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Evaluation of the knowledge toward communicable diseases prevention among health workers at In Al-Sadr Medical City in Najaf Governorate\ Iraq

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***Abstract*---**Communicable diseases represent a severe burden on human life, so control and prevention are essential to maintaining the sustainability of life. Health workers are the first line of defense against these diseases. Poor knowledge and wrong attitudes of health workers can negatively affect efforts to combat infection. The study aims to evaluate the knowledge levels among health workers toward communicable diseases. Also, determine the relationship between dependent and independent variables with participants' levels of knowledge. A cross-sectional analytical study in Al-Sadr Medical City, Najaf Governorate, from mid-November 2021 to the end of June 2022. On 384 health workers who were using a randomly collected self-questionnaire, the data was collected and analyzed using a statistical program. The main results indicate that (66.1%) of the participants are females, the majority of the age group (20-26) years, half of them are married and hold a bachelor's degree, (66.4%) have less than five years of experience, and (35.9%) receive a training course, In terms of profession, (27.3)% were nurses. The results show that (57.2%) had

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good overall knowledge. it was found that there is a significant relationship between knowledge and training sessions, as for other socio-demographic characteristics, there is no significant association with both knowledge. The study concluded that more than half of the health workers had good levels of knowledge and positive attitudes, and therefore these levels need to be raised through continuous training courses on infection control by local officials, where we concluded that there is an important relationship between knowledge and training courses. In addition, most health workers are young and have a few years of experience in practicing the profession, which found a statistically significant relationship with the educational level.

***Keywords*---**knowledge, health workers, communicable diseases, cross-sectional.

Introduction

Communicable diseases are diseases that are spread between people from one individual to another directly or indirectly which cause infection are microorganisms in/on the human body (pathogens) certain such as bacteria, viruses, parasites and fungi or their toxic products that are transmitted between people through contaminated foods and surfaces, insect bites, blood products, or coughing into the air (1). Communicable diseases have been considered since before and to this day in the world a serious burden on the public health of all humankind. Despite the great development in knowledge and methods of control and prevention, as well as the discovery of treatment of infectious diseases, but they are still among the main causes of disease, death and economic decline for millions of people, especially in developing countries (2).

According to the World Health Organization (WHO)/ International Labour Organization (ILO), healthcare workers are all people who participate in activities aimed at improving health, including those who perform health care, such as doctors, nurses, laboratory technicians, pharmacists and others (3). Health workers play a significant role in providing disease prevention, diagnosis, treatment, and care for sick people, and they have a duty to protect patients and visitors from infection while working in hospitals or primary health care centers. Through maintaining a healthy, infection-free environment. (4).

Therefore, health workers are exposed to several occupational hazards during their work in health institutions, including biological, ergonomic, chemical, physical, violence and stress (5). Based on the above, health workers expend the utmost of their time caring for the patients. So, they should have a good level of knowledge and attitudes toward infectious disease control and prevention in healthcare facilities (6).

The WHO estimated that from January 2020 to May of the following year, about (180,000) health workers lost their lives due to COVID-19 in a short time, a serious scenario that threatens all health workers(7). Furthermore, it is estimated that about (35,000,000) health care workers in all countries of the world have

been suffered from infections acquired in hospitals, and about (3,000,000) are exposed to viruses that blood-borne transmitted each year (2,000,000 HBV and 900,000 hepatitis C also, 300,000 HIV). According to the WHO estimates, about 37,000 deaths among health workers in Europe alone, while in American health care places, it amounted to about 99,000 deaths, (8). Increasing knowledge about infection prevention and disease mode of transmission is a necessary and important initial step in developing and implementing successful infectious disease infection control programmers (9), as well as raising awareness and strengthening national disease control systems in order to reach a better state and reduce local speed. Disease outbreaks and prevent them from turning into a global pandemic.

Methodology

A cross-sectional analytical study was conducted to achieve the aims of the study that has been conducted in Al-Sadr Medical City, Najaf Governorate, from mid-November 2021 to the end of June 2022. On 384 health workers (sample size) who were using a randomly collected self-questionnaire, the data was collected and analyzed using a statistical program.

Data Collection

Data were collected randomly using a self-administration questionnaire (the Arabic model) on the prevention of infectious diseases by health workers in hospitals. The sample size in this study was (384), Al-Sadr Medical City was divided into 16 departments, starting from the emergency hospital and ending with the dialysis unit, where the share of each unit was 24 questionnaires.

