Journal of Environmental Health and Sustainable Development

The Effect of Training Courses on Awareness, Attitude, and Performance of Confectionery, Bakery, and Restaurant Workers in Yazd City

Jalal Sadeghizadeh-yazdi [1,2*], *Zohreh Rahaei* [3], *Zahra Aalipour* [3]

[1] *Department of Food Sciences and Technology, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.*
[2] *Environmental Science and Technology Research Center, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.*
[3] *Department of Health Education, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.*

ARTICLE INFO

ORIGINAL ARTICLE

Article History:
Received: 22 February 2020
Accepted: 20 April 2020

***Corresponding Author:**
Jalal Sadeghizadeh-Yazdi

Email:
j.sadeghizadeh.ssu.ac.ir

Tel:
+983538209100

Keywords:
Education,
Awareness,
Attitude,
Food Handling,
Employee Performance,
Appraisal.

ABSTRACT

Introduction: Health organizations are required to raise people's awareness about foodborne diseases and to control and prevent these diseases. Training courses held by guilds are aimed to enhance food hygiene in the society. The present study was conducted to determine the effect of training courses on the awareness, attitude, and performance of confectionery, bakery, and restaurant workers.

Materials and Methods: In this semi-experimental research, 120 individuals in charge of preparing, distributing, and selling food in Yazd City were selected by random sampling method. The participants' awareness, attitude, and performance levels were measured before and after the training courses using a valid and reliable questionnaire. Data were analyzed by SPSS.16 software using ANOVA statistical tests, pair t-test, Wilcoxon and Kruskal Wallis nonparametric tests.

Results: The mean age of the participants was 31.95 ± 9.57 years. Following implementation of the training courses, the participants' average scores increased significantly in terms of awareness, performance, and attitude ($p < 0.001$). Moreover, education, age, type of responsibility, as well as work experience had a significant relationship with the workers' awareness, attitude, and performance ($p < 0.05$).

Conclusion: Training courses conducted by guilds improved the awareness level of participants, especially bakery operators, enhanced attitude of participants, especially sellers, and improved hygiene performance of the operators in various fields, including food hygiene. Thus, such training courses should be conducted for each profession category and each job position separately. Every businessmen should be required to pass these courses every two years.

Citation: Sadeghizadeh-Yazdi J, Rahaei Z, Aalipour Z. ***The effect of Training Courses on Awareness, Attitude, and Performance of Confectionery, Bakery, and Restaurant Workers in Yazd City***. J Environ Health Sustain Dev. 2020; 5(2): 1021-9.

Introduction

Foods play the key role in maintaining human health and preventing different diseases [1]. In spite of the efforts to provide access to healthy foods, many problems exist related to food corruption and food poisoning in different countries [2]. More than 250 different foodborne diseases have been discovered all over the world, many of which are

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[DOR: 20.1001.1.24766267.2020.5.2.8.5]
[DOI: 10.18502/jehsd.v5i2.3390]

infectious and caused by a variety of bacteria, viruses, and parasites [3]. Food safety measures are widely applied in the United States. Nevertheless, foodborne diseases are still a threat to the health of Americans. In 2017, 24484 cases of infections, 5677 cases of hospitalizations, and cases of 122 deaths were reported in the US [4]. Food poisoning, diseases, and malnutrition leading to obesity, diabetes, high cholesterol, and osteoporosis indicate the great importance of food hygiene [5]. Food hygiene refers to all the criteria that must be observed in the production, process, storage, and supply of food to deliver healthy foods to the consumers [6]. One of the most effective ways to prevent loss of life and property caused by non-compliance with food hygiene issues is education and familiarization of the community with the food hygiene principles. Foodborne diseases can be prevented by modeling and educating people [7]. Individuals' awareness can be improved and their ways of thinking and or behaving can be changed by education [8]. Many studies showed the effect of food hygiene education on improving the awareness and performance of people [9-13]. In 2015, Jeon et al. hypothesized that a comprehensive health education program can promote the health of kitchen and restaurant staff by improving their attitudes and performance [10]. In 2012, Rafiei Manesh et al. investigated the impact of guilds' training courses on the awareness and health performance of supervisors and staff of food preparation and distribution centers. They realized that guild health training courses could enhance the awareness and performance of supervisors and workers of food preparation and distribution centers [11]. Pirsaheb et al. studied the effect of periodic training on the awareness, attitude, and performance of staff working in the food preparation and distribution centers. As they noted, the average score of awareness, attitude, and performance of these people was higher after training, which confirmed the positive effects of periodic guilds training courses [12]. However, many individuals ignore the hygiene rules despite having the necessary knowledge and awareness due to various reasons, such as misconceptions and negligence [13]. Therefore, holding training courses is not enough. In other words, the results and effects of these trainings should be considered both in the short- and long-term. Consequently, the effectiveness of such training courses should be evaluated and the necessary improvements should be made based on the feedbacks [14]. Effective teaching can change the learners' behavior from three aspects of knowledge, attitude, and skill [8].

