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## **Evaluation of paramedical student's awareness towards COVID-19 in Thi-Qar: A questionnaire-based survey.**

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**Abstract**--Introduction: To limit the COVID-19 pandemic, several countries have implemented effective procedures. However, it has been noted that an individual's attitude, knowledge, and practices concerning COVID-19 plays a major role in determining how much they will follow the established preventive and control measures. This study aimed to evaluate the awareness level of Iraqi paramedical student's regarding Covid-19. Methods: This study conducted an online survey of (118) paramedical students over a two-week period using piloted and validated questionnaire. Data were entered into SPSS version 21 for analysis. Contingency Coefficients test was used to estimate of the association between student's responses and socio-demographical characteristics variables. Results: Of the participants, (55%) students provided correct answers, indicating moderate awareness. Only (35%) of the sampled students could correctly define "close contact." Further, (65%) students knew about the different infection control measures such as respiratory hygiene, cough etiquette, rapid triage, and the importance of a well-ventilated and separate waiting area for patients presumed to have COVID-19. Most students (85%) also knew about clinical management, including immediately executing recommended infection prevention and control measures as well as managing complications in a supportive manner. On the other hand, only 36% students knew of the most effective method to prevent COVID-19 infections in a healthcare setting. There were no major differences between the responses from students and the socio-demographical characteristics variables. Conclusions: Awareness of the paramedical students towards the COVID -19 was moderate. It is essential to raise student's awareness about COVID -19. So, Iraq can win the battle against COVID-19.

**Keywords**--paramedical student's, awareness, COVID-19.

## **Introduction**

Towards the end of 2019, an outbreak of COVID-19 began spreading from Wuhan in China and has since been declared a pandemic by the World Health Organization (WHO). Having spread to 213 countries, the pandemic has negatively affected healthcare services across the globe<sup>1</sup>. As of 2021, COVID-19 has infected approximately 116,778,730 people, resulting in 5,364,806 deaths across the world. As per Worldometer, until 18 December 2021, there were 2,090,208 the positive cases in IRAQ and 24,051 fatalities<sup>2</sup>. It has also been observed that healthcare workers are at a higher risk because of a lack of proper health training and inadequate health services<sup>3</sup>.

What sets this virus apart is the alarming speed at which the infection transmits through close contact with an infected person<sup>4</sup>. To examine the current programs and effective behavioural change strategies that can be implemented in the community, awareness survey is necessary. Some studies have begun assessing the awareness level of students in Iraq. However, this is perhaps the first study that is examining the awareness of Iraqi medical undergraduate students in Thi-Qar regarding COVID-19. As medical and paramedical students tend to be more exposed infected patients, they are at a higher risk and should thus be more informed about the prevention tools. This study aimed to evaluate the awareness level of Iraqi paramedical student's regarding Covid-19. This questionnaire-based survey was designed as per the existing interim guidelines along with information provided by the WHO and US Center for Disease Control and Prevention (CDC) for healthcare personnel.

## **Methods**

For this study, a questionnaire-based survey was conducted between 5 and 19 December 2021 in AL-Nasiriya Technical Institute, in Thi-Qar. Once Deanship of Research granted ethical approval, we provided the Institute of Applied Medical Sciences' students with the link to the questionnaire. The link was hosted on the institute's website and the students' IDs were screened to verify that they were from the institute of Applied Medical Sciences. The scoring range was based on the average of all responses for every category. Before conducting the survey, the questionnaire's reliability and validity were assessed. From the two departments, the questionnaire was sent to 225 students. From those who responded to the questionnaire, some of the questionnaires that these students sent back were incomplete. Hence, 118 of the 225 undergraduate students were selected through convenient sampling method from the two departments. Following the assessment, only complete questionnaires (n = 118) were included in this study.

