

## KNOWLEDGE AND PRACTICE OF UNIVERSITY OF DUHOK STUDENTS TOWARDS COVID-19 VIRUS: A CROSS SECTIONAL STUDY IN DUHOK CITY-IRAQ.

NOOR AHMED MOHAMMED

Dept. of Biology, College of Science, University of Duhok, Kurdistan Region-Iraq

*(Received: March 30, 2021; Accepted for Publication: June 27, 2021)*

### ABSTRACT

**Background and aims:** In December of 2019, Wuhan in China experienced the first novel coronavirus. World Health Organization (WHO) declared a global pandemic on 11<sup>th</sup> of March 2020. Kurdistan region government, took strict precautionary actions at an early time to control the pandemic. Due to the high risk and rapid transmission of the COVID-19 virus, low hospital capacity and facilities, thus; educate the community were important in decreasing the spread of COVID-19.

**Materials and Methods:** A across section survey was conducted among university of Duhok students (UDS) to determine and provide the information about the awareness and practice of university students toward COVID-19 outbreak in Duhok city. The cross-sectional survey was conducted using online Google form platform between 25 July and 15<sup>th</sup> August of 2020. A total of 412 students participated and answered all the questions of the questionnaires. The statistical packages of social science (SPSS) were used to analyze the data. Mean, Frequency and percentage were used with descriptive statistics, while independent-sample t-test and one way analysis of variances ANOVA were used to test the variance between two or more groups.

**Results:** The overall correct rate of the knowledge questionnaire was 77.31%. More than the half of the participants 63% were following most of the prevention steps (washing hand frequently, using masks outside and preventing the crowded places). Male showed more knowledge with  $(1.80 \pm 0.18)$   $P \leq 0.037$ , while Female showed better practices than males  $(3.96 \pm 1.13)$   $P \leq 0.024$ . Students Location (City and Countryside) showed significant correlation  $P \leq 0.025$ .

**Conclusion:** this study concluded that USD had good knowledge score towards this disease, Students gender had differences among their knowledge's and practices about COVID-19 pandemic in Duhok city. The results highlight the important of Social media to improve the UDS knowledge, which could reflect to student's families and the community as well. Additional intense health education should be directed toward all the public sectors to improve levels of knowledge and good practices during such a pandemic.

**KEYWORDS:** Awareness, COVID-19, Duhok-Iraq, Practices, Students

### INTRODUCTION

On December of 2019, Wuhan in China experienced the first novel coronavirus. WHO declared a global pandemic on 11-March 2020 (1). At the end of June 2020, more than 7.5 million positive COVID-19 patients were recorded leading to more than 420,000 deaths world -wide (2). Iraq recorded the first positive case of COVID-19 infection on 22<sup>th</sup> of February 2020 (3), while Duhok city confirmed the first case of a 50 years old man who returned from Germany in the beginning of March (4).

The COVID-19 spread in Kurdistan region of Iraq has increased slowly, because Kurdistan

region government, from very early stage (end of February) has taken precautionary action and strict regulations to control the virus transmission and control the pandemic. Universities, school, gathering places and occasions were all banned and closed; travelling between cities was also banned. People were locked down for long periods of time, between first of March and end of April. However, the number of infected people in Duhok city and other Kurdistan regions (Erbil, Sulaimania, Halabja) increased sharply after the second lockdown, when travelling between cities was allowed (4).

COVID-19 is an infectious disease, the symptoms are non-specific and the disease's

presentation can range from mild, moderate, to sever symptoms, which can lead to death (2%) in some cases (5). Mild symptoms can range from fever, cough, fatigue, sputum, headache, hemoptysis, diarrhea, sore throat, nasal congestion and muscle pain, while severe symptoms range from acute respiratory distress to organ failure (lung, liver, kidney and heart) and need intensive care unit (5 & 6). During the period when the study carried out, there was no vaccine or effective treatment that target COVID-19. Providing new vaccine will require a huge funding and it will also take long periods of time for the vaccine to pass the development process and the quality control to be approved for use.

Accordingly, many supportive treatments were considered such as antiviral medicine (5&6), antibiotics to prevent pneumonia (7), steroids and survivor's plasma injection used for some serious condition patients. Despite all above optional treatments, COVID-19 is parlous disease and can affect most people in different ages. Young children, people age 65 years and older and pregnant women can be in high risk of developing complications (8). Due to the high risk and rapid transmission of the COVID-19 virus among with low hospital capacity and facilities, thus, educating the community and evaluating the level of awareness amongst people to limit the spread of COVID-19 and help in flattening the curve of infected cases.