The major goals of the Ministry of Health are to enhance the public awareness, educate and promote appropriate eating habits, as well as prevent food poisoning and diseases. A way to achieve this goal is to implement the article 13 of the law on food, beverage, cosmetics and health of the Ministry of Health. In this regard, individuals working in food, beverages, and cosmetics industries as well as public places should complete the special public health course prescribed by the Deputy Minister of Health of the Ministry of Health and Medical Education [15]. The confectionery, bakery, and restaurant-related occupations are among the most sensitive occupation classes and their workers should be trained with regard to health issues. So, it is necessary to determine the effect of educational training courses on the knowledge, attitude, and performance of the staff of these industries. Hence, the present study was aimed at determining the effect of guilds training classes on the awareness, attitude, and performance of confectionery, bakery, and restaurant workers in Yazd City, Iran.

Materials and Methods

This semi-experimental interventional study was conducted using pre-test and post-test method in 2019.

The sample size was calculated considering the significant level of 5%, the test power of 80%, the standard deviation rate δ = 2.5, the estimated error of 10%, the difference between the average awareness score in the two groups of intervention and control with at least 2 scores and also according to previous studies [16] (N = 120).

The study population included all food workers in Yazd City and the sample consisted of people

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working in confectionery, bakery, and restaurant industries in Yazd.

The samples were randomly selected from workers, vendors, and supervisors in confectionaries, bakeries, and restaurants. Owners and employees of the confectionery, bakery, and restaurant guilds of Yazd were introduced to the guilds health education courses to pass the training courses. Participation in the study was voluntarily and those who did not want to cooperate were excluded. To collect the data, a valid and reliable questionnaire used in similar studies was employed [17]. Cronbach's alpha method was used to calculate the internal coordination of measurement tools, including questionnaires or tests measuring different traits. In such tools, the answer to each question may have different numerical values. Content validity is a type of validity commonly used to investigate the components of a measurement tool. The reliability coefficient of the questionnaire in this study was calculated as 0.928 using Cronbach's alpha. The questionnaire consisted of four parts. The first part included the demographic variables including gender, age, work experience, type of business, type of responsibility, and level of education. The second part included 36 questions concerning awareness assessment. The questions were of yes/no multiple-choice types. A score of zero was given to each incorrect answer and a score of one was given to each correct answer. The total attainable score was 59 that showed high levels of awareness. The third part contained six questions in determining the attitude that was designed based on a 5-point Likert scale; strongly agree, agree, no idea, disagree, and strongly disagree. After aligning the answers, scores of 1-5 were given to each question, and the mean scores were obtained based on the sum of the total scores of the questions. Hence, the attainable scores ranged from 6 to 30. In the fourth section, four questions were considered to obtain an participants' health performance. The participants' performance assessment criteria were based on the regulations of article 13 of the law on food and cosmetics. In this regard, an environmental health expert helped us in completing and assessing this questionnaire (scope of total scores ranged between 0 and 20).