The self-designed questionnaire included demographic information of the students. Further, 15 questions regarding knowledge and infection control practices concerning COVID-19 in the healthcare setting were taken from the CDC's existing interim guidance and information provided for healthcare workers, as updated on 7 March 2020 [4]. We also covered questions concerning hand hygiene techniques according to the WHO's "five moments of hand hygiene" for testing participants' the students' knowledge regarding the best hygiene practices [5]. The data was collected using convenient sampling method, with the

distribution of responses being put forth as frequency and percentages. The data further included subgroups designed as per age (< 20 years, 20–24 years, and ≥ 25 years), profession (radiology student and medical lab. student), and gender. Excel and SPSS version 21 were used to tabulate data and descriptive statistics, respectively. The study included a random convenient sample of (10) individuals who were paramedical students.

### **Statistical methods**

Data were collected and analysed, after which they were summarized and presented in tables. All data were analyzed using the Statistical Package for Social Sciences (IBM SPSS Statistics 21). Descriptive statistics like observed frequency, percentage, Mean of Score, Standard deviation, Relative sufficiency, and final evaluation through three scored "Low, Moderate, and High" with the following intervals: [ (0.00 – 33.33); (33.34 – 66.66); (66.67 – 100)] of the MCQ respectively were performed, Chi-squared test, and Binomial test testing with were performed to (Compare the observed frequencies with an expected outcomes). Contingency Coefficients (C.C.) test was used to (Testing the significance of relationships between redistribution of global responding based survey for (Covid-19) in two categories responses (Under/Upper) cutoff point (The Median) and Socio-Demographics variables. A p-value >0.05 was considered significant.

### **Results**

A total of 118 students participated in this study. And regarding "Gender", the studied student's sample from female are accounted 68(57.6%), and with respect to "Age Groups" two third of studied student's sample are focusing at the second class (i.e. 20 – 24) yrs., and accounted 77(65.3%). Table 1 summarizes distribution of the studied sample regarding their socio-demographical characteristics variables (SDCv.). Most participants were in Medical Laboratory science 79 (66.9%) compared to other departments. Table 2 summarizes the Distribution of the studied students pertaining to Health and Medical institute's departments with comparisons significant. Table 1 presents that no significant different at  $P>0.05$  are accounted between the observed distribution with their expected with reference to gender, while highly significant different at  $P<0.01$  are accounted on the subject of age groups. Table (2) shows distribution of the studied selected students who were studied in two Health and medical institute's departments, "The Radiologic Technologist", and "The Medical laboratory".

Results shows that highly significant different was accounted at  $P<0.01$  between the studied locations, and that reflected into consideration the students in each department comparing from sit to another site, which explains the total numbers of Health and medical institute's departments proportions. Figure (1) represented of the studied student's distribution (i.e. The Paramedical Students) with reference to their socio-demographical characteristics variables (SDCv.).

### Essential variables

Table (3) represent summary statistics concerning points estimators are illustrated for studying a proposed "Questionnaire-Based Survey" for evaluation of paramedical student's awareness towards Covid-19, such that: (Mean of score, Standard deviation, Relative sufficiency, and final evaluation) which are consisting of 15 items. In addition to that evaluation for observed responding through using differentiated intervals: [(0.00 – 33.33) for Low (L) evaluation; (33.34 – 66.66) for a Moderate (M) evaluation; and (66.67– 100) for a High (H) evaluation]. Results that observed responses of moderate evaluate assign which are accounted 9(60.0%) items, while the leftover items were a assigned high, and low evaluations, and accounted 4(26.7%), and 2(13.3%) respectively.

For summarizes of preceding results, it could be concluding that "Student's Knowledge concerning Covid – 19)" were non assigned at the established level in which that achieving the goal of this study. Relationships among "Questionnaire-Based Survey" student's responses and their (SDCv.):Table (4) shows relationships for "Questionnaire-Based Survey" student's responses and their (SDCv.), through estimating a contingency coefficients and their testing significant levels. Results shows that regarding to a contingency coefficients and testing significant levels, observed weak relationships with non-significant levels at  $P > 0.05$ , and according to that it could be conclude that studying a "Questionnaire-Based Survey" student's responses could be a mended for studying phenomena on the same population in any time rather than differences of (SDCv.) among studied individuals. Figure (2) of cluster bar charts represent graphically redistribution of responding (under/upper) cutoff point (i.e. The median value) of an overall evaluation of studied a proposed "Questionnaire-Based Survey" student's responses by different classes of the (SDCv.) concerning paramedical students.

