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Evaluating the Participation Ratio of Dental Assistants Working in Dentistry Centers of the City of Ahvaz in Southwest Iran in Infection Control Educational Courses

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ABSTRACT

In spite of extensive progresses in respect of infection control during recent years, many problems are still observed in the faculties, private and public healthcare centers. Thus, this study has been performed in order to evaluate the participation ratio of dental assistants working in the dentistry centers of the city of Ahvaz in southwest Iran in the infection control educational courses in 2015.This study has been performed descriptively and analytically in a six months period from October 2015 to March 2016. The statistical population is the dental assistants working in the private and public dentistry centers in the city of Ahvaz, that 217 of them were selected in a stratified random way. The performance of dental assistants about infection control was evaluated by researcher made questionnaire. The data was analyzed by SPSS 21 software. Among the total dental assistants participating in the study, 98.1% were female and 1.9% were male. In respect of workplace, 69% were working in private clinics, 29.6% in personal clinics, and 1.4% in public clinics. Their performance about infection control was not satisfactory. About participation in the infection control educational program, 199 people (91.7%) had responded "no" and 17 people (7.9%) responded "yes". The results of study showed that the dental assistants' awareness, attitude, and performance are not still adequate and more training along with exact monitoring is required in this regard.

Keywords: Educational Courses, Dental Assistants, Infection Control, Iran

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INTRODUCTION

Training human resources results in breeding people's talents, promoting methods and skills of performing work, learning knowledge, job skills increase, and preventing cost waste for the organization.[1-2].In order to increase the Dental Assistants learning and health level, hygienic environmental factors (color, light, open space, noise, chairs, etc.) should be considered in order to the content of Staff in-service Training. [3-8]. In spite of extended progress in respect of infection control during recent years, many problems are still observed in the faculties, and private and public healthcare centers. One of the concerns of practitioners and decision makers in the oral health domain and issues related to it is to prevent disease transmission to the patients, physicians, healthcare staff and treatment surrounding, the point mentioned in the medical and dentistry topics as infection control [9]. The concerns about infection control in dentistry increased seriously when HIV transmission from an American dentist to his five patients had been reported [10]. The existence of patients suffering Hepatitis B and C has changed the infection transmission to a great concern and problem for dentists and assistants, and even the client patients [11]. Those who need blood injection continuously are more exposed to the transmission of these infectious diseases [12]. According to ABHES dental assistant is one who has been trained about dental techniques, and simultaneously is able to perform the required administrative works of clinic. The above definition includes a range of emergency cares of

patient, common works in a dentistry clinic, and also performing laboratory works in a clinic such as preparing material for moldings, pouring plaster in taken molds, and also contacting with dentistry laboratories. He/she always performs duty beside the dentist directly or indirectly. An assistant helps in taking vital signs of a patient, writing medical and dentistry record, preparing the patient for performing clinical examinations or surgical operations by dentist, and in general treatment processes by the dentist. Dental assistant is able to take radiography photos and processing them, and also preparing materials and injections. He/she who has been trained well about the processes of disinfecting and sterilization of devices, also informs the patients about the necessary instructions after performing dentistry treatments [13]. Infection control is one of the most important discussable topics and among the priorities in the dentistry that is related to the health of dentists, assistants, and patients [14]. Dentistry clinic is an environment in which infectious diseases transmission occur easily. Infection is created when the microorganisms enter the body, and are replaced in an appropriate place and begin reproduction. In some patients, there is a specific sensitivity towards infection with various microorganisms such as aerobic bacteria in individuals with a history of rheumatic heart disease, endocarditic, mitral valve prolapsed, artificial heart valve, or joint prostheses in dentistry environments [15]. Prevention of cross infection in the dentistry clinic is a basic issue in dentistry profession. All the staffs of dental health should be aware of the basic principles of disease transmission and safety to reduce the risks of exposing to dangerous factors. All health workers when facing with dangerous cases are required to be trained about infection control. Risk reduction includes applying policies and methods that reduce the risk of professional contact with blood diseases [16]. There are reports about the transmission of various infections in some dentistry clinics [10-11]. Valiollahi et al. performed a research entitled as "The correspondence ratio of public dentistry centers of Tehran with desired criteria of infection control and the factors impacting on it" in 2006. This study was performed on 74 public centers of the south and southwest of Tehran by a list of investigation including 10 axes and 141 indicators of infection control through direct observation, that 16.2 percent of centers were located under expectation limit, 81.1 percent at medium limit, and only 2.7 percent at desirable limit. In this research, having specialty of dentists, their membership in the board of the academic members of university, and the centers being stationed in the university hospitals had significantly role in the centers' trend towards desirability [17]. In the study of Hudson Davies et al. performed in England in 1995, only 12 percent of the employees of dentistry wards had participated in the infection control retraining courses [17].The field of dentistry is among the most important fields with high applicant volunteers for entering the university in Iran [19-22]. An increase in the infectious and dangerous diseases all over the world has aroused the attention of the people of world, and has made observing special principles essential for all staff working in the healthcare service units. Since the infection control is among the most important priorities of dentistry profession that is related to the health of dentists, assistants, and patients, and the awareness ratio of dental assistants with the infection control process has high impact on the promotion of current status towards the desired status, thus this study has been performed to evaluate the awareness and performance ratio of dental assistants working in dentistry centers of the city of Ahvaz in southwest Iran, about infection control in 2015.