To conduct this study, the necessary coordination was made with the experts of the Deputy Minister of Health, the names of the people with business licenses were randomly extracted, and their work address and phone number were recorded. In coordination with the guild health education institutes, the participants' knowledge, attitude, and performance were evaluated 10 days before the training course; the researcher referred to the workplace of the individuals to complete the questionnaire. After obtaining the participants' consent forms, they were ensured about confidentiality of the information. Participants were also provided with some explanations about the study goals and method. Later, the questionnaires were administered. Subsequently, a 40-hour educational intervention (in eight 5-hour sessions) was conducted for the participants by a group of experts in the field of health sciences at the guild health education institutes. Each training course included 30 people and provided information on the general principles of public health, personal health, food hygiene laws, water hygiene, water and foodborne diseases, environmental optimization, occupational tools health, etc. One month after the training course, the researchers referred to the participants' workplace without prior notice and re-administered the same questionnaire to evaluate the effect of training intervention on the knowledge, attitude, and performance of individuals. Data analysis was performed by SPSS software using ANOVA statistical tests, Paired t-test, and Kruskal Wallis, Wilcoxon nonparametric test. P-value ≤ 0.05 was considered as the significant level in all calculations. It is noteworthy that the normality of the data was evaluated according to Kolmogorov-Smirnov's test. In terms of ethical standards, all participants participated in the training course with prior knowledge and full satisfaction.

Results

The mean age of participants was 31.65 ± 9.57 years and the highest number of participants (n = 68) had less than five years of work experience (56.66%). Demographic information of the participants showed that 70.83% were male

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and 75 people (62.5%) were employed in restaurants. More than half (55%) of the studied population worked as laborers and the highest level of education was related to high school graduates (33.38%) (Table 1).

Table 1: Demographic information of confectionery, bakery, and restaurant staff in Yazd

Variable	Gender		History of work by year			Type of guild			Type of responsibility			Literacy rate				
Grouping	Male	Female	< 5	5-15	>15	confectionery	Bakery	Restaurant Owner	worker	Seller	Supervisor	illiterate	Primary	School	High School	Collegite
Number	85	35	68	44	8	29	16	75	66	25	29	2	12	20	46	40
Percent	70.83	29.16	56.66	36.66	6.66	24.16	13.33	62.50	55.00	20.83	24.16	1.66	10.00	16.66	38.33	33.33

The results revealed that after implementation of the training courses, the overall average score of awareness significantly increased from 30.81 ± 11.09 to 40.65 ± 10.70 (p-value = 0.001) (score range of 0-59). In terms of attitude, the attainable scores ranged from 6 to 30. At the end of the training course, the average score for attitude increased significantly from 25.60 ± 3.87 to 25.81 ± 5.61 (p-value = 0.01). Before training, the performance score was 13.30 ± 1.49 that increased significantly (p-value = 0.001) and reached 16.2 ± 1.09 after the intervention. In this section, the score range was 4-20 (Table 2).

Table 2: Mean and standard deviation scores of confectionery, bakery, and restaurant staff in Yazd before and after training

Score	Mean ± SD		p-value*
	Before training	After training	
Awareness	30.81 ± 11.09	40.65 ± 10.70	0.001
Attitude	25.60 ± 3.87	25.81 ± 5.61	0.010
Performance	13.30 ± 1.49	16.20 ± 1.09	0.001

*Paired t-test & Wilcoxon nonparametric test

At the end of the training course, the results revealed that the average performance score of food preparation and sales operators in the field of food hygiene (p-value = 0.0001), environmental optimization (p-value = 0.0001), personal hygiene (p-value = 0.0001), and occupational tools health (p-value = 0.0001) significantly increased compared to these scores before training. Table 3 presents a comparison of the mean scores.

Table 3: Mean and standard deviation performance score of individuals in the studied population before and after training

Performance questions	Mean ± SD		p-value*
	Before training	After training	
Food hygiene	14.20 ± 1.67	18.90 ± 2.09	0.0001
Reform of the environment	12.90 ± 1.41	15.20 ± 1.98	0.0001
Individual hygiene	13.40 ± 1.51	16.80 ± 1.36	0.0001
Plant hygiene	12.70 ± 1.37	13.90 ± 1.65	0.0001

*Wilcoxon nonparametric test

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The results indicated that among the guilds, the highest increase in the average score was related to bakers (before: 18.13, after: 36.66) and this increase was statistically significant (p-value = 0.021). Moreover, in spite of the significant increase in awareness of all participants, this increase was more considerable in sales operators (before: 27.61, after: 40.38) and statistically significant (p-value = 0.001). Furthermore, people with work experience of 5 to 15 years had the highest significant increase in the average awareness score compared to others (p-value = 0.035), with an average awareness score of 32.20 before training course that increased to 43.00. Even though the average awareness score before training in people under the age of 25 years was lower than others, we realized that education had the highest impact on these people (p-value = 0.001). Moreover, the highest increase in the average awareness score in the level of literacy was related to employees with high school degree (p-value = 0.001).

