

# Investigating and Prioritizing of the Barriers of Performing Periodic Occupational Examinations in Industries of Kashan City in 2019

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## Abstract

**Aim and Scope:** Health monitoring is important component of the employee health maintenance program, which is performed by periodic examinations in accordance with Article 92 of the Labor Law. Thus, the aim of this study was to investigate the barriers of performing periodic examinations in the industries of Kashan in 2019. **Materials and Methods:** This descriptive study was conducted on 200 people (employer, health inspector, and medicine physician and industry health experts). A researcher-made questionnaire used to collect the data. Barriers were prioritized based on the scores of each group. Then, a weighting technique was used to accumulate the opinions and final prioritization. To analyze the data, SPSS 16 software was used. **Results:** Out of 200 subjects the number (percentage) of employers, inspectors, occupational medicine physicians and industry experts were 103 (51.5%), 31 (15.5%), 5 (2.5%) and 61 (31.5%) respectively. Using AHP (hierarchical analysis) and Expert Choice software. Final weight for the perspective of occupational health inspectors, employer, occupational medicine physician, and industry expert was obtained at 0.38, 0.257, 0.195, and 0.168, respectively. After applying the weight from the perspective of the four groups, the final priorities were obtained as the high cost of examinations, lack of awareness of workers about the importance of examinations, and lack of a comprehensive plan to reduce occupational diseases in industry, respectively. **Conclusion:** It is recommended that examinations be performed in clinics covered by the University of Medical Sciences at a lower cost. And train employers about the benefits and importance of occupational examinations.

**Keywords:** Barrier, industry, occupational disease

## INTRODUCTION

Threat to the health of the labor force is a threat to the economy of a community and consequently a threat to the health, welfare, security, and development of that community. Maintaining and promoting the general health of the labor force is one of the most important responsibilities of the

institutions in charge of the health, welfare, and security of the community. Employee health monitoring is one of the most important components of the employee health maintenance and

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promotion program, which is performed through occupational examinations.<sup>[1]</sup> Occupational examinations are defined as a complete study or investigation of the health of employees. These examinations can be performed before employment, periodically, after returning to work, and before leaving the work or retirement. In general, periodical examination or any other type of examination depends more on the nature of the job and the type of work hazards.<sup>[2]</sup> The main goal of occupational health care is to identify the incidence and prevalence of known occupational diseases and injuries. Occupational injuries caused by unpredicted events and occupational diseases are caused by prolonged exposure to harmful factors at workplace.<sup>[3-5]</sup> For example, occupational examinations are performed periodically to quickly diagnose lead poisoning by identifying the early signs and symptoms of the disease in its early stages and can be easily treated in the same stages.<sup>[6]</sup> Periodic examining and monitoring of workers' health status not only promotes workers' health and ultimately the health of the community but also it is one of the main factors that increase productivity and profit of the company,<sup>[7-9]</sup> so that some countries in the world, including the Netherlands, have set guidelines for preemployment medical examinations, which help to select suitable workers in terms of physical and medical condition before employment.<sup>[10]</sup>

Early studies on occupational examinations suggest that workers' health care was limited to medical examinations for a specific group of workers (such as young workers) and for certain occupational hazards during the first half of the twentieth century. Subsequently, in some countries, such as France and Japan, this care was provided to all workers. Occupational examinations in some countries were performed by certified or licensed physicians, and in some countries, by any physician. Then, medical centers were established at the workplace, one of the tasks of which was to perform occupational examinations.<sup>[11]</sup> At present, in Iran, according to Article 92 of the Labor Law, performing health monitoring examinations of employees is required at least annually for the units, subject to Article 85 of the Labor Law. However, it has limited to regulations that require occupational medicine examinations, both at the beginning of employment and periodically and less attention has been paid to way and content of these examinations, requirements, standards, regulations and necessary executive and supervisory strategies that ensure the quality, quantity, and improvement of the process of professional examinations.<sup>[11]</sup> Despite the mentioned legal article, Kashan city with 1591 factories in 2017 performed periodic examinations only for 40% of the employees of these factories. It results in impairment in timely diagnosis of occupational diseases and implementation of control strategies to reduce them to maintain health of employees.

It should be noted that the studies conducted in this field so far include a study in South Korea between 2006 and 2013 showed 71% of administrative employees and 80% of nonadministrative employees were periodically examined in 2006, and 69% of administrative employees and 91% of

nonadministrative employees were periodically examined in 2013.<sup>[12]</sup> The study by Alishiri *et al.* 2003, to assessing the physical health status of Revolutionary Guards employees<sup>[13]</sup> and the surveyed by Parsa Khou *et al.* 2017 to monitor the physical health of forestry project employees<sup>[14]</sup> reviewed only the results of occupational examinations and analyzed them and did not investigate the barriers of periodic examinations. Hence, the present study was conducted with the aim of examining the barriers of performing periodic examinations in the industries of Kashan city.

## MATERIALS AND METHODS

The present study was conducted to investigate the barriers of periodic occupational examinations in the industries of Kashan in 2019. In this study, a researcher-made questionnaire consisting of 24 questions was used. Its answers are scored from 1 to 10.

