ORIGINAL ARTICLE

Presentation of a New Inspection Structure to Solve HSE problems in industrial towns

ASGHAR LOTFOLLAHZADEH[1], ALIREZA GHADERI[2], BABAK GROSSI[3], *BITA SADAT ZEGHARDI[4]*

ABSTRACT

Background: All countries can step up effectively and distinctively to reduce the incidence of occupational diseases through implementing Health, Safety, and Environmental (HSE) preventive plans.
Aim: To develop a new inspection structure in industrial towns.
Methods: The present research was conducted by intervention method on the health system of Namin city with the participation of the governorate, prosecuting office, department of environment, and department of labor and social welfare in 2011. Initially, a HSE Committee of the city was formed followed by identification of beneficiaries. After extracting statistics, a meeting was held with the employers using the comments of safety and health experts at factories and searching the electronic databases in order to analyze the status of HSE. Finally, centralized meetings were held to appoint an inspection team and then visits were carried out at levels of experts and managers. A comparison was made between the results of above actions before and after the visits. The results were analyzed using the SPSS19 software.
Results: A total of 91 workshops each with over 25 individuals were inspected using the new inspection structure. Significant changes were observed in the status of workshops compared to the routine method ($p < 0.05$). There were improvements in important occupational health indices. After 5 years of implementation, the structure was eventually approved by the provincial Health and Safety Council.
Conclusion: Considering the new structure and field visits by high ranking officials in the city, handling HSE deficiencies is more efficient than referring cases to the judicial authorities.
Keywords: Health, Safety, Environment

INTRODUCTION

Occupational accidents are an integral part of various working environments, particularly industrial jobs[1,2,3]. Eighty five percent of such accidents occur because of unsafe actions resulting from attitude, culture and behavior[4,5]. It is estimated that the economic cost of poor occupational health and safety to be 4% of GDP[6]. A report by the WHO indicates that small-business workers encounter more safety and health problems, particularly in developing countries. Some of these problems include inappropriate workshop site, plan and building, lack of health facilities, no control of work environment hazards, long working hours, employment of individuals below 18 years of age, no insurance coverage for workers, and the use of non-standard depreciated machinery[7]. In this regard, Loomes et al. (2009) conducted a study on the value of SHE plans in the work environment and concluded that prioritizing safety plans in the organizational core policies could increase the productivity and boost the morale of employees and their sense of responsibility[8]. The results of a study by Hola et al (2007) on the relationship between accident rates and their impacts on the industry economy suggested that the firm's costs increased with rising accident rates ultimately affecting the firm's economy[9]. Beatriz et al. (2009) reported a positive impact of safety management system on the competitive and financial performance of industries[10]. Xunpeng (2009) outlined the role of governments in improving industrial safety plans through formulation of laws and regulations, and noted that the safety to be positioned in optimal use of material and human resources scientifically, improving the quality of life of staff, reducing production costs, increasing product quality, timely repair and maintenance, and value creation for the customer; he also accounted that a major part of machinery cessation could be caused by accidents, breakdowns, and technical issues[11]. The present research, therefore, sought to investigate the problems and the need to review and develop new inspection methods in order to achieve the goals of the Ministry of Health to strengthen intersectoral cooperation between regulatory bodies on HSE structure of industrial factories and provide employers with an explanation about the need to consider the health issues of employees.

[1,2,3]Ardabil University of Medical Sciences, Ardabil, Iran.
[4]Fasa University of Medical Sciences, Iran.
Correspondence to Asghar Lotfollahzadeh, Email: lo_asghar@yahoo.com, Tel: +984533513775 Fax: +984533512004

METHODOLOGY

This interventional study was conducted at Namin healthcare network with participation of the governorate, the Justice, Department of Labor, Cooperatives and Social Welfare, and the Department of Environment in the city from 2011 to 2016 for 5 years as follows. The results were analyzed using the SPSS19.
Stage I: A HSE Committee was formed in the city with the participation of main beneficiaries including the prosecutor, deputy governor, social affairs director of the governorate, head of Department of Labor, head and inspector of Department of Environment, director and assistant of health network, and director of occupational health.
Stage II: The status of HSE was analyzed by extracting statistics and performance of HSE at factories, meeting with employers, comments from safety and health experts of factories, and searching in electronic programs and databases.