Many perceptual strategies and hygiene recommendations have been suggested by WHO during the COVID-19 pandemic. A cross section survey was therefore conducted among university of Duhok students (UDS) to determine and provide the information about the awareness and practices of universities students towards COVID-19 outbreak in Duhok city, which will indicate the impact of health education through various media in increasing universities student's awareness.

## MATERIALS AND METHODS

### Study design and participants.

The cross-sectional survey was conducted using online Google form platform between 25<sup>th</sup> July and 15<sup>th</sup> of August of 2020. The target participants were the UDS. Several popular social media applications have been used to distribute and share the Questioners such as ; Viber, Facebook Massager and WhatsApp

### Study setting

University of Duhok is located in Duhok city-Kurdistan region of Iraq. The university includes 18 colleges and has about 20986 undergraduate students.

### Questionnaire and data collection.

A total of 415 UDS participated in this study, out of these only 412 students were included, and filled the questionnaires completely. The questions were about the level of awareness and practices of UDS towards COVID-19 pandemic. The questionnaire was designed after reviewing many literatures and considering the WHO reports and prevention suggestions (10). This survey was reviewed by a couple of experts from the University of Duhok itself. The study involved 17 questions, the first part included the student's gender and the year of the study (year 1, 2, 3, or 4), the (residence), the second part covered some knowledge about the virus and the last part with a couple of questions investigated the practices of students towards the virus and how they protect themselves (Figure E). The online Google based questionnaire was in Kurdish language, as Kurdish language is the mother language for most of the students and will help the students to understand easily and will increase the proportion of participants.

### Statistical Analysis.

The statistical packages of social science (SPSS) were used to analyze the data. Mean, Frequency and percentage were used with descriptive statistic, while independent-sample t-test and one way analysis of variances ANOVA used to test the variance between two or more groups. P value of less than 0.05 was considered statistically significant.

## RESULTS

### Demographic data of University of Duhok Students

Figures 1 show the demographic data of the UDS participants, with total sample of 412 who completed the whole questionnaires. Figure (A) shows that 70.6% (n=291) of the students were females compared to 29.4% (n=121) were males. Figure (B) presents the students stage of study, most of the students were in stage 3 (n=131, 31.9%) and stage 2 (n=124, 30.1%), while students from stage 4 and 1 were about (n=81, 19.6%) and (n=76, 18.4%), respectively. Figure

(C) shows that the residence of the students, 62.4% (n=255) of the students participants were

from the city (Duhok, Irbil, Sulaymaniyah) and 37.6% (n=157) were from the countryside regions.