MATERIALS AND METHODS

This cross-sectional study has been performed in a six months period from October 2015 to March 2016 descriptively and analytically. The statistical population is dental assistants working in public and private dentistry healthcare centers in the city of Ahvaz, in southwest Iran, that 217 of them have been performed based on the similar previous studies and the number of dentistry centers of the city of Ahvaz, and by using 95% confidence level, according to the following formulas:

$$n = \frac{z^2_{1-\propto_{cc}} p_1 - pj}{d^2}$$

$$n = \frac{(1.95)^2 \times 0.5 \times 0.5}{(0.07)^2} = \frac{3.84 \times 0.25}{0.0049} = 193$$

The list of dentistry centers was inquired from Ahvaz Medical Council Organization, and was considered as a framework for sampling. Data collection was performed through a researcher made questionnaire. The questions of questionnaire had been arranged in three categories. The first part was related to the personal characteristics such as age, gender, work experience years in this job (five questions), the second part was related to the dental assistants' performance about infection control including questions such as using protective devices like gloves, using disinfecting devices, types of the methods of disposing materials and infectious and contaminated devices, and also questions about the sterilization of devices against diseases, referring to the physician after the occurrence of events, the way of washing hands, methods of maintaining and storing devices and other cases that the assistants should implement the answer of these questions in a practical and applied way in their work (20 questions). The answers to the questions of one to five should be given shortly, and the questions 6 to 25 were in multiple-choice form, that for each correct answer one positive score, and for each wrong answer a zero score was considered. If the respondent's

score is from zero to five, it was located in the weak group, if it is from six to fifteen, it was located in the medium group, and if it is from sixteen to twenty-five, it was located in the good group. The validity of this questionnaire was confirmed by using the viewpoint of experts such as dentistry specialists and the infectious disease specialists and medical education specialists of Ahvaz Jundishapur University of Medical Sciences, and its reliability was proved with 0.95 Cronbach's alpha coefficient. Performance means implementing awareness in doing the work. The questionnaires were given to the assistants through attending at public and private healthcare centers and personal clinics of dentists and by coordinating with the managers of these centers to answer the questions lonely in certain time period specified in the answer sheet (25 minutes).Having collected the responded questionnaires, the data was analyzed by using SPSS software version 21.Moreover, the required ethical considerations such as attracting the satisfaction of people questioned, and ensuring them that the confidentiality of their viewpoints in this research has been observed, were given.

