI	
		Increase		Unchanged		Total		Lower	Upper		Lower	Upper
		n	%	n	%							
Age	Young	6	66,7	3	33,3	9	0,712*	1,59	1,90	1,467	0,299	7,188
	Old	15	57,7	11	42,3	26						
Gender	Male	7	70	3	30	10	0,704*	1,56	1,87	1,833	0,383	8,778
	Female	14	56	11	44	25						
Employment	Newterm	5	71,4	2	28,6	7	0,676*	1,66	1,94	1,875	0,309	11,372
	Longterm	16	57,1	12	42,9	28						
Education	ES	1	25	3	75	4	0,974§	2,19	2,67	-	-	-
	JHS	8	66,7	4	33,3	12						
	HS	12	63,2	7	36,8	19						

*Fisher Exact test
§Kolmogorov-Smirnov test

DISCUSSION

Knowledge is the result of knowing after sensing a particular object.[7] Based on the results of this study, shows that within 2 weeks after being given interventions on deafness due to noise, there is an increase in The Mean of Knowledge score in respondents. The results of increasing knowledge scores after being given interventions in the form of counseling in this study are supported by the results of previous research, namely by Gamelia (2015), which states that health counseling is able to increase knowledge significantly.[8]

Attitude is a reaction or response that is still closed from each individual respondent to some stimulus and the readiness of the individual to act.[8] The increase in Attitude score in this study is in accordance with previous research, which shows that health counseling effectively changes the Attitude better.[8] In accordance with previous research by Kristina (2019), attitude improvement is directly proportional to the increase in knowledge of an individual.[9]

Behavior analysis of respondents on the prevention of deafness due to noise in this study showed an increase in Mean Behavior score. This result is in accordance with previous counseling, namely in research by Kristina (2019) and Lilisa (2017) who used leaflets as counseling materials and mentioned that there is an influence of counseling on workers' behavior in using PPE.[10,9] Gamelia (2015) mentioned that providing information through counseling and support can change one's behavior that can be applied in everyday life.[8]

From analysis of the relationship of the age, gender, length of service (employment), and level of education variable, which is suspected as a confounding variable on changes in the level of knowledge, attitudes, and behavior, the results are not significant.

The analyse of age result contradicts to previous research, which stated that there was an effect of age on knowledge, attitudes, and behavior regarding NIHL.[11]

The analyse of gender result contradicts previous research, which states that there is an effect of gender on farmer's knowledge, attitudes, and behavior in using pesticides on farmers in China.[12]

The analyse of employment result contradicts previous research, which states that the longer a person works, the more experience they will have and it is possible that a worker with a longer tenure will have a better knowledge.[13]

The analyse of education level result contradicts to previous research, which states that there is an effect of education level on a person's knowledge, attitudes, and behavior regarding information that has just been introduced to him.[13]

The limitation of this study lies in the process of retrieving data on respondents who cannot at one time due to restrictions on the number of people in one room. Another limitation of this study was behavior measurement using questionnaires and not observing changes behavior in respondents directly.

DIPONEGORO MEDICAL JOURNAL
(Jurnal Kedokteran Diponegoro)
Online : http://ejournal3.undip.ac.id/index.php/medico
E-ISSN : 2540-8844
Volume 10, Number 4, July 2021

CONCLUSSION

The workers mean score of knowledge, attitude, and behavior after being given health counseling on noise hearing loss is higher than their mean score of knowledge, attitude, and behavior before being given health counseling.

There is no influence of workers age, longterm of employment, last education, and gender type on changes in worker's knowledge, attitude, and behavior scores regarding NIHL after health counseling.

Ethical Approval

Ethical clearance was obtained with the approval and consideration of the Health Research Ethics Commission, Faculty of Medicine, Diponegoro University with ethical clearance number No. 134/ EC/ KEPK/ FK-UNDIP/ VI/ 2020.

Conflicts of Interest

There is no conflict of interest related to the materials, methods, and findings in this study.

Author Contributions

The researcher would like to thank Dr. dr. Zulfikar Naftali, Sp.THT-KL(K), M.Si.Med. as the examiner, dr. Dwi Marliyawati, Sp.THT-KL, M.Si.Med. as the first advisor, and dr. Kanti Yunika, Sp.THT-KL as the second advisor and other parties who have helped this research.

Acknowledgments

This work was supported by Department of Medical and Department of otorhinolaryngology-head and neck surgery, Faculty of Medicine, Diponegoro University.