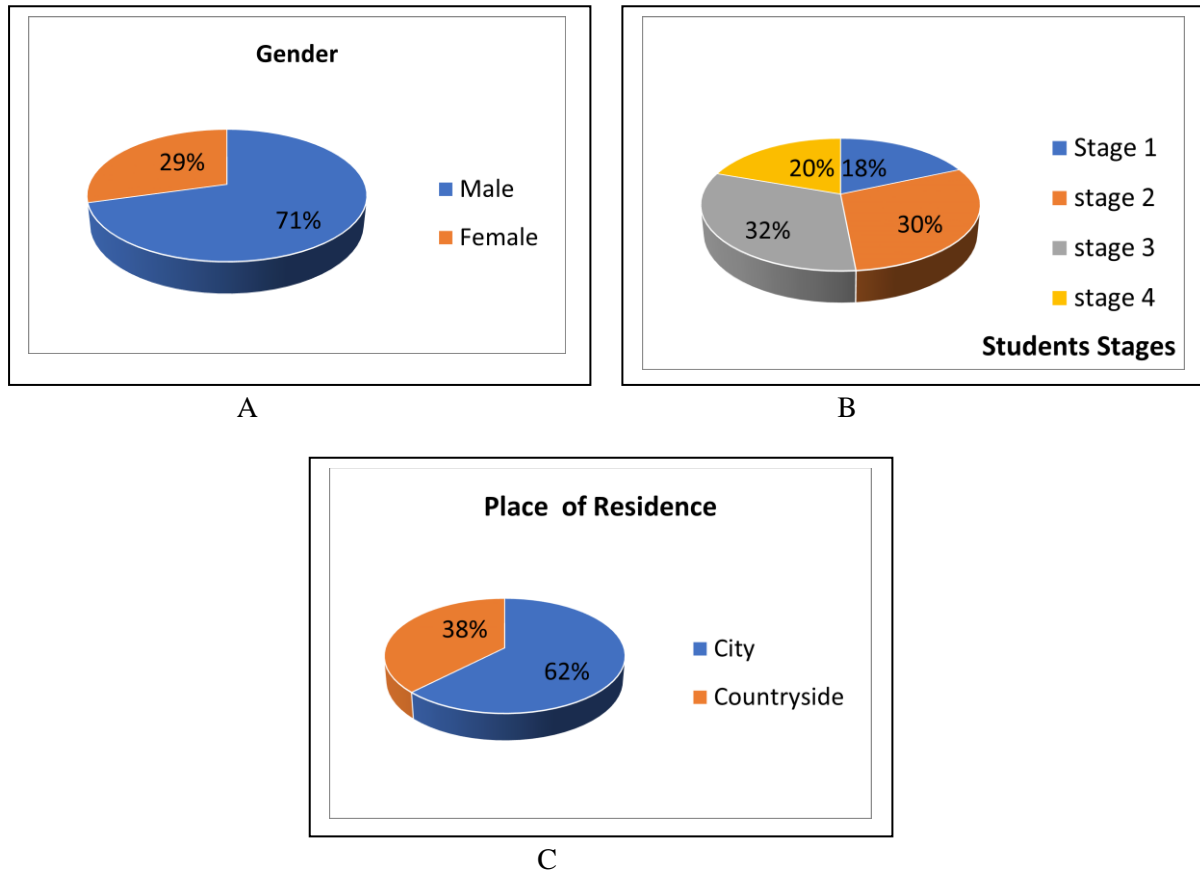


Fig.( x):- Demographic characteristics of participants; A: Gender, B: student stages, C: Place of residence

**Knowledge of University of Duhok students towards COVID-19**

Table1. shows the respondents good knowledge score (mean ± SD) of 8 questions was (1.727±0.56) on the signs and symptoms toward COVID-19. The correct percentage was 78.5%, The majority of the UDS participants (95.6%) answered correctly that COVID-19 is caused by a virus, around (96.4%) had a high knowledge that this disease spread very quickly. Approximately 83.7% of the participants reported that the main clinical symptoms of diseases were fever, cough and tasteless. About 62%, 1.5%, 0.2% and 36.4% of the UDS participants reported that COVID-19 is more danger to old people, young people, children, and everybody, respectively.92.4% of UDS showed good knowledge that COVID-19 spread via respiratory droplet of infected people, while

surprisingly 84.7% of the participants thought that there is a specific medicine for treating the COVID-19 patients.

More than half of the participants reported that no vaccine is approved until now. A total of 142 (68.2%) of students agreed that the awareness between people can help to control the spreading of virus.

**Practices and beliefs of University of Duhok students towards COVID-19.**

Table 2 presents the practices and beliefs of UDS toward COV-19 in 4 Questions, the results showed that 95% of the UDS believed that there are some positive cases in Duhok city, therefore, 98.1% of them agreed that the Kurdistan ministry of health rules will be able to control the spread of this virus. Similarly, a high rate of UDS participants (96.6%) agreed that washing hands,

using masks and avoiding crowded places will help in minimizing the spread rate of COVID-19.

Regarding the personal behavior, we found that 63.3% were used to following most of the prevention steps (washing hands frequently, use mask outside and prevent the crowded places), while the others (37.7%) were used to practice some of these steps but not all of them together.

**Source of information of University of Duhok student's towards COVID-19**

More than half of the UDS (58%) obtained their knowledge from social media (facebook, YouTube, Instagram and snapchat. Among them 16% and 15% were using the TV and Duhok General health Director (DGHD) website to get the knowledge about this disease. Only 7.2% followed the Doctors and professionals regarding the disease as displayed in figure D.

**Correlation between Socio-demographic characteristics with knowledge and practices level of University Of Duhok Students**

Table 3 shows the results of the knowledge level score (out of 8) being significantly different

between gender and student's location ( $p \leq 0.037$  and  $p \leq 0.025$ , respectively), while no significant correlation ( $p \leq 0.324$ ) were found between students' knowledge of different stage level.