### Discussion

On 24 February 2020, the first COVID-19 case was announced in Iraq. Since then, there has been a lot of worry among the Iraqi public as well as governmental institutions. Although there has been progress in developing the vaccine against COVID-19, no cure has been developed. Healthcare professionals as well as medical students are crucial in making people aware of this pandemic. Lack of awareness about the virus combined with high-risk practices can not only result in misinformation but also make people more susceptible to getting infected. This study aimed to evaluate the awareness level of Iraqi paramedical students regarding COVID-19. Most Iraqi paramedical students seemed to have moderate awareness of COVID-19 including how it is transmitted, the isolation or quarantine procedures, hand hygiene practices, importance of using a facemask/respirator, and infection control measures.

This study showed that only 14% of the participants knew that the COVID-19 virus was initially called 2019-nCoV and then named syndrome coronavirus 2 (SARS-CoV-2). This statistic is lower than the data reported from Indian medical and allied health–science students (22.6%). This may be caused by the different sample size as the Indian study used a larger sample size<sup>6</sup>. Of the participants,

51% correctly answered that the virus is primarily transmitted through respiratory droplets. This finding is also lower than what was reported by studies of undergraduate students from Palestine (78.5%) and Indonesia (78.99%)<sup>7 8</sup>. However, the study from India reported 68% students knowing the correct mode of transmission. There's a need for raising more awareness as well as for conducting further research on this subject.

Moreover, only 35% participants of the present study knew the definition of "close contact" in terms of the recommended physical distancing. This was similar to the data from India<sup>6</sup>. However, it was significantly less than that data from Nigeria (83%)<sup>9</sup>. This may have been caused by the difference in educational background, study environment, and study period, as well as the perception towards the severity of the pandemic. It is crucial to generate more awareness of the risk of close contact because the lack of knowledge can lead medical students to disregard physical distancing and expose themselves or others to the virus. Most participants (76%) could correctly answer the questionnaire items regarding COVID-19 exposure that needed medical attention. This data was similar to that reported from India (87%)<sup>6</sup>.

In the past three years, nearly 48% participants received formal hand hygiene treatment. In this study, 66% participants reported that they regularly washed their hands to prevent transmitting the virus to other healthcare workers. Similar data was reported in an Indian study where all students regularly washed their hands<sup>10</sup>. Washing hands regularly has been recommended by the WHO as an effective method to prevent the spread of the virus. More than 60% participants stated that they believed using a face mask or respirator was not necessary for people who are not infected and are not in contact with a suspected or infected COVID-19 patient. According to all major global health organizations, using a mask is necessary for all healthcare workers and symptomatic patients. Despite the discrepancies noted in the use of masks in the community setting, it is necessary to encourage using masks to avoid burdening the healthcare setting<sup>11</sup>.

Of the respondents of this study, only 36 % knew of the most effective method to prevent the spread of COVID-19 in healthcare setting. Compared to this, the data from China reported 87.9% of participants having awareness of this<sup>12</sup>. This may be because the Chinese study included a varied participant group from different colleges and diverse subject areas. All student groups of the present study showed high awareness regarding using personal protective equipment (PPE) for suspected/confirmed COVID-19 cases. The CDC has outlined Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 (COVID-19) in terms of healthcare settings for PPE<sup>13</sup>. Further, 77% knew of the essential PPE required to transport a patient suspected of having COVID-19 in a healthcare facility. Concerning isolation procedure, 29% participants knew about the isolation procedures required for confirmed COVID-19 patients (Airborne Infection Isolation Room without exhaust).