To evaluate the validity of the questionnaire, first, this tool was provided to 13 occupational health professionals and the face and content validity of the questionnaire was confirmed. Furthermore, by performing the principal components analysis and determining the explained variance, the construct validity of the questionnaire was assessed. Cronbach's alpha criterion was also used to measure the reliability of the instrument. Then, this questionnaire was completed by 103 employers, 31 occupational health inspectors, 61 occupational health experts, and 5 occupational medicine physicians. To prioritize the barriers in the four groups studied, first the mean score of the priority of the barriers in each group was obtained and prioritized. ANOVA test or its nonparametric equivalent was used to compare the four groups in each of the items. Finally, to determine the weight and importance of the answers of each of the studied groups, the weighting technique was used. Thus, a group consisting of 3 occupational health experts working in the industry, 3 occupational health inspectors, 3 employers, and 3 occupational medicine physicians were formed and they completed the pairwise comparison matrix using focus group discussion and Delphi technique and according to the AHP method (hierarchical analysis). Then, Expert Choice software was used to analyze the AHP results and pairwise comparisons. Finally, the mean prioritization scores were calculated according to the opinions of different groups by applying weight in the weighting system.

## RESULTS

This questionnaire contains 24 questions that face and content validity were confirmed. Also, the results of structural validity showed that the power of Explanation the variance of the tool was equal to 61.5%. Furthermore, Cronbach's alpha coefficient of the questionnaire was obtained at 0.922.

Based on the results, 31% of the respondents were female and 69% were male. 51.5% of the subjects were employers, 15.5% were inspectors, 2.5% were occupational medicine physicians performing examinations and 31.5% were

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industrial occupational health experts. Also, out of the total number of participants, 7.5% had a diploma and below diploma (belonging to the group of employers), 75.5% had an associate and a bachelor's degrees, and 17% had a master degree or higher. Other demographic information of the subjects is presented in Table 1.

According to this study, the most important barriers of performing periodic examinations from the perspective of employers, occupational health experts, and occupational health inspectors were the high cost of examinations was obtained as the most important barrier, while from the perspective of occupational medicine physician, the incompetence of occupational health experts on identifying the importance of examinations and skills of justifying employers was obtained as the most important barrier.

Furthermore, the least important barriers of performing periodic examinations from the perspective of the employer and the occupational medicine physician were the low quality of periodic examinations due to performing in a short time and without the necessary accuracy. However, from the perspective of occupational health inspectors and industry occupational health experts, Lack of taking legal actions against violating employers by the occupational health unit and the inability of industry occupational health experts in recognizing the importance of examinations and the skills of justifying employers, respectively, were reported as the least important barriers of performing periodic examinations [Table 2].

Using the AHP method (hierarchical analysis) and Expert Choice software, the final weight for occupational health inspectors, employer, occupational medicine physician, and industry expert was obtained 0.38, 0.257, 0.195, and 0.168, respectively. By multiplying the weights obtained from the previous step in the mean scores obtained, each of the barriers of performing periodic examinations in the study groups, the most important barriers are the high cost of periodic examinations and workers' lack of knowledge of the importance of occupational examinations in having legal rights, respectively. Furthermore the least important barriers were the lack of necessary follow-up of some occupational health inspectors and the lack of taking legal action by

the occupational health unit against violating employers, respectively.

## DISCUSSION

In the present study, the most important barriers of performing periodic examinations from the employers' and reveal perspective were high cost and low quality of examinations due to performing them in a short time and without the necessary accuracy by occupational medicine centers and lack of comprehensive plan to reduce occupational diseases in industry. It can be justified by the fact that occupational health expert does not have the necessary ability to justify the employer to pay for the examinations due to the economic problems of the employers. A study conducted by Asume *et al.* in 2017 revealed that beyond knowledge, other factors can play a role in the performance of these examinations, such as the cost, willingness, and belief in the value of these examinations.<sup>[15]</sup> Lingard and Holmes also stated in 2001 that the best facilitator to reduce risks in small industries is monetary incentives, followed by strict supervision by experts and employers.<sup>[16]</sup> Furu *et al.* also state that although periodic examinations are performed, necessary instructions are not followed due to lack of knowledge and lack of identification of occupational diseases.<sup>[17]</sup> In a study conducted by Sunindijoa in 2015, results showed that the major barrier for safety development in industries is selecting the lowest bid price in the evaluation of bids, forcing organizations to negligence to safety. It is consistent with the result of the present study.<sup>[18]</sup> Also, lack of knowledge of employers about periodic examinations makes them unwilling to perform examinations. The results of a study conducted by Tsobanoglou and Batra in 2000 showed that despite the willingness of employers and industry managers in health and safety programs, they are not aware of the importance of implementing safety and health programs. Except in limited cases that are related to a specific safety or health problem.<sup>[19]</sup>

In the present study, the most important barriers of performing periodic examinations from the perspective of occupational health experts Vice-Chancellor for Health were reported to be the high cost of examinations, low quality of periodic examinations and employers' lack of knowledge about the importance of periodic examinations, respectively, and the