The data showed that the score level knowledge of males ( $1.809 \pm 0.185$ ) was more than females ( $1.762 \pm 0.241$ ), and students who live in countryside were better in their knowledge ( $1.80 \pm 0.23$ ) compared to the students from the city ( $1.75 \pm 0.23$ ). In addition, stage 4 showed more knowledge score ( $1.814 \pm 0.243$ ) toward the disease than the other stages.

Regarding students practices, although score results were significant between the student's gender and stage ( $p \leq 0.024$  and  $p \leq 0.014$ , respectively), students location shows no significant difference in practices towards COVID-19 ( $p \leq 0.671$ ). Female ( $3.9691 \pm 1.1362$ ) students show better practices level than male ( $3.6942 \pm 1.071$ ) regarding the mean level. Students in stage 1 showed highest score in their practices towered this disease ( $4.0263 \pm 1.095$ ) when compared to student in stage 2 with lowest score of practices ( $3.626 \pm 1.096$ ).

**Table (1):-UDS Knowledge towards COVID-19**

		Frequency	Percentage%	Mean	Std. Deviation
COVID-19 caused by	Virus	394	95.6	1.1044	.52321
	Bacteria	5	1.2		
	Parasite	1	.2		
	Don't know	12	2.9		
COVID-19 spread very quickly	Yes	397	96.4	1.0485	.26576
	No	10	2.4		
	Don't Know	5	1.2		
The main clinical symptoms of COVID-19 are	Fever	20	4.9	3.8544	.78188
	Cough	25	6		
	Tasteless	22	5.3		
	All above	345	83.7		
People who are at more risk of COVID-19	Older people	255	62	2.1092	1.44155
	Young people	6	1.5		
	Children	1	.2		
	Every body	150	36.4		
COVID-19 spreads via respiratory droplets of infected people	Yes	31	7.5	1.9126	.30747
	No	381	92.4		
Is there a specific medicine for COVID-19?	Yes	349	84.7	1.1481	.36902
	No	63	15.2		
Is there a vaccine for COVID-19?	Yes	160	38.9	1.6019	.50956
	No	252	61.1		

Increasing the people's awareness, can help in controlling the spread of virus	Yes	281	68.2	1.2403	.53403
	No	131	31.7		
Total			77.31%	1.72	0.56

**Table( 2):- UDS Practices and Believes toward COVID-19**

Questions		Frequency	Percentage%	Cumulative Percent
Doubtless, in Duhok there is some COVID-19 patients	Yes	392	95.1	95.6
	No	18	4.4	100.0
	Don't Now	2	.5	.5
Do you agree with the Kurdistan ministry of health rules to control the spread of this disease	Yes	404	98.1	100
	No	7	1.7	1.9
	Don't Know	1	.2	.2
Do you think the following steps can prevent the spread of COVID-19, Wash hands frequently, use masks, and avoid the crowded places	Yes	398	96.6	100.0
	No	13	3.2	3.4
	Don't Know	1	.2	.2
What is your personal behavior to prevent the virus infection	1-Washing hands frequently	14	3.4	3.6
	2-Uses Masks out side	26	6.3	10.0
	3-Avoiding the crowded places	51	12.4	22.3
	4-All the above	261	63.3	85.7
	5- (2+3)	27	6.5	92.2
	6- (1+3)	19	4.6	96.8
	7- (1+2)	14	3.4	100.0