In the present study, 65% participants knew about the different infection control measures such as respiratory hygiene, cough etiquette, rapid triage, and the importance of separate, well-ventilated waiting areas for patients suspected of

having COVID-19. Most participants in the present study (85%) also knew about clinical management, including promptly implementing the recommended infection prevention and control measures along with supportive management of complications. In addition, 71% participants knew about the suggested infection prevention and control measures for executing aerosol-generating procedures. The data for healthcare professionals and students in India reported similar findings <sup>6</sup>. It can thus be recognized that carrying out additional training and supplying the necessary number of PPE kits can encourage educators to believe that the environment they are working in is safe and that they will not be infected. It should be noted that the present study has certain limitations. First, the sample size included students from only two institutes that may not represent all students in Iraq. Second, as the survey was conducted online, the participants may have answered with information bias. Therefore, carrying out further large-scale studies from other regions in Iraq is important to further explore awareness at the national level.

### **Conclusion**

Awareness of the paramedical student's towards the COVID -19 was moderate. Consistent educational interventions as well as training programs regarding infection control practices for COVID-19 are necessary for all healthcare students. Paramedical students should attend hand hygiene awareness programs. The present study's findings can help both health policymakers and professionals with providing additional training to prevent COVID-19 for all paramedical students.

### **Authors' contributions**

Conceptualization:AR. Data curation:AR. Formal analysis:AR. Funding acquisition: not applicable. Methodology: AR. Writing–original draft:AR. Writing–review and editing: AR.

### **Conflict of interest**

The authors declare no conflict of interest that could influence this work.

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Table 1  
Distribution of the studied individuals according to their (SDCv.) with comparisons significant

SDCv.	Classes	No.	%	C.S. P-value
Gender	Male	50	42.4	P=0.118

	Female	68	57.6	(NS)
	Total	118	100	
Age Groups yrs.	< 20	26	22	$\chi^2 = 55.644$
	20 _ 24	77	65.3	P=0.000
	≥ 25	15	12.7	(HS)
	Total	118	100	
	Mean ± SD	21.62 ± 4.14		

(<sup>o</sup>)HS: Highly Sig. at P<0.01;NS : Non Sig. at P>0.05; Testing based on One-Sample Chi-Square test, and Binomial test.

Table 2

Distribution of the studied students pertaining to Health and Medical institute's departments with comparisons significant. (<sup>o</sup>)HS: Highly Sig. at P<0.01;Testing based on Binomial test

Location ( ( The Students ) )	Name	No.	%	C.S. P-value
Medical Technical Institutes (Government and Private students)	Radiologic Technologist (The Private students)	39	33.1	P=0.000 (HS)
	Medical Laboratory (The Government students)	79	66.9	

Table 3

Summary Statistics of a proposed "Questionnaire-Based Survey" for Covid-19"  
Scoring Scales

Questionnaire-Based Survey for Covid-19	No.	MS	SD	RS%	Final Ev.
OFFICIAL NAME OF THE VIRUS	118	0.14	0.35	14	L
THE TRANSMISSION MODES	118	0.51	0.50	51	M
"CLOSE CONTACT" MEANS	118	0.35	0.48	35	M
CORONAVIRUS SYMPTOMS	118	0.76	0.43	76	H
HAND HYGIENE WORKSHOP	118	0.48	0.50	48	M
THE BEST HAND HYGIENE ACTIONS FOR HEALTH CARE PROFESSIONAL	118	0.66	0.48	66	M
VISIBLY SOILED HAND WASHING TECHNIQUE	118	0.47	0.50	47	M
USING THE MASKS	118	0.66	0.48	66	M
PREVENTATIVE MEASURE	118	0.36	0.48	36	M
PERSONAL PROTECTIVE EQUIPMENT	118	0.77	0.42	77	H
CARE OF ASYMPTOMATIC PATIENT	118	0.59	0.49	59	M
PATIENT ISOLATION	118	0.29	0.45	29	L