Questionnaire preparation

The questionnaire was adapted from (10), after the questionnaire was modified according to the supervisors' assessment, then it was given to (15) experts in various specialists to assess the study's validity and suitability and a number of questions related to the study. If the questions could achieve the goal of the study, the questions covered all aspects of the study and the clarity of the questionnaire. The questionnaire was divided into three parts. The first part includes social and demographic characteristics, and it consists of 7 paragraphs, namely, age, sex, occupation, marital status, years of experience, participation in training courses related to the prevention of infectious diseases and their number. The second part relates to health workers' knowledge of infectious disease prevention. This part includes 50 paragraphs that are answered with yes, no, or I don't know. The third part adopts the attitudes of health workers towards infectious diseases and consists of 20 paragraphs. The five-point Likert scale was based on the answer to the third part, as follows: Point 1 = strongly agree, point 2 = agree, point 3 = neutral, point 4 = disagree, point 5 = strongly disagree.

Rating and Scoring

Part two was about the knowledge of health workers about communicable diseases, this part contains 50 questions, scoring using Likert scale three points

(yes, no and I don't know), yes score 1 however, no and I don't know scoring with 0, then the overall scores of knowledge were calculated, depending on the mean of score the knowledge score divided into three classes (bad, neutral and good) Part three of the questionnaire was about attitudes of health workers about communicable diseases, which contained 20 items. Likert scale 5 points was used to evaluate the responses of the participants, the response where scoring as Strongly agree 5 points, agree 4 points, neutral 3 points, disagree 2 points and strongly disagree 0 points. After that, the overall score was calculated depending on the mean of scores, and they were classified into three classes (good, neutral and bad).

Statistical Analysis

Data of current study were analyzed by using Statistical Package for the Social Sciences (SPSS) version 27. A three-point Likert scale (yes, no and I don't know) was used to assess the sample's response to part two items related to health workers' knowledge of infectious disease prevention. While the Likert scale for five-point strongly agree, agree, neutral, disagree and strongly disagree was used to evaluate the sample response to the part three of the questionnaire items related to health worker attitudes towards infectious diseases.

Results and Discussion

This chapter contains the results of the study and a discussion of these results. The sample of this study included (384) health workers, whose age range was (20-to 56)years with a mean ±SD (28.8±6.7). In addition, the data were normally distributed. The health workers in Al-Sadr Medical City in Najaf filling out a questionnaire about knowledge and attitudes toward communicable diseases.

Socio-Demographic characteristic of health workers

Table (1) shows the socio-demographic characteristics of health workers, according to the age group ranging from (20-56) years old, the highest percentage (51.4%) were in age (20-26) years and the lowest percentage (2.1%) in age group ≥49 years. In addition, there is a significant difference among age groups (F=160.5, df=4 and p-value =0.001). The results of this study agree with another study was conducted in Turkey (11), where the highest percentage of participants was (52.5%) of the age group of ≤30 years, while, the lowest percentage was (7.2%) of the age group of ≥41 years.

In addition to that, the result of this study is agreed with another study was conducted in Najaf (12), where the main age group (20-26) was (63.8%), as well as with a study in Palestine(13), where the highest age group was (64.2%). The reason for this result is related to the large number estimated at thousands of graduates from the governmental and private medical group colleges and institutes, as the Iraqi Ministry of Health works to recruit them annually to work in the health field, so most of the ages are from this age group.

Table (1) Distribution of health workers participants according to social and demographic characteristics

Socio-demographic characteristics.		No	%	p-value
Age (years)	20-26	198	51.5	0.001
	27-33	109	28.3	
	34-41	52	13.5	
	42-48	17	4.4	
	Equal or more than 49	8	2.1	
	Total	384	100.0	
Gender	Male	130	33.9	0.001
	Female	254	66.1	
	Total	384	100.0	
Marital status	Single	177	46.1	0.001
	Married	192	50.0	
	Divorced	10	2.6	
	Widowed	5	1.3	
	Total	384	100.0	
Educational level	Academic	18	4.7	0.001
	Institute	146	38.0	
	Bachelor	192	50	
	High Degree	28	7.3	
	Total	384	100.0	
Professional level	Physician	28	7.3	0.001
	Pharmacist	68	17.7	
	Lab. Technician	91	23.7	
	Medical Assistant	69	17.9	
	Nurses	105	27.3	
	X-ray Technician	3	0.8	
	Others	20	5.2	
	Total	384	100.0	

While, in the gender, most health workers in this study were female (66.1%), while, a male was (33.9%). In addition, there is a significant difference between genders (p-value =0.001). This result was similar to the results of another study conducted in Saudi Arabia (14), which revealed that the majority of the participants were females (68.1%).