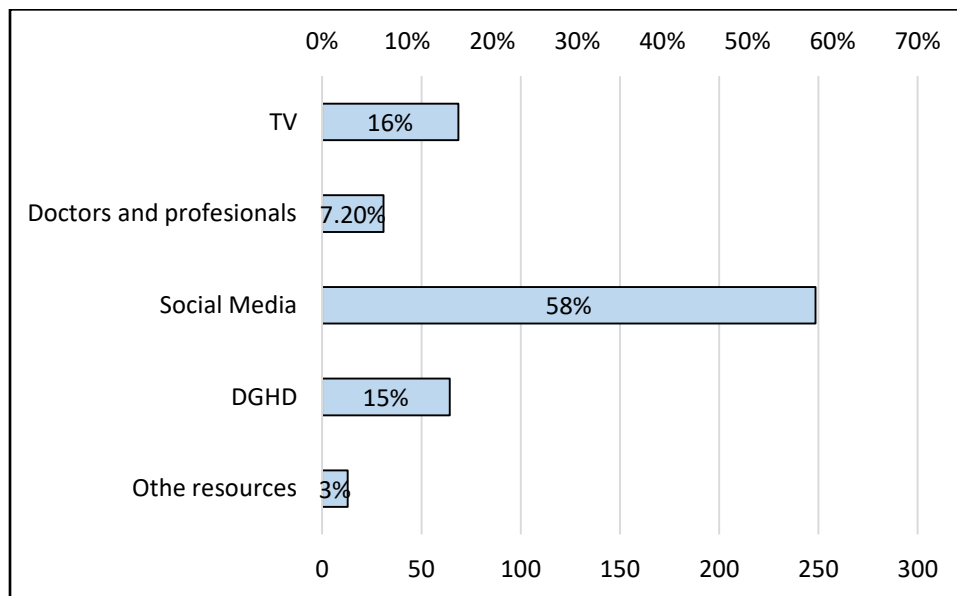


Fig.( C):- Source of UDS knowledge towards COVID-19

Table(3):- Correlation between socio-demographic characteristics of UDS with knowledge and practices

Variables		Frequency (%)	Mean ± SD	t/f	P value
Gender	Male	121 (29.4%)	1.80±0.18	2.911	0.037
	Female	291 (70.6%)	1.76±0.24		
Stage	1	76 (18.4%)	1.75±0.26	1.162	0.324
	2	124 (30.1%)	1.77±0.23		
	3	131 (31.8%)	1.76±0.21		
	4	81 (19.7)	1.81±0.24		
Residence	City	257 (62.4%)	1.75±0.23	2.005	0.025
	countryside	155 (37.6%)	1.80±0.23		
Practices		Frequency (%)	mean±SD	t/f	P value
Gender	Male	121 (29.4)	3.69±1.07	2.273	0.024
	Female	291 (70.6)	3.96±1.13		
Stage	1	76 (18%)	4.02±1.095	3.575	0.014
	2	124(30%)	3.62±1.096		
	3	131(32%)	3.98±0.969		
	4	81(20%)	4.01±1.3369		
Residence	City	254(62%)	3.967±1.135	0.424	0.671
	Countryside	158(38%)	3.858±1.107		

\*P value was determined: Independent Sample T test (t), One Way ANOVA (t)  
 P. value<0.05 was statistically significant differences  
 SD: Standard Deviation

## DISCUSSION

This study is a preliminary study and the number of students participated in this study were less than expected, this is could be due to the fact that the questionnaire was online Google form and sharing between students was the only way to increase the rate of participant.

In Duhok city, the first COVID-19 positive case was confirmed at the beginning of March, the government took strict precautions and cities and places were lockdown. However, after the end of last lockdown and with the increases number of COVID-19 patients, people's awareness and good practices were the only steps to control this pandemic. In addition, Iraq in general (including Duhok city) has no ability to control or deal with such disease because of list of reasons as mentioned earlier (9).

A survey based study about the knowledge and practices of UDS toward COVID-19 were taken. Participants were from different colleges within university of Duhok, online surveys were collected using different platforms. Results indicate that UDS knowledge had good level (77.31%) regarding the causes, risk and symptoms towards COVID-19. The study also showed a good understanding of the steps to prevent themselves from the infection. Our finding are in agreement with the results obtained from the study in Kurdistan region of Iraq which showed that 75.8% of students were knowledgeable about this disease (10). 63% of the UDS actually were practicing all the required preventive measures (Washing hands frequently, using mask outside, avoiding the crowded places), While others were used to following one or more preventive measures. Many studies conducted in Kurdistan region, Iraq and other countries showed the same results (11 & 12).

These results could be due to the fact that all the participants were from a high level of education (university) and they have the ability to access the right resource to obtain the correct answer for any question or concern related to this disease during the pandemic.

Although people in Kurdistan region of Iraq perceived unwillingness to follow the prevention measures, as result of profound breakdown in trust to our local government because of the socioeconomic imperatives consequences during the lockdown (13), our results showed that 95% of the UDS still believed there are positive cases in Duhok city and all of them agreed with the

Kurdistan ministry of health rules to control this pandemic. This finding are agreed with other studies in the same region showed that students belief that Kurdistan Government can win the battle against this pandemic (10).