Stage III: Focused meetings of group discussions was led to an agreement in the selection of the prosecutor as the head of the committee, network administrator as the secretary, and establishment of new inspection groups at the following two levels:

A. Group I: Experts level

B. Group II: Managers level

At this stage, prioritized factories with over 25 individuals were visited and the employers were announced to address the health and environmental safety deficiencies.

RESULTS

The expert team paid 91 visits from 2011 to 2016. The managers group visited defective factories four times in 2016. Six HSE Specialty Committee were held in charge of the prosecutor's office. These visits resulted in increased level of examinations from 37% to 55%, promotion of the Committee on Technical Protection and Occupational Health index from 35% to 65%, and changes in the process of carcinogens asbestos with alternative substances (Table 1). A total of 91 workshops each with over 25 individuals were inspected using the new inspection structure. Significant changes were observed in the status of workshops compared to the routine method ($p < 0.05$). There were improvements in important occupational health indices. After 5 years of implementation, the structure was eventually approved by the provincial Health and Safety Council.

Table 1: Outcomes of the new inspection structure from 2011 to 2016

Row	Title	Description
1	Promotion of labor examination levels	From 37% to 55%
2	Promotion of the Committee on Technical Protection and Occupational Health index	From 35% to 65%
3	Changes in the process of carcinogens asbestos	
4	Promotion of refineries at dairy factories	Installing and/or launching of refineries for Goban factories/Vegetable oil, etc.
5	Approval for the creation of two workers' health home at factories with over 50 individuals	Arta Plast/ Sepehr Steel
6	Promotion of technical-engineering measures	Increased heating in Sepehr Steel saloon/ enhanced localized air conditioning in Arta Plast / installation of cement bag house system, etc.
7	Reduced visit fees through shared visits	
8	Interaction and alignment of organizations to protect and maintain human force, environment, and employment issue	
9	Increasing the inspectors' morale owing to the support of high ranking city officials to pursue and solve problems	
10	A proposal to the Workers' Health Task Force for approval by the provincial Health and Food Safety Task Force	Imparting the approval of the provincial Health and Food Safety Task Force for implementation in cities of the province

DISCUSSION

Maintenance of human and material resources is a fundamental task of managers at industrial and manufacturing organizations. Investments in safety contexts are considered by many managers to be a portion of organizational overhead costs. By confirming the positive impacts of safety plans on reducing accident rates and improving efficiency, a step is taken for promoting a safety culture at organizations and offering a scientific proof for decision making on prioritization of safety plans by policy makers. A high number of workshops in the country contain physical, chemical and ergonomic harmful factors. Despite the application and implementation of specialized trainings on occupational health, the controlling indices of harmful factors, viz. noise, dust and poor body condition are very low[12,13]. A poor executive system in dealing with offenders has gained the highest percentage among existing barriers and challenges of monitoring[14]. The International Labor Organization believes that all countries can take effective and distinctive steps to reduce the incidence of occupational diseases by implementing HSE preventive plans. In order to achieve such a great goal, it is necessary to develop a new inspection structure in the country with a collective approach to labor safety and health and intersectoral cooperation from legislation and policy-making stages to planning and implementation in public and private sectors[15,16,17,18]. Additionally, a special attention should be placed on the role of government in changing the structure and codification of laws and regulations for improving industrial safety plans, with an emphasis on the importance of safety in optimal use of material resources and human forces. The joint visits of factories by three supervisory agencies with the participation of high-ranking provincial authorities (the governor and prosecutor) will lead to synergy, performance improvement, and optimal use of governmental resources. By establishment of intersectoral collaboration, the threats of HSE hazards will be minimized by regulatory agencies.

CONCLUSION

The Ministry of Health should consider the approval of a new organizational structure and development of a comprehensive directive. Organizing regular meetings, implementing the regulations of workers' health task force in the city and defining indicators are important and decisive. The roles and expectations from the agencies should be determined in the form of cooperative memoranda. Development of guidelines to encourage

executives and employers is considered as a boosting strategy for intersectoral cooperation. Ultimately, pursuing the results of implementing a new organizational structure by the highest executive will help advance HSE goals.

Conflicts of interest: The authors declare no conflict of interest.

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