Also, the results of this study is supported by the result of another study was conducted in District 2 Hospital in Vietnam (15), and noted that the majority of the participants were females with a percentage of (74.0%). Furthermore, our study corresponds with a study in Malaysia(16), that found a high percentage of females were (77.7%) among health workers.

As for the marital status, it was found that half of the health workers (50.0%) were married, (46.1%) were single, and the lowest percentage (3.9%) were divorced and widowed. In addition, there is a significant difference between marital status (p-value =0.001). This result is consistent with another study was conducted in

Najaf. Iraq (12), the result of that study was married (62.8%),single was(35.3%) and (1.9% widow and divorced). It also corresponds to a study conducted in the city of Al- Kut, Iraq (17), which found that (52.3%) of the health workers are married. Also, a study in Egypt that found that (67.5%) married supports the results of our study.

According to the educational levels of the health workers, the study apparently included (49.9%) of the bachelor's degree holders and (38.1%) of the institute's certificate holders, and it also included (4.7%) academics, as well as (7.3%) graduate degree holders. . In addition, there is a significant difference among educational levels (df=3 and p-value =0.001). The results of the educational level are in line with a study conducted in one hospital in Basra, Iraq (18) where (46.0%) of the participants had a bachelor's degree. It differs with a study conducted in Egypt (19), where it was found that (27.8%) of the participants had a bachelor's degree.

The researcher believes that the reason for the high percentage of health workers with a bachelor's degree is due to the large number of private and governmental colleges of the medical group in Najaf, and thus the increase in the number of graduates each year, in addition to the possibility of graduates to complete their higher studies.

Related to professional levels, the highest percentage (27.2%) Nurses, (23.8%) Lab. Technician, (18.0%) Medical Assistant, (17.8%) Pharmacist, (7.3%) Physician, (0.8%) X-ray Technician and (5.2%) others professional level. In addition, there is a significant difference among professional levels (df=6 and p-value =0.001). Our results are agreement with a study in Egypt(19), that only founded in the percentage of nurses was (25.1%) but differed in the percentage of Physicians that was (31.2%). While a study in regional hospital in Ghana (20) found a agreement among physicians(7.0%) and a difference in the percentage of nurses(42.3%). On the other hand, a study conducted in Baquba Hospital, Iraq (21) found that the percentage of Lab. Technician was (16.0%) and Medical Assistant were (10.5%), these results are consistent with what we found. While the profession of pharmacist(11.0%) and X-ray Technician(2.2%) was founded in a study conducted at Dubti Hospital in Ethiopia(22).

The researcher believes that this difference between the studies was due to the distribution of health workers that differ from one hospital to another and the difference in the size of the sample, as well as the random selection of health workers.

Table (2) Distribution of health workers according to experience years and Training Courses

Variable	Groups	No	%
Years of experience	≤5 (Years)	255	66.4
	>5 (Years)	129	33.6
Training Courses	Non	246	64.1
	1-5	130	33.8
	6-10	8	2.1

	Total	384	100.0

Years of Experience: The majority of study participants had (≤5) years (66.4%) and the lowest (33.6%) in (>5) years, Our results are in line with a studies conducted in the city of Kut. Iraq (17),and Al Hilla Teaching Hospitals/ Iraq(23), which founds that the majority of healthy workers (56.0%) and (57%) have (≤5) years of experience. On the other hand, the training courses on the topic of communicable diseases prevention showed that (64.1%) did not enter training courses, while (33.8%) entered (1-5) training courses and (2.1%) have (6-10) training courses. The results of the study agree with a study conducted in Western Saudi Arabia (24), which showed that (72.3%) of health workers did not participate in training courses on the prevention of infectious diseases. It also agrees with a study conducted in Al Hilla Teaching Hospitals/ Iraq (23), which found (57.5%) the majority did not participate in the training courses. but, disagreement with study in In Baghdad City Hospitals. Iraq (25), found (62.0) participate infection control training.

All the courses were held inside Iraq according to the answers of the health workers. Because participation in training courses outside Iraq requires financial support from the Iraqi health authorities, and also because of the compulsory restrictions imposed recently as a precautionary measure to stop the spread of the Corona virus. This difference in training courses was due to the Corona pandemic, as well as the restrictions and strict measures imposed and the increase in the number of patients, which negatively affected the establishment of training courses on the prevention of infectious diseases.

The table (3) shows the association between educational levels and Experience years of health workers, the highest percentage (60.8%) represents holders of a bachelor's degree from hospital staff who have (≤5) years of experience, while (47.3%) represents holders of a diploma with (>5) years' experience . This indicates that the management and planning in the hospital, in terms of balancing experience and educational level, are doing the right thing. There is also a significant difference between the educational level and years of experience where the p-value (0.001) due to the fact that the number of years of study is inversely proportional to the years of experience where the more years of study (the higher the educational level) leads to fewer years of work (experience) in the hospital.