More that half (58%) of the UDS depended on the social media to get the information about this disease. The current results show similar finding to another study in EAU (14). This can explained by Szmuda and his colleagues (15), who showed in Europe and other country that COVID-19 search in Google and many search engine were trend during the outbreak. These results highlight important of Social media to improve the UDS knowledge, which will reflect to the knowledge of their families and the community as well, especially those who live in the countryside.

Our results using t-test, ANOVA showed that males compared to females have more knowledge about COVID-19 while females showed better practices to prevent the infection than males. This was similar to studies in Kurdistan region, Mosul city and Saudi (10,11&15). Regarding the student's stages, there were no significant differences between students in their knowledge, however stage 1 shows better practices followed by stage 4 and 3. Our current study did not show any significant difference when comparing students who lived in cities (Duhok, Irbil, Sulaimania) and the country side in their practices, while there was good knowledge between the students who lived in country sides. We believe nowadays network line (internet) is available in cities and country sides as well, therefore student's location will not affect their knowledge and practice if the students are willing to increases their knowledge about the COVID-19 or learn about the right steps to prevent themselves for the infection. In addition, it was shown earlier that about 60% of our participants used the social media to educate themselves.

## CONCLUSION

This study concluded that USD had good knowledge score toward this disease; Students gender had differences among their knowledge's and practices about COVID-19 pandemic in Duhok city. The results highlight the important of Social media to improve the UDS knowledge, which could reflect to students' families and the community as well, especially those who live in the country side. It's worth to mention that

awareness begins at home and students as a part of the community can be a part of the awareness campaigns toward such public health emergency. So, we recommend that more intense health education should be directed towards the public and UDS, both females, which showed less knowledge and males for their less practices towards COVID-19. The government could use our findings as a baseline for the future planning health awareness education campaigns.

#### Limitation

This study summarized only the level of specific sector (University students only), controlling such pandemic diseases will depend on cooperation and compliance of all members of society.

#### Acknowledgements

I would like to express my appreciation to the students of University of Duhok who agreed to participate in this study. Also, I am gratefully to Associate Professor Dr. Saad Fathal Abass for his contribution in the data analysis.

#### Abbreviations

**DGHD**, Duhok General Health Director

**COVID-19**, Corona virus -2019

**UDS**, University of Duhok Students

**WHO**, World Health Organization

#### REFERENCES

- Bedford J, Enria, D, Giesecke J, Heymann DL, Ihekweazu C, Kobinger G. The Lancet 2020; 395: 1015–1018. COVID-19: towards controlling of a pandemic.  
World Health Organization (WHO). Coronavirus disease (COVID-19) pandemic,  
OCHA. United nation office for the coordination of humanitarian affairs, <https://www.unocha.org/iraq>: 2020
- Husseina N R , Naqida I A ,\*, Saleemb Z S, Almizoric L A, Musab D H, Ibrahim N, A sharp increase in the number of COVID-19 cases and case fatality rates after lifting the lockdown in Kurdistan region of Iraq, *Annals of Medicine and Surgery* 57 (2020) 140–142.
- Shrikrushna S U, Ansar Q B, Sanap S, Thakhre S , Wadatkar Sh, Bairagi R . Suraj Sagrule and Prof. Dr. K. R. Biyani. REVIEW ON CORONA VIRUS (COVID-19) *World Journal of Pharmaceutical and Life Science*, Vol. 6, Issue 4, 109-115 (2020).
- Zhong B L, Luo W, Li H M, Zhang Q Q, Liu X G, Li W T, Li Y. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents

during the rapid rise period of the COVID-19 outbreak : a quick online cross-sectional survey. *Int J Biol Sci*;16 (10):1745-1752. (2020)