RESULTS

According to table 1 among the total dental assistants participating in the study, 1.9% were male and 98.1% were female. In respect of workplace, 69% were working in the private clinics, 29.6% in the personal clinics, and 1.4% in the public clinics. Based on the total assistants participating in the study 71 people (32.9%) had 3-4 years work experience, 60 people (27.8%) had 0-2 years work experience, 50 people (23%) had more than 6 years work experience, and 35 people (16.2%) had 5-6 years work experience, and 71 people (32.9%) had 3-4 years work experience. The mean of the employment experience of assistants has also been 4.235± 2.692 years. Among the total assistants participating in the study 129 people (59.7%) were working 3.1-6 hours, and 64 people (29.6%) were working 6.1-9 hours. The mean number of working hours of assistants has also been 2.217±6.604 hours. According to table 2, among the total assistants participating in this study, 199 people (91.7%) responded "no", and 17 people (7.9%) responded "yes" about participating in infection control educational program.

Table 1: Demographic Information of Dental Assistants under Study

		Frequency	Percent	Reliable Percent
Gender	Male	4	1.8	1.9
	Female	212	97.7	98.1
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	
Marital Status	Single	143	65.9	66.5
	Married	72	33.2	33.5
	Total	215	99.1	100.0
Missed Data	System	2	0.9	
Total		217	100.0	
Workplace	Private clinic	149	68.7	69.0
	Public clinic	3	1.4	1.4
	Personal clinic	64	29.5	29.6
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	
Work Experience (Year)	0-2	60	27.6	27.8
	3-4	71	32.7	32.9
	5-6	35	16.1	16.2
	>6	50	23.0	23.1
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	
Working Hours	0-3	1	0.5	0.5
	3.1-6	129	59.4	59.7
	6.1-9	64	29.5	29.6
	>9	22	10.1	10.2
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

Table 2: Frequency Distribution of Assistants Participating in Infection Control Education Program

Participation Ratio of Assistants Participating in Infection Control Education Program	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Yes	17	7.8	7.9
	No	199	91.7	92.1
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 3 among the total assistants participating in this study, 158 people (73.1%) responded “always” and 36 people (16.7%) responded “often”, and 15 people (6.9%) responded “rarely”, and 7 people (3.2%) responded “never” about using gloves for washing devices before sterilization.

Table 3: Frequency Distribution of Using Gloves for Washing Devices before Sterilization

Frequency of Using Gloves for Washing Devices	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Always	158	72.8	73.1
	Often	36	16.6	16.7
	Rarely	15	6.9	6.9
	Never	7	3.2	3.2
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 4 among the total assistants participating in this study, 37 people (17.1%) responded “always” and 36 people (16.6%) responded “often”, and 70 people (32.4%) responded “rarely”, and 73 people (33.8%) responded “never” about using mask for washing devices before sterilization.

Table 4: Frequency Distribution of Using Mask for Washing Devices before Sterilization

Frequency of Using Mask for Washing Devices	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Always	37	17.1	17.1
	Often	36	16.6	16.7
	Rarely	70	32.3	32.4
	Never	73	33.6	33.8
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 5 among the total assistants participating in this study, 170 people (78.7%) responded “always” and 18 people (8.3%) responded “often”, and 11 people (5.1%) responded “rarely”, and 17 people (7.8%) responded “never” about using gowns for washing devices before sterilization.

Table 5: Frequency Distribution of Using Gowns for Washing Devices before Sterilization

Frequency of Using Gowns for Washing Devices	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Always	170	78.3	78.7
	Often	18	8.3	8.3
	Rarely	11	5.1	5.1
	Never	17	7.8	7.9
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 6 among the total assistants participating in this study, 28 people (13.0%) responded “always” and 19 people (8.8%) responded “often”, and 49 people (22.7%) responded “rarely”, and 120 people (55.6%) responded “never” about using eyeglasses for washing devices before sterilization.

Table 6: Frequency Distribution of Using Eyeglasses or Shield for Washing Devices before Sterilization

	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Always	28	12.9	13.0
	Often	19	8.8	8.8
	Rarely	49	22.6	22.7
	Never	120	55.3	55.6
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 7 among the total assistants participating in this study, 120 people (55.6%) responded “no” and 96 people (44.4%) responded “yes”, about doing every three stages of vaccination against Hepatitis B.