The average score of attitude in all employees increased in all variables; however, this increase was more significant among sales managers (p-value = 0.041).

Given the average performance scores, it was realized that education had the most significant impact on bakers (p-value = 0.02), salespersons (p-value = 0.041), those with less than five years of work experience (p-value = 0.001), the age group of less than 25 years (p-value = 0.001), and those with secondary school education (p-value = 0.001) (Table 4).

Table 4: Comparison of the mean scores of awareness, attitude, and performance among different groups of confectionery, bakery, and restaurant staff in Yazd

scores		Literacy rate				Type of business			Type of responsibility			age by year			History of work by year		
		Primary	School	High School	Collegiate	confectionery	Bakery	Restaurant Owner	Worker	Seller	Supervisor	< 25	25-35	> 35	< 5	5-15	> 15
Awareness score	Before training	37.33	26.75	27.92	35.64	28.83	18.33	29.00	29.00	27.61	37.46	26.00	31.56	34.96	30.54	32.20	34.94
	After training	40.50	35.08	42.16	42.41	34.50	36.55	38.90	38.90	40.38	44.60	40.57	38.21	43.83	40/18	43.00	43.83
*p-Value		0.561	0.067	0.001	0.029	0.340	0.021	0.010	0.001	0.001	0.042	0.001	0.019	0.007	0.001	0.035	0.007
Attitude score	Before training	24.50	25.16	24.88	26.70	25.00	24.00	23.93	24.58	24.92	27.53	25.00	25.26	26.46	25.18	27.70	26.06
	After training	25.00	26.08	26.56	27.58	25.83	25.33	24.96	24.93	27.30	28.53	26.36	26.17	26.95	26.28	27.90	26.65
**p-Value		0.317	0.612	0.540	0.242	0.560	0.540	0.550	0.410	0.041	0.220	0.169	0.933	0.750	0.053	0.236	0.750
Performance score	Before training	14.33	12.58	13.08	13.76	13.33	12.00	13.25	13.25	12.53	14.06	12.73	13.39	13.77	13.24	13.60	13.77
	After training	15.00	16.08	16.24	16.58	15.66	16.00	15.90	15.90	16.30	16.66	16.26	15.91	16.44	16.20	16.10	16.44
**p-Value		0.666	0.001	0.001	0.001	0.040	0.020	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.044	0.001

*ANOVA

**Kruskal Wallis

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Discussion

Educational courses may play a significant role in decreasing foodborne disease [7]. However, conducting training courses with no follow-up to evaluate its short- and long-term effects is not useful [14].

In 2010, Ansari Lari et al. assessed the awareness, attitude, and performance of workers in meat processing plants. They used the data from a researcher-made questionnaire and realized that workers had acceptable levels of awareness, excellent attitudes, and poor performance in food hygiene standards. A negative but significant correlation was found between awareness and performance as well as attitude and performance, indicating that increased awareness and attitudes toward food safety did not always result in positive changes in food-related behaviors. The reason for the inconsistency of our results with the above-mentioned study may be related to several factors like age, gender, literacy level, work experience, as well as the type of responsibility [13].

The results of the present study suggested that after training, the average score of performance increased in all guilds; while in the study by Heydari et al. in 2010 training could change people's awareness and performance significantly. Heydari believed that this could be due to improper training methods, insufficient time, or not applying the issues taught during the inspection by inspectors [16].

Contrary to the results of the study by Karimi et al. [18] in 2002, results of the present study revealed that the average score of awareness and performance increased in all guilds after training. However, its impact on the bakery guild was statistically significant and higher than other guilds. Perhaps longer training courses and different working conditions of the bakers made this difference. However, holding more specialized training courses may increase the awareness, attitude, and performance of employees in different guilds, especially the bakery.