Table (3) Crosstabs between Experience years for health workers with education Levels

Variable		Experience years		p-value
		≤5	>5	
Educational level	Academic	11 (4.3)	7(5.4)	0.001
	Institute	85 (33.3)	61 (47.3)	
	Bachelor	155 (60.8)	37 (28.7)	
	High Degree	4(1.6)	24(18.6)	
Total		255(100.0)	129(100.0)	

In terms of the relationship between educational levels and training courses for health workers, the table (4) shows that the highest percentage representing half (50.7%) of bachelor's degree holders participated in training courses on the control and prevention of communicable diseases, while those who did not participate in training courses for any reason They represent almost half (49.5%) and they are also holders of a bachelor's degree. To clarify this and based on what we mentioned previously that large numbers of bachelor's degree holders have graduated from government and private colleges, and one of the duties of health institutions and health departments in each governorate is to prepare rigorous training courses for newly appointed permanent staff. To provide them with the experiences and work requirements according to their scientific qualifications, as in the study (which said that mandatory training for newly appointed health workers is an integral part of the Iranian health system. but, the ideal training for health workers varies in different countries depending on the availability of funding, socio-cultural status and support system(26,27).

However, the health institution (Al-Sadr Hospital) needs a greater effort to cover all numbers of workers. There is also a significant difference between the educational level and the training courses, where the probability value is (0.001).

Table (4) Crosstabs between education Levels and training courses for health workers

Variable		Training Courses		p-value
		Yes	No	
Educational level	Academic	7(5.0)	11(4.5)	0.001
	Institute	48(34.7)	98(39.8)	
	Bachelor	70(50.7)	122(49.5)	
	High Degree	13(9.5)	15(6.0)	
Total		138(100.0)	246(100.0)	

Knowledge of health workers Regarding communicable diseases prevention

The result of this table(5) shows that the overall knowledge of health workers was (57.2%) had good knowledge about communicable diseases. However, (42.8%) of them had bad knowledge. In addition, there is a statistical significant difference between them (0.004). This result was similar to the findings of other studies that were conducted in the teaching hospitals in Tehran, Iran (28) and the other results of the study was conducted in Dobti Referral Hospital, located in Ethiopia (22). Finally with study was conducted in Al-Hassa Saudi Arabia (29) found (57%, 50.5%, and 61%, respectively) of health care workers to have good knowledge.

In terms of studies in Iraq, our results were close to finding a study was conducted in the city of Erbil (30), as well as another study conducted in the city of Al-Amara (31). These two studies were found that (54.0% and .60%, respectively) health care workers who had good knowledge. On the other hand, the results of our study on the good knowledge of communicable diseases were better than some studies were conducted in the Western Development Region, Nepal (32), and other regional hospitals in Trinidad and Tobago (33), and also a study in Palestine Governmental Hospital (13) found (28%, 20%, and 18%,

respectively). We also mention that in other studies, a high level of knowledge was found among health workers in Dessie Referral Hospital, South Wollo (34), and also in Vietnam (35) it was found (95.7% and 91.3%, respectively).

To clarify this difference between the results of the studies, perhaps due to the difference in knowledge score and the provision of training courses on disease prevention and the sample size. In addition, the time was difference between studies.

Table (5) overall knowledge of health workers about communicable disease prevention

Knowledge	No.	%	p-value
Good Knowledge	220	57.2	0.004
Bad Knowledge	164	42.8	
Total	384	100.0	

Association between knowledge of health workers and socio-demographic characteristic

Table (6) shows the association between the level of knowledge about infectious diseases for health workers and socio-demographic characteristics. All variables in the table below were found to be not statistically significant, P-value (> 0.05). These results are consistent with the results of studies conducted in Sana'a, Yemen (36), and other hospitals in Palestine (13) that found that there was no significant difference between knowledge with socio-demographic characteristics and the p-value was (P > 0.05).

In Iraq, a study conducted in the city of Kut (37), found no significant correlation between the level of knowledge with social and demographic characteristics, except for the age group, which had a high significant relationship. The explanation for this is due to the random selection of the sample, on the contrary, studies in the Qassim (38) hospitals of Saudi Arabian and Fayoum Governorate Egypt (19) reported a significant relationship Between knowledge and socio-demographic characteristics, explaining this discrepancy between studies due to the difference in the time of the study, as well as the interaction and social habits in different countries.