- Merza M A , \*, Al Mezori A A , Mohammed H M, Abdulah D M, COVID-19 outbreak in Iraq Kurdistan: The first report characterizing epidemiological, clinical, laboratory, and radiological findings of the disease, *Diabetes & Metabolic Syndrome: Clinical Research & Reviews* 14 (2020.) 547e554.
- Frequently Asked Questions (FAQs) about COVID-19 For an update of cases by county, the New Jersey Dept of Health (NJDOH) has set up a dashboard with information: [https://www.nj.gov/health/cd/topics/covid2019\\_dashboard.shtml](https://www.nj.gov/health/cd/topics/covid2019_dashboard.shtml)  
[https://www.nj.gov/health/cd/topics/covid2019\\_dashboard.shtml](https://www.nj.gov/health/cd/topics/covid2019_dashboard.shtml)
- Accessed on 11 March 2021.
- Mikhael, E M, Al-Jumaili, A A .Can developing countries face novel coronavirus outbreak alone? The Iraqi situation , *Public Health in Practice* 1 (2020) 100004.
- Hussein N R, Naqid I A, Jacksi K, Abdi B A. Assessment of knowledge, attitudes, and practices toward COVID-19 virus among university students in Kurdistan region, Iraq: Online cross-sectional study. *J Family Med Prim Care*. 2020;9(9):4809-4814. Published 2020 Sep 30. doi:10.4103/jfmpc.jfmpc\_870\_20
- Saeed B Q, Al-Shahrabi R, Bolarinwa O A Socio-demographic correlate o l f knowledge and practice toward novel coronavirus among people living in Mosul-Iraq: A cross-sectional study, DOI: 10.1101/2020.09.11.20192542.
- Azlan AA, Hamzah MR, Sern TJ, Ayub SH, MohamadE. Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. *PLoS ONE* 2020; 15(5):e0233668.
- Hussein N R, Naqid I A, M. Saleem Z S, Musa D H , Ibrahim N, The Impact of Breaching Lockdown on the Spread of COVID-19 in Kurdistan Region, Iraq. *Avicenna Journal of Clinical Microbiology and Infection* 2020 March;7(1):34-3.
- Saeed B Q , Elbarazi I, Barakat M, Novel Coronavirus (COVID-19) health awareness among the United Arab Emirates population. DOI: 10.1101/2020.09.10.20191890.
- Szmuda T, Alib S, Hetzgerb T V , Rosvallb P, Are online searches for the novel coronavirus (COVID-19) related to media or epidemiology? A cross-sectional study *International Journal of Infectious Diseases* 97 (2020) 386–390.



پێزانین قوتابێین زانکویا دھوک لسه کورونا؟!				
م	ن	ر	ه	گ
2	1	3	4	
دهوربهري	باژير (دهوك،	جهن نيشته جيپووني		
باژيري (قهزا،	اريل، سلیمانیه...			
ناحييه)	هتد)			
مشه خوره	به كتيپا يه	نه خوشيا كورنا نه خوشيه كا		
نزائم	به لئ	نه خوشيا كورنا زي به لاف دبیت		
نه خپر	به لئ	نه خوشيا كورنا مه ترسييا وي پتر لسه ر		
گه نجا يه	دان عمر يه	پترييا نيشانئ ديار دبیت سه كه سئ كورنا		
هه ستنئ تامكرنئ	له ش گه رم دبیت	هه		
نامينيت				
كوخكا				
حشك				
هه ليزارتن)				
نه خپر	به لئ	نه خوشيا كورنا دچيته كه سئ به رامبه ر بريك		
		كوخكا نه ساخي		
نه خپر	به لئ	نه خوشيا كورنا كيم بكن (Education)		
		ئهم شين ب ريك هشارين		
نه خپر	به لئ	چ لقاح تايبه ت بو فن نه خوشين نينه هه تا		
		نوكه		
نه خپر	به لئ	چ درماني تايبه ت بو فن نه خوشين نينه هه تا		
		نوكه		
ديركه تن ژ	بكارئينانا ماسكا	چ ريكئ تو بكاربين دا خو پاريزن ژ نه خوشيا		
جهن	ژده رقه ي مال	كورنا		
قه ره بالغ				
نزائم	نه خپر	شيشتنا دهستان و بكارئينانا ماسكا و ديركه تن		
		ژ جهن قه ره بالغ دكه ن نه خوشيا كورنا به لاف		
		نه بيت		
نزائم	نه خپر	ل دهوكئ بن گومان هنده ك كه سئ توشبووين		
		كورنا هه نه		
نزائم	نه خپر	تو پشتگنيريا ياساين ته ندروستي دكه ي بو		
		بكارئينانا ماسكا و دهستگوركا و ديركه تن ژ جهن		
		قه ره بالغ		
لايين دي	دكتور و كه سين	تو پترييا پيزانين خو ده ربارئ فن نه خوشين ژ		
شاره زا	سوشيال	چ ژنده ران و هر دگر ي		
	ميديا			
	بي وه زاره تا			
	ته ندروستي			

Fig.( D):- Kurdish version of the questionnaire, containing all the questions related to the students knowledge and practices of UDS.