COVID-19 CONTROL MEASURES	118	0.65	0.48	65	M
COVID-19 CLINICAL MANAGEMENT	118	0.85	0.36	85	H
INFECTION PREVENTION AND CONTROL	118	0.71	0.45	71	H
Overall	118	55.1	14.2	55.1	M

Table 4  
Relationships among Students (SDCv.) and Studied Departments'

SDCv.	Statistics		
	C.C.	Sig.	C.S.
Gender	0.076	0.410	NS
Age Groups	0.067	0.765	NS
Departments	0.004	0.968	NS

(\*NS : Non Sig. at P>0.05; Testing are based on a Contingency Coefficient test.

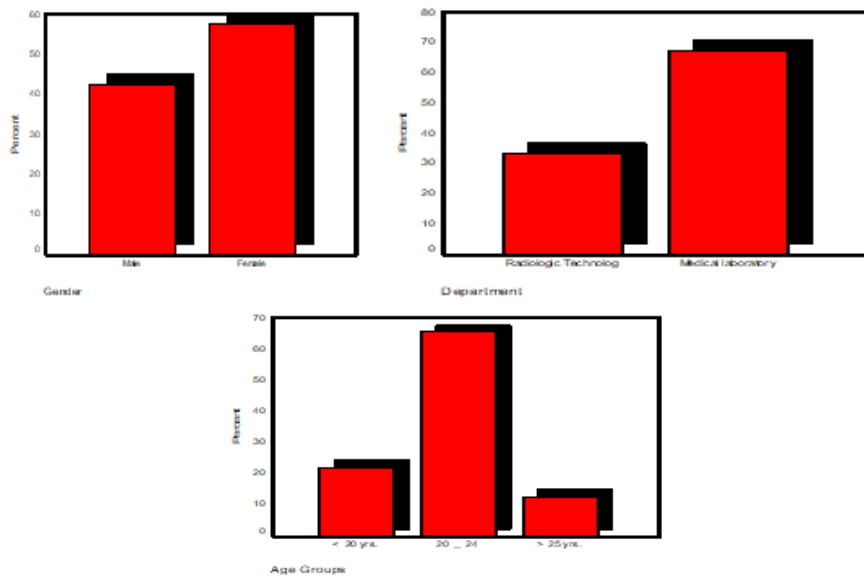


Figure 1. Bar Charts represents studied student's distribution (i.e. The Paramedical Students) with reference to their (SDCv.)

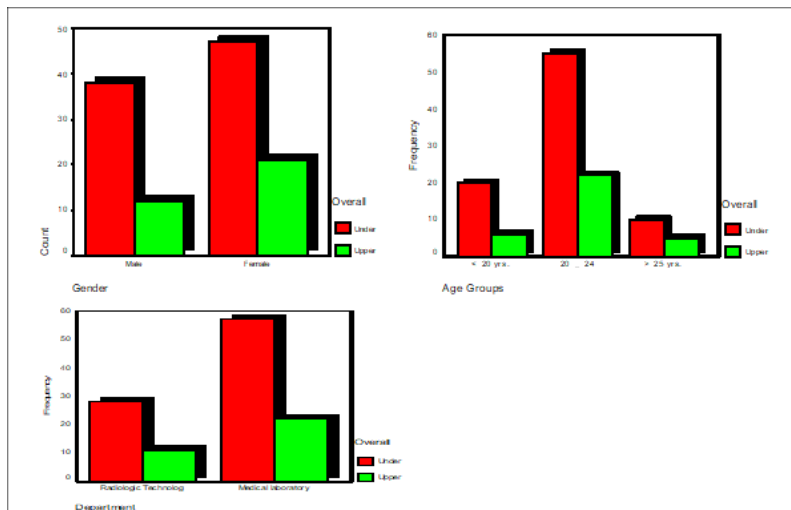


Figure 2. Cluster Bar Charts represents graphically redistribution of studied responding (under/upper) cutoff point and paramedical student's (SDCv.)