

Conference Paper

Acute Respiratory Infections in Informal Footwear Workers

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Abstract

Acute respiratory infections (ARIs) were the most common diseases among informal workers attending the Ciomas Puskesmas (Public Health Centre), Bogor Regency in 2014. Commonly, these infections had occurred because of a lack of knowledge of both ARIs and industrial hygiene in the informal sector. This study aimed to describe the relationship between knowledge and awareness of ARIs (smoking habit and using PPE during work variables) and the incidence of ARIs. The population of study comprised seven footwear workshops in Pagelaran Village, Ciomas District, Bogor Regency. They employed 87 workers in 2014 and all workers were included in the sample of the study. To explore the association between awareness of ARIs and occupational health issues, we used the chi-square test. The study showed that there were 34 (40%) workers who suffered from ARIs. 56 (66%) were smokers, 65 (76%) employees did not use Personal Protective Equipment (PPE) during work, and 75 (88%) workers reported that they did not have knowledge concerning ARIs. Overall, the incidence of ARIs was not significantly associated with a smoking habit ($P=1.000$), PPE compliance ($P=1.000$), or knowledge of ARIs ($P=0.512$).

Keywords: Acute Respiratory Infections, occupational health, Personal Protection Equipment, knowledge, smoking habit.

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Received: 21 January 2018

Accepted: 8 April 2018

Published: 17 May 2018

Publishing services provided by
Knowledge E

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Selection and Peer-review under the responsibility of the 2nd International Meeting of Public Health 2016 Conference Committee.

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1. INTRODUCTION

The labour force in Indonesia numbers 116 million people, of which 107.41 million people are working. 76.69 million people (71.3%) work in the informal sector and 30.72 million (28.6%) work in the formal sector (The Central Bureau of Statistics, 2009). The informal workforce mainly consists of workers who sell their services on a daily or short-term basis, doing manual labour or piecework. They are often itinerant workers, travelling from place to place to find what work is available, and as

a result do not have the workplace protections as a worker in the formal economy. These workers often lack essential knowledge regarding occupational health and safety. This places them at increased risk of occupational diseases and accidents [5].

For the most part, occupational health services in Indonesia only focus on curative services, while promotion and preventive services are far from optimal. This problem occurs because of an unequal distribution of health workers, lack of health facilities and infrastructure, and a low level of public awareness regarding the importance of health. Additionally, recording and reporting systems for occupational health have not been well established to gather information to plan and implement strategies for the improvement of worker's health status [6].

Ciomas District is famous for its informal footwear industry. This sector has a pivotal role in providing employment and is concentrated in small workshops or worker's homes. In Ciomas, the most common occupational diseases in the informal industry were ARIs. Based on the occupational health monthly report from Ciomas Puskesmas (Ciomas Public Health Centre) 2013 (2014), the cases of ARIs experienced an upward trend in the four months from June to September. In June, this trend held at 16.67% of cases that have presented to the Puskesmas, in the following month it decreased to 14.83%, in August rose to 23.11%, and in September declined to 20.63%.

In 2010, Yusnabeti et al. found 43 (43.9%) of 98 workers had suffered from ARIs in the furniture industries in Bogor. Also, a study carried out in footwear manufacturing workers in Kolkata, India by Gangopadhyay et al. (2011) revealed that the particulate and adhesive affected the lung capacity and Peak Expiratory Flow Rate (PEFR) of the workers irrespective their type of work.

Health effects of occupational exposure among shoe workers may create an economic burden for employers. A study conducted by Birnbaum et. al. (2002) revealed that patients with respiratory infections were a financial burden to their employers. They estimated \$112 billion of the company's annual expenditure in the USA was spent on their employees with respiratory infections, including costs of medical treatment and time lost from work in 1997.

In Indonesia, there is insufficient research done to examine the incidence of ARIs in adults and workers, while existing research has usually focused on toddlers or children under five years old. For that reason, this study was deemed essential.

2. METHODS

2.1. Design Study and Objective

This research used a cross sectional study design in which all of data was collected at the same time, from March to April 2014. The objective of the study is to describe the association between knowledge of ARIs, and awareness relating to the prevalence of using PPE and smoking habits with incidence of ARIs.

2.2. Study Population

The study population was taken from all workers in the seven footwear workshops in Pagelaran Village, Ciomas District, Bogor Regency which consisted of 87 workers who all participated. The sample was not randomly selected, but instead used purposive sampling, in which samples were taken in accordance with the inclusion and exclusion criteria. This sampling method was used because the available data of the number of workers was incomplete. As such, it was not appropriate to apply the random sampling method. For inclusion criteria, we selected people who came to work when we were collecting data in the workshop and for exclusion criteria, employees who were not on duty and/or refused to participate in the study.

2.3. Measurement

Interview questionnaires were used to record all information. It included questions about participants-knowledge of ARIs, smoking habits, and their health status related to ARIs. The use of PPE (mask) during work was assessed based on observation.

The measurement of ARIs used five symptoms; cough, flu, shortness of breath, sore throat, and fever or chills, and was based on the presence of one or more symptoms without medical observation. To measure respondent's knowledge, we measured their level of familiarity with the information about ARIs and/or symptoms, and divided them into two categories; yes (respondent knows) and no (respondent does not know). Respondents who could answer the five symptoms were included in the know category and vice versa.