Table 7: Frequency Distribution of Doing Every Three Stages of Vaccination against Hepatitis B by Participant Assistants

	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Yes	96	44.2	44.4
	No	120	55.3	55.6
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 8 among the total assistants participating in this study, 185 people (85.6%) responded “no” and 31 people (14.4%) responded “yes”, about investigating antibody titer after completing vaccination stages of Hepatitis B.

Table 8: Frequency Distribution of Investigating Antibody Titer after Completing Vaccination Stages of Hepatitis B by Assistants

	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Yes	31	14.3	14.4
	No	185	85.3	85.6
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 9 among the total assistants participating in this study, 185 people (85.6%) responded “no” and 31 people (14.4%) responded “yes”, about referring to the physician after being injured by contaminated dentistry devices.

Table 9: Frequency Distribution of Referring to the Physician after Being Injured By Contaminated Dentistry Devices by Assistants

	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Yes	26	12.0	12.0
	No	180	82.9	83.3
	Other cases (Please Explain)	10	4.6	4.6
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 10 among the total assistants participating in this study, 113 people (52.3%) responded “at home and separated from other clothes”, 55 people (25.3%) responded “in the clinic”, 40 people (18.5%) responded “giving to laundry”, and 8 people (3.7%) responded “at home and along with other clothes” about the place of washing contaminated gowns.

Table 10: Frequency Distribution of the Place of Washing Contaminated Gowns of the Assistants under Study

	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	At home and along with other clothes	8	3.7	3.7
	At home and separated from other clothes	113	52.1	52.3
	In the clinic	55	25.3	25.5
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

According to table 11 among the total assistants participating in this study, 107 people (49.5%) responded “yes” and 104 people (48.1%) responded “no”, about doing vaccination against Hepatitis B.

Table 11: Frequency Distribution of Assistants’ Vaccination against Hepatitis B

	Type of Answer	Frequency	Percent	Reliable Percent
Reliability	Yes	107	49.3	49.5
	No	104	47.9	48.1
	I do not know	5	2.3	2.3
	Total	216	99.5	100.0
Missed Data	System	1	0.5	
Total		217	100.0	

DISCUSSION

In general, and with regard to the results of this research, the performance of dental assistants working in dentistry centers of the city of Ahvaz in southwest Iran was not satisfactory in respect of infection control. In this research, among the participant assistants 199 people (91.7%) responded "no", and 17 people responded "yes" about participating in the infection control educational program. In the study of Valillahi et al. (2009), the correspondence ratio of the education of employees and patients in the centers under study with desirable criteria was 27.01 percent. In their research, having specialty of dentists, their membership in the board of the academic members of university, and the centers being stationed in the university hospitals had significantly role in the centers' trend towards desirability [17]. In the study of Hudson Davies et al. performed in England in 1995, only 12 percent of the employees had participated in the infection control retraining courses [18]that corresponds with this research. In the study of Mustafa et al. (2015), 70% of assistants had participated in the training course [23]. that does not correspond with this research. In the study performed by Singh et al. (2011) in India on the ratio of information, performance, and attitude of dentistry students, 61.2 percent of students had never been vaccinated against Hepatitis B. The students' awareness level about infection control was also very low, and was not satisfactory, the reason of which can be attributed to the inadequacy of training about infection control that corresponds with this research [24]. In the study of Geramipanah and Monzavi (2003), 80% of assistants did not pass the oral health course work that corresponds with this research [25].

Wearing gloves is an important protective barrier to prevent cross contamination; carelessness in the use of dentistry instrument results in tear or hole in the gloves or cuts in hand, that in such cases the risk of high suffering of cross contamination exists [24]. Among the total assistants participating in this study 73.1% responded "always", 16.7% responded "often", 6.9% responded "rarely", 3.2% responded "never" about using gloves for washing devices before sterilization. In the study of Mutters et al. (2014) 100% of the dental assistants were using gloves during dental works, and 71.4% were changing their gloves between various works or contacting with the patients[26].