The average awareness scores revealed that education had a significant impact on people working in sales position, having high school education, being under 25 years of age, and having higher work experience. On the contrary, results of the study by Banaiy-Qahfarokhi et al. showed a decreased level of awareness with increase of age and working experience, but a significant increase in the level of awareness and performance with increase of education. The difference between the research results reported by Banaiy-Qahfarokhi et al. can be related to the design of the questionnaire and the scope of the evaluated guilds [19].

The results of a study by Khatib et al. over the awareness, attitudes, and performance of the personnel working at food preparation and distribution centers indicated that the level of awareness was significantly related to the participants' education level and job position. Similar to this study, in spite of the change in awareness of the participants, no difference was observed in their attitude and performance [20]. Of course, increased attitudes after training have been more pronounced in people with lower literacy levels and younger age groups, besides those with less work experience.

Furthermore, findings reported by Tavakoli et al. showed a significant difference in level of awareness between military personnel with a university degree and staff with a non-academic degree. In other words, people with higher levels of literacy had greater levels of awareness in observing the rules of appropriate nutrition. Of course, this difference was not significant in the attitude and performance of these participants. In addition, a strong and positive correlation was observed between the participants' awareness and attitude [21]. Even though the average attitude score in our study is somewhat different from the above-mentioned findings, it can be claimed that training improves attitude. However, nutrition awareness cannot affect the individuals' nutritional performance and other factors such as physiological needs, access to food, mass media, and particularly food preferences can affect a person's nutritional performance [22].

In 2017, Iwu et al. assessed the awareness, attitude, and performance of food vendors about food hygiene in the state of Imo in Nigeria. They realized that most respondents had good awareness

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(81%) and positive attitude (71%) towards the food hygiene and only 37% of the respondents had good health performance. The differences between the results of Louis Chindo et al. and the present study seem to be related to the performance of the studied population. The researchers assessed all food delivery centers, from hotels to itinerant vendors, which could have different performance depending on the type of provided services and the type of food [23].

In 2012, Noor-Azira et al. assessed the awareness, attitude, and performance of workers at Kuala Pilah restaurants in Malaysia. They reported that training had a significant correlation with awareness, attitude, and performance of restaurant workers. Consistency of these results with our research findings indicates that it is better to provide specific food hygiene training courses for each occupational class since food service providing requires different necessities in different occupations [24].

Cates et al. evaluated the relationship of the type of restaurants' inspections and violations with the presence of an expert kitchen manager. They realized that restaurants with an expert manager at the time of inspection were significantly less likely to have violating personnel, food sources, processing equipment, and washing systems. In other words, training increased the staff's health habits [25]. Moreover, the findings of this study revealed that a regular training system may play a significant role in raising the individuals' level of awareness. After the training, scores of the learners improved significantly in all measured dimensions of awareness, attitude, and performance. In addition to encouraging people to have healthy habits, such educational courses can decline the risk of foodborne diseases. Thus, the implemented training course was generally effective and useful for the above-mentioned guilds.

The study by Liu et al. indicated that training programs might increase awareness, attitude, and performance among participants; however, to achieve this goal, training must be more selective and specialized [26]. The results of this study confirmed the positive effects of education, age, job position, and work experience on the training of employees in the above-mentioned guilds. So, holding separate training sessions in terms of the participants' job position, literacy level, work experience, and age is recommended. In addition, it is essential to use educated and experienced people with enough work experience for sensitive and effective tasks with regard to health quality of foods.

Conclusions

Guilds training courses have a special impact on improving the individuals' awareness (especially the bakery guild), attitude (especially sellers), and health performance (of those working in various fields, including food hygiene). In this regard, we suggest professional educational courses in each guild for each job position every two years. One of the limitations of the present study was impossibility of comparing the impact of guild training courses on the trained and untrained individuals due to the lack of a control group. Furthermore, the impacts of these educational courses was evaluated in the short term and self-report questionnaires were applied for data collection.

Acknowledgments

We thank all people who helped us in conducting this research, especially the participants and experts of environmental health engineering (Akram Mohammadnejad and Najmeh Hosseini).

Funding

There were no funding sources for this study.

Conflict of interest

The authors have no conflict of interest regarding this article.

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