The use of PPE was measured by employee's awareness of how to protect them self where hazards are not particularly well controlled, and categorized into using or not using a mask during work. This study did not assess the quality of the equipment.

Smoking status was recorded at enrollment and categorized into two groups, smoker or non-smoker. This variable assessed how frequently people smoked and if it was a recurring habit. People were defined as smokers if they smoked at least once a day whilst non-smoker were categorised as those who did not smoke at all.

Before interview, all participants received information about the study and gave their informed consent. The interviews were conducted during the production process and took place from 10:00 am to 03:00 pm.

2.4. Data Management and Statistical Analysis

To analyze the association between all variables, this study used the chi-square test that examined the associations of ARIs in relation to smoking habit, the use of PPE, and knowledge of ARIs. This statistic test was chosen since all data in this study is categoric data.

3. RESULTS AND DISCUSSION

In general, the footwear workshops occupied densely populated areas and most of building conditions did not meet workplace environmental hygiene standards in accordance with Decree of the Ministry of Health of the Republic of Indonesia No.1405/MENKES/SK/XI/2002, however, in the study area there are many obstacles to providing occupational health services, including the limited capacity of public health officers to provide supervision.

At the time of data collection, the area of study was entering the transition period (March and April) from rainy season to dry season, which may have influenced the relationship between variables as in this period the incidence of ARIs usually increases.

There were two respondents who were excluded from the sample because they were absent from work.

When the subjects were asked about their health status relating to ARIs, 40% of them said that they experienced problems such as laryngitis, influenza, and coughing during work. The vast majority of respondents (88.24%) answered that they did not know about ARIs and a minority (11.76) answered they knew about ARIs. Most had gotten their information from health professionals (90%). More than half of them had a smoking habit and were heavy smokers, furthermore 76% employees did not use Personal Protective Equipment (PPE) during work.

TABLE 1: Relations The use of PPE and Smoking Habit with ARIs in Industrial Footwear Workers in Ciomas 2014.

Variable	ARIs		P Value	OR (95% CI)
	Disease (+) n (%)	Disease (-) n (%)		
Knowledge ARIs				
No (Do not know)	29 (38.7)	46 (61.3)	0.512	0,630
Yes (Know)	5 (50.0)	5 (50.0)		0.168 – 2.369
Smoking Habit				
Not smoking	12 (41.4)	17 (58.6)	1.000	1,091
Smoking	22 (39.3)	34 (60.7)		0.438 – 2.718
Using PPE				
Not using	26 (40.0)	39 (60.0)	1.000	1.000
Using	8 (40.0)	12 (60.0)		0.360 – 2.782
OR = odd ratio				
CI = confident interval				

Improving knowledge of ARIs plays a fundamental role in minimizing large economic and productivity losses because of the health problems. The present study showed that there was no significant difference between occurrence of ARIs and knowledge of ARIs. However, this is in stark contrast to another study, which found that knowledge has significant association with preventing ARIs [4]. According to unstructured interviews with employers and public health officers, we found that there was lack of health promotion interventions related to respiratory diseases in the workplace so that the majority of participants did not know about ARIs. On the other hand, the limitation in this study was relying on participant's memory without probing their level of knowledge.

Smoking is a risk factor for the occurrence of respiratory disorder problems and lung disease as cigarette smoke leads to respiratory tract irritation and structural changes in human lung tissue. This change in the respiratory tract will cause changes in lung function and the occurrence of chronic pulmonary obstructive disease [8]. Over half of workers were smokers. The results confirmed that smokers did not reach statistical significance ($p \leq 0.05$) between smoking and the incidence of ARIs. This possibly was caused by other agents like particulate, microbiology and chemical substance. In a study in the same place, conducted by Kurniawidjaja et al. (2012), it revealed that respiratory disorders were caused by Benzene and Toluene vapour from the glue that they inhaled during making shoes. Moreover, a majority of the employees did not

use a mask at work. According to observations and interviews, the main reason was discomfort, unfamiliarity and reluctance to use it.

There were 40.0% of workers who did not use PPE that suffered from ARIs. Statistical analysis confirmed that there was not significant difference between the occurrence of ARIs and the use of PPE. Other factors such as education and duration of employment were not examined. A study of Budhathoki, et al. (2014) showed that education and duration of employment were significantly associated with using PPE. So, those factors are likely to determine the awareness of workers on the need to use PPE.

These results could not continue to multivariate analysis to find the dominant variables in determining ARIs since the results of bivariate analysis were not statistically significant for any variable.

4. CONCLUSION

From the present study, it may be concluded that the knowledge and awareness of informal workers in Ciomas has nothing to do with the incidence of ARIs. Therefore, by identifying the factors affecting the level of knowledge and awareness of them regarding ARIs, it will be more constructive to promote this knowledge, as well as seeking the attention of employers and supervision of public health officers to do procurement of PPE at no cost to employees and health promotion relating to respiratory disease prevention and industrial hygiene. Future studies may wish to analyze quantitative indoor exposure of biological, physical, and chemical agents.

ACKNOWLEDGEMENTS

The authors express their sincere gratitude to all Ciomas public health officers, footwear manufacturing workers, and employers who rendered immense cooperation during the completion of this study, as well as the Indonesian Endowment Fund (LPDP) for supporting funding.

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