Table (7) shows, according to the existing results, that there is a significant difference between the training courses on the control and prevention of communicable diseases for health workers and their knowledge about communicable diseases, p-value (0.008), where the impact of participating in the training courses was clearly positive on health workers in raising the level of good knowledge, on the contrary. Those who did not participate in training sessions had poor knowledge. According to previous studies conducted in Iraq in Al-Amarah and Al-Kut, both (39,40) agreed with the presence of a significant difference, (P< 0.05) with our results. This indicates something that indicates that training courses and continuing education for health workers, as well as keeping pace with the development in science and knowledge, is a prerequisite for increasing good knowledge (41), also said that practical training and theoretical

training courses for health workers are indispensable for the control and prevention of disease outbreaks.

Regarding to their years of experience, the results in the tables (7) indicate that there is no significant correlation between the knowledge of health workers and years of experience, this result is consistent with study in regional hospitals of Trinidad and Tobago (33) they found p-value (0.885), and in Iraq Mosul city (42) found no significant relationship p-value (0.938) also and this supports the results Our study, based on the foregoing results, can explain that the increase in years of experience does not increase the level of knowledge to the appropriate extent that education and training courses can increase.

Table (6) Crosstabs between knowledge of health workers and socio-demographic characteristic

Socio-demographic characteristics.		Knowledge		p-value
		good	bad	
		No.(%)	No.(%)	
Age (years)	20-26	115(52.3)	83(50.6)	0.450
	27-33	64(29.1)	45(27.4)	
	34-41	30(13.6)	22(13.4)	
	42-48	9(4.1)	8(4.9)	
	≥49	2(0.9)	6(3.7)	
Gender	Male	75(34.1)	55(33.5)	0.910
	Female	145(65.9)	109(66.5)	
	Total	220(100.0)	164(100.0)	
Profession	Physician	16(7.3)	12(7.3)	0.088
	Pharmacist	43(19.5)	25(15.2)	
	Lab. Technician	61(27.7)	30(18.3)	
	Medical Assistant	40(18.2)	29(17.7)	
	Nurses	48(21.8)	57(34.8)	
	X-ray Technician	1(0.5)	2(1.2)	
	Others	11(5.0)	9(5.5)	
Educational level	Academic	6(2.7)	12(7.3)	0.190
	Institute	83(37.7)	63(38.4)	
	Bachelor	115(52.3)	77(47.0)	
	High Degree	16(7.3)	12(7.3)	
Marital status	Single	104(47.3)	73(44.5)	0.234
	Married	107(48.6)	85(51.2)	
	Divorced	8(3.6)	2(1.2)	
	Widowed	1(0.5)	4(2.4)	
Total		220(100.0)	164(100.0)	

Table (7) Crosstabs between knowledge of health workers with Training Courses and Experience years

variable	Overall Knowledge		p-value
	Good	Bad	
	No.(%)	No.(%)	0.008

Training Courses	Yes	122(55.5)	16(9.8)	
	No	98 (44.5)	148 (90.2)	
Experience years	≤5 (Years)	150(68.2)	105(64.0)	0.394
	>5 (Years)	70(31.8)	59(36.0)	
Total		220(57.3)	164(42.7)	

Conclusion

Based on the results of our current study, we concluded that more than half of the health workers had good levels of knowledge and positive attitudes, and therefore these levels need to be raised through continuous training courses on infection control by local officials, where we concluded that there is an important relationship between knowledge and training courses. In addition, most health workers are young and have a few years of experience in practicing the profession, which found a statistically significant relationship with the educational level. Also, Most of them young people and Non-participation in training courses held outside Iraq. The level of knowledge and attitudes about communicable diseases is not affected by the socio demographic characteristics that include (age, gender, marital status, residence, profession and years of experience).

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Limitation

The limitations of the study are represented by some unexpected problems and challenges that we faced during the research process, which negatively affected the interpretation and application of the results. These limitations can be summarized in the following points:

1. Respondents may exaggerate or underestimate their responses to the questionnaire, so the best answer was taken for the respondents to ensure that they understand the questions contained in the questionnaire.
2. Some of the health workers targeted in the questionnaire did not participate due to lack of time at work in the hospital, or for fear that answering the questionnaire might create problems between him and his work official.
3. The spread of the Corona pandemic, the preventive measures and restrictions imposed on health workers, affected one way or another on the study and sample collection.

Ethical approval

Approval was obtained from Al-Sadr Teaching Hospital in Najaf Governorate, as well as the official administrative approval from the Ministry of Health and the Directorate of Health in Najaf Governorate after the College of Graduate Studies submitted a request for official approval of the current study and data collection. Also, Oral consent was obtained from each health worker.

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