**Table 1: Demographic information of the subjects**

Study groups (number)	Employer (103)	Occupational health inspector (31)	Occupational medicine physician (5)	Industry occupational health expert (61)
Age (X±SD)	44±10.743	35±7.374	46±7.085	32±5.334
Gender (%)				
Female	5 (4.9)	10 (32.3)	0	47 (77)
Male	98 (95.1)	21 (67.7)	5 (100)	14 (23)
Education (%)				
Diploma and below diploma	15 (14.5)	0	0	0
Associate and bachelor	68 (66)	28 (90.3)	0	55 (90.16)
Master and higher	20 (19.5)	3 (9.7)	5 (100)	6 (9.84)

SD: Standard deviation

**Table 2: Prioritizing the barriers from the perspective of the study groups before and after weighting**

Row	Study groups	Weight of each group	Status	Barriers	
				The most important	The least important
1	Employer	0.257	Before weighting	High cost of periodic examinations	Low quality of periodic examinations due to short time and lack of accuracy
			After weighting	High cost of periodic examinations	Lack of necessary follow-up by some occupational health inspectors
2	Occupational health inspector	0.38	Before weighting	High cost of periodic examinations	Lack of taking legal actions against violating employers by the occupational health unit
			After weighting	Lack of knowledge of workers about the importance of occupational examinations in having legal rights	Lack of taking legal actions against violating employers by the occupational health unit
3	Occupational medicine physician	0.195	Before weighting	Inability of industrial occupational experts in recognizing the importance of examinations and the skills of justifying employers	Low quality of periodic examinations due to short time and lack of accuracy
			After weighting	Lack of comprehensive plan to reduce occupational diseases in industry	Performing occupational examinations by noncommitted or nonskilled physicians
4	Occupational health expert in industry	0.168	Before weighting	High cost of periodic examinations	Inability of industrial occupational experts in recognizing the importance of examinations and the skills of justifying employers
			After weighting	Lack of knowledge of workers about the importance of occupational examinations in having legal rights	Incomplete completion of the periodic examination form by the occupational health expert of the center providing occupational medicine services due to lack of visit to factory or lack of skills in accurate identification of harmful factors at work place

least important of them was lack of taking legal action against violating employers by the occupational health unit. In a study conducted by Akbari *et al.* in 2013 revealed that the most common reason for women not participating in screening was the lack of knowledge about the importance of prevention and early detection of cancer, which is consistent with the results of the present study.<sup>[20]</sup> Furthermore, in a study conducted by Nieuwenhuijsen *et al.* in 2018, results showed that risk perception and willingness to cooperate were higher among employees who participated in occupational examinations, which is consistent with our study.<sup>[21]</sup> Similar results were also obtained in the studies conducted by Cheng Chou in 1994 and Obata in 2003.<sup>[22,23]</sup>

In this study, the most important barriers of performing periodic examinations from the perspective of physicians performing examinations were lack of proper cooperation of judicial authorities and lack of timely enforcement of law and taking actions against violating employers in this field, reduced motivation in workers' cooperation due to lack of technical or managerial control measures in previous periods and workers' unwillingness to perform occupational examinations due to fear of consequences and job insecurity in case of disease, respectively. The least important barrier was also the low quality of periodic examinations due to performing it in a short time and without the necessary accuracy. It is clear that physicians performing the examinations are satisfied with the quality of their services as well as the amount of costs they receive from their employers and do not try to improve the quality. However, the study by Won *et al.* 2019, showed the

achievements, problems and future orientation of the quality control program for occupational medicine centers in Korea illustrated that the ultimate goal of the quality control program for occupational medicine centers is to correctly diagnose a worker's health status. This result is not consistent with our findings.<sup>[24]</sup> In a study conducted by Rodriguez-Jareno *et al.* (2015) showed that there are many shortcomings on a scientific basis and feature for health examinations, the quality of collective health monitoring, and the referral of suspected cases to insurance companies for diagnosis and treatment. The mentioned study raises serious concerns about the way of doing health tests in the employee health monitoring system, which should be reviewed to ensure that its occupational prevention goal is met.<sup>[25]</sup>

## CONCLUSION

The most important barrier of performing periodic examinations was reported to be the high cost of doing the examinations from the perspective of the four groups studied. Periodic examinations of employees in clinics covered by the University of Medical Sciences at a lower cost, training workers and employers on the benefits and importance of occupational examinations, and comprehensive and coherent planning to reduce occupational diseases in industries through control of harmful factors are recommended to reduce as possible the most important barriers mentioned. It is recommended for future researchers to consider the role of industry employers in performing occupational examinations, the role of industrial occupational health experts in conducting occupational

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examinations, and investigate other ignored barriers of performing periodic occupational examinations.

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### Ethical issue

The authors certify that this manuscript is the original work of the authors. This article was extracted from a plan approved by the Department of Occupational Health Engineering, School of Health, Kashan University of Medical Sciences (Approval code: 9809) and the ethical code of the Ethics Committee will be IR.KAUMS.NUHEPM REC.1398.007.

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### Conflicts of interest

There are no conflicts of interest.

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