REFERENCES

1. Bashiruddin J, Soetirto I. Gangguan Pen. In: Buku Ajar Ilmu Kesehatan Telinga Hidung Tenggorokan Kepala & Leher. 7th ed. Jakarta: Badan Penerbit Fakultas Kedokteran Universitas Indonesia; 2012. p. 42–5.
2. Murphy WJ, Eichwald J, Meinke DK, Chadha S, Iskander J. CDC grand rounds: Promoting hearing health across the lifespan. United States: Cent Dis Control Prev. 2018;67(8):241–6.
3. Bashiruddin J, Soetirto I. Gangguan Pen. In: Buku Ajar Ilmu Kesehatan Telinga Hidung Tenggorokan Kepala & Leher. 7th ed. Jakarta: Badan Penerbit Fakultas Kedokteran Universitas Indonesia; 2012. p. 42–5.
4. Murphy WJ, Eichwald J, Meinke DK, Chadha S, Iskander J. CDC grand rounds: Promoting hearing health across the lifespan. United States: Cent Dis Control Prev. 2018;67(8):241–6.
5. Dewanty RA, Sudarmaji S. Impact Analysis of Noise Intensity with Hearing Loss on Laundry Worker. Surabaya: J Kesehat Lingkung. 2016;8(2):229.
6. Peraturan Menteri Kesehatan Republik Indonesia Nomor 70 Tahun 2016 Tentang Standar dan Persyaratan Kesehatan Lingkungan Kerja Industri. Indonesia: Peraturan Mentri. 2016. p. 5–24.
7. International Labour Organization. Keselongtermtan dan Kesehatan Kerja: Sarana untuk Produktivitas [Internet]. Geneva; 2013. 125–137 p. Available from: www.ilo.org / publns
8. Mallapiang F, Santy Damayati D, Fadillah N. Gambaran Behavior Tenaga Kerja Dan Pelaksa-Naan Program Kesehatan Dan Keselongtermtan Kerja (K3) Konstruksi Dalam Pembangunan Balai Diklat Bpk-Ri Makassar Oleh Pt. Wijaya Karya (Persero) Tbk. Makassar: Al-Sihah Public Heal Sci J. 2017;9(1):72–84.
9. Widi A. Pengaruh Konseling Terhadap Knowledge Attitude dan Behavior Orang Old Anak OMSK. Semarang: Universitas Diponegoro. 2018;27–30. Thesis.
10. Gamelia E, Kurniawan A, Widiyanto AF. Pengaruh Konseling Terhadap Peningkatan Knowledge, Attitude, Dan Behavior Masyarakat Tentang Kesehatan Lingkungan Counseling. Pirwokerto: J Kesehat Masy Fak Ilmu-Ilmu Kesehat Univ Jenderal Soedirman. 2015;1–5.
11. Pase M, Kristina. Pengaruh Penyuluhan Kesehatan Tentang Penggunaan Alat Pelindung Diri Terhadap Behavior Petani di Desa Petukel Blang Jorong Kecamatan Bandar Kabupaten Bener Meriah Tahun 2019. Deli Serdang: JKI. 2019;6(2):142–9. M
12. Murni L, Fitri A. Pengaruh Penyuluhan Kesehatan Terhadap Kepatuhan Pemakaian Alat Perlindungan Diri (APD) Pada Pekerja Pembuatan Kerupuk Sanjai Di Kelurahan Manggis Gantiang Sanjai Bukittinggi Tahun 2017. Padang: Jurnal Stikes Perintis. 2018;1(1):1–9.
13. Alzahrani RAM, Alzahrani AOS, Alghamdi AAM. Knowledge, Behaviors and Attitudes about Noise-Induced Hearing Loss among Adults in Albaha Region : A Cross-

DIPONEGORO MEDICAL JOURNAL
(Jurnal Kedokteran Diponegoro)
Online : http://ejournal3.undip.ac.id/index.php/medico
E-ISSN : 2540-8844
Volume 10, Number 4, July 2021

Sectional Study. Egypt J Hosp Med. 2018;70(5):824–7.

14. Wang W, Jin J, He R, Gong H. Gender differences in pesticide use knowledge, risk awareness and practices in Chinese farmers. Sci Total Environ [Internet]. 2017;22–8. Available from: http://dx.doi.org/10.1016/j.scitotenv.2017.03.053
15. Dharmawati IGAA, Wirata IN. Hubungan Tingkat Pendidikan, Umur, dan Masa Kerja dengan Tingkat Pengetahuan Kesehatan Gigi dan Mulut pada Guru Penjaskes SD di Kecamatan Tampak Siring Gianyar. JKG. 2016;1–5.