Among the total assistants participating in this study 33.8% responded "never", 32.4% responded "rarely", 17.1% responded "always", 16.6% responded "often" about using mask for washing devices before sterilization. In the study of Mutters et al. (2014) 89.3% of dental assistants were using mask during dental works [26].

Protecting the eyes to minimize the transmitting viruses such as HCV and HBV to the conjunctivas is necessary. The eyes can be protected by eyeglasses that ideally have plastic shield and unbreakable lenses [27]. Among the total assistants participating in this study, 55.6% responded "never" 22.7% responded "rarely", 13.0% responded "always" and 8.8% responded "often" about using eyeglasses for washing devices before sterilization. In the study of Mutters et al. (2014) 89.3% of dental assistants were using eyeglasses during dental works [26].

Among the total assistants participating in this study, 49.5% responded "yes" and 48.1% responded "no" about doing vaccination against Hepatitis B. Considering strict recommendation of WHO, all referring patients should be regarded infectious [25]. Considering the increasing enhancement of those suffering infectious diseases, and regarding the issue that all infectious patients can be diagnosed with regard to the history, examination, and laboratory tests, all patients should be considered infectious and the infection control principles should be implemented seriously [26].

In the study of Sabohi et al. (2015) about vaccination against Hepatitis B, 26.3% of the general dentist and assistant had been vaccinated against Hepatitis B in the private clinic and13.5% in the clinic, and 40.9% of professional dentist and assistant had been vaccinated against Hepatitis B [28]. In the study of Monarca et al. (2000) 30% of the staff of dentistry clinics were not vaccinated against Hepatitis B [29]. In the study of Mahdipour et al. (2007), 69% of dental assistants and secretaries were vaccinated against Hepatitis B [30]. In the study of Singh et al. (2011) in India on the ratio of information, performance, and attitude of dentistry students, 61.2 percent of the students of professional dentistry courses were not vaccinated against Hepatitis B at all. Among the total assistants participating in this study about investigating antibody titer after completing Hepatitis B vaccination stages, 185 people (85.6%) responded "no", and 31 people (14.4%) responded "yes" [24]. In the study of Kakoie et al. (2007) 43.6% of dentists had investigated their antibody titer after completing Hepatitis B vaccination [31]. In a study, Al-Ruhaimi (1991) showed that only 25.5% of dental assistants were vaccinated against Hepatitis B [32]. Considering that the immunogenicity ratio of HBV vaccine in the best circumstances has been mentioned 96%, it is better to determine antibody titer after vaccination. In spite of the favorability of vaccination against HBV among the dentistry staff, a large number of them still do not have much awareness about the importance of serologic test after vaccination [31]. Thus, the importance of training antibody titer measurement in the faculties and retraining courses is confirmed.

The probability of suffering Hepatitis B, compared with AIDS following needle stick contaminated with blood has been reported 6-30 percent, that compared with AIDS which the transmission probability is 0.29, is very high [31]. However, among the total assistants participating in this study 85.6% responded “no”, and 14.4% responded “yes” about referring the physician after being injured by contaminated dentistry devices.

CONCLUSION

Regarding the weak performance of dental assistants about infection control, it is suggested to hold in-service training courses and workshops or continuous theoretical and practical retraining courses of infection control formally by awarding degree, or informally along with exact monitoring for dentists, dental assistants, and service providers of dentistry centers at their awareness and education level. The recruitment condition and using dental assistants in the public and private sections and personal clinics should be having educational certificates of skill about infection control.

LIMITATIONS

In this research the data has been collected based on the questionnaire and self-assessment that is based on the viewpoints of dental assistants themselves. However, to obtain more accurate information, the researcher should have referred to the dentistry centers and observed the behavior and actions of statistical sample. Therefore, the responses might not be reflecting the real awareness and performance level of assistants, and might be less than the real limit. The real awareness and performance of the respondents cannot be shown solely based on this limited number of questions either. Of course it was tried to design questions as minimum as possible, so that the ratio of people’s participation in the study increases, that it seems that the researcher has reached his goal in this respect.

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