

Assessing of practices and preventive measures for the environmental outbreak of the Corona pandemic: An Analytical study of sample workers in the city of Benghazi

Wafa. M. Habib^{1*}, Ahmed. M. Elhain², Dr .Abdelsalam Abuzreda³

¹Lecture at the Higher Institute of Engineering Technologies, Benghazi, Libya. *Corresponding Author,

²Senior lecturer faculty of medical Technology, Tobruk University, Libya.

³Postdoctoral Researcher-Assistant Professor at The University of Benghazi and Coordinator of the Department of Health Safety and Environment (HSE), Arabian Gulf Oil Company (AGOCO), Benghazi, Libya.



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Abstract

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Throughout human history, epidemics and chronic diseases have claimed the lives of many people, and the appearing Corona virus (Covid 19) that emerging in China in December 2019, and spreading from it to various parts of the whole world today, has brought the death outcome from it to more than 3,000,000 three million deaths, more than 141 One hundred and forty-one million cases of coronavirus in the world. Despite the data and information provided by the competent authorities in Libya about the pandemic, such as (the National Center for Disease Control in Tripoli, and the Medical Advisory Committee to combat the Corona epidemic in Benghazi), there is a great deal of fear among workers due to the conditions of ambiguity and uncertainty about the disease and the fate of patients and the suffering that they face. And because this topic has not received enough attention from researchers in studying this pandemic in Libya in particular, awareness-raising efforts have become about ways of transmission and prevention and how to deal with infected people as the first line of defense to prevent the spread of the virus. **Objectives:** This study aimed to analyze the impact of the emerging corona virus pandemic on the level of knowledge, practices and attitudes regarding several characteristics of COVID-19, to assess the perception of risk for workers in various fields, and to know the most common symptoms. **Method:** The study relied on the descriptive analytical approach, and a KAP questionnaire was used and distributed to a sample of 300 workers in the city of Benghazi to fill it in. It was developed to cover the research objectives from December 27, 2020 to March 16, 2021. The response rate was about 100%. **Results:** The results showed that the highest percentage of the study sample had learned about COVID-19 in (December 2019), and through social networking sites. Among the study sample (n = 300), 33.0% between 30 and 39 years old, 39.7% were women, and 55.7% had a university education. The overall correct rate of the cognitive questionnaire was 77.8%. (55.7%) expressed their willingness to abide by the decision to stay at home. The majority agreed that home isolation was the best health care option. A large percentage of participants (72.3%) wash their hands frequently or use sanitizers. The results also showed that the majority of the study sample did not suffer from any chronic diseases. And that the majority of the study sample was not diagnosed with any disease recently. **Conclusion:** Health education programs directed to enhance knowledge of

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COVID-19 are beneficial to workers by adopting positive attitudes and disseminating knowledge related to beneficial practices.

Keywords: Safety, occupational health, occupational diseases, corona virus, covid19-.

تقييم الممارسات والتدابير البيئية الوقائية لتفشي جائحة كورونا (دراسة تحليلية لعينة من العاملين في مدينة بنغازي)

وفاء محمد حبيب & أحمد مصطفى الهان & عبدالسلام عبدالله بوزريدة

الملخص :

إلى الآن مازالت الأوبئة هي التي تشكل التهديد المباشر للجنس ومن أحدث الأمثلة على ذلك هو فيروس كورونا (COVID19) الذي ظهر في الصين في ديسمبر 2019 وانتشر بشكل سريع جدا في كافة أنحاء العالم. وقد تسبب في وفاة أكثر من ثلاث مليون شخص واصابة أكثر من 141 مليون حالة على مستوى العالم.

بالرغم من المعلومات والبيانات المتحصل عليها من قبل الجهات المسؤولة والمختصة عن وباء كورونا في ليبيا سواء في طرابلس أو بنغازي، لا يزال هناك تخوف وقلق بين العاملين بالقرب من فيروس كورونا وهذا الخوف والقلق ناتج عن الظروف الغامضة والمخيرة حول هذا الوباء ومصير المريض والمعاناة التي قد تواجهه. هذا الخوف والمعاناة من قبل العاملين أدى إلى ضرورة تسليط الضوء حول معرفة مدى خطورة هذا الوباء من ناحية التعامل معه وتقدير خطورته لمنع تفشي هذا الوباء بين العاملين.

أيضا لما لمسناه من نقص في الاهتمام من قبل الباحث في ليبيا وبالخصوص عن كيفية طرق انتقال هذا الوباء والوقاية منه وكذلك كيفية التعامل مع المصابين بهذا الوباء كخط دفاع أول للوقاية من انتشاره.

أهداف الدراسة: هذه الدراسة تهدف إلى تحليل تأثير جائحة كورونا على مستوى المعرفة به والممارسات لدى العاملين (بخصوص مواصفات كورونا المختلفة). تقييم مدى فهم خطورة الوباء للعاملين في مجالات مختلفة كذلك السلوكيات المتخذة لمواجهة هذا الوباء ومعرفة الأعراض الشائعة له وطرق انتقاله. أيضا معرفة درجة القلق بين العاملين والاحتياطات المتخذة لتقليل خطر الاصابه بالفيروس.

طريقة البحث: هي دراسة وصفية تقوم بتحليل النتائج المتحصل عليها وذلك باستخدام استبيان KAP كأداة لجمع البيانات، حجم العينة 300 عامل في مدينة بنغازي قاموا بتعبئة الاستبيان، فترة الدراسة من 27 ديسمبر 2020 إلى 16 مارس 2021، نسبة الاستجابة للاستبيان 100%.

النتائج: بينت النتائج أن النسبة الأعلى في عينة الدراسة كانت على دراية بفيروس كورونا وذلك من خلال مواقع التواصل الاجتماعية على الانترنت. أيضا من خلال عينة الدراسة (عدد 300) 33.0% بين أعمارهم ما بين 30-39 سنة

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(39.7%) نساء و (55.7%) رجال لديهم مستوى تعليم جامعي. المعدل الكلي لإدراك الاستبيان وجد أن 77.8% من العاملين (55.7%) منهم فضل البقاء في المنزل على انه أفضل وسيلة للوقاية من الوباء. نسبة كبيرة من المشاركين في الاستبيان (72.3%) كانوا حريصين على غسل اليدين بشكل متكرر وكذلك استخدام المطهرات. الدراسة أيضا أوضحت أن غالبية المشاركين في الاستبيان ليس لديهم أمراض مزمنة ومعظمهم لا يشكو من أي مرض حاليا.

الخلاصة: أن التثقيف الصحي الموجه لتعزيز المعرفة حول وباء كورونا Covid19 يعود بالفائدة على العاملين وذلك بتبني موقف إيجابي ونشر المعرفة باتجاه الممارسات الصحية المفيدة.

الكلمات المفتاحية: السلامة ، الصحة المهنية ، الأمراض المهنية ، فيروس كورونا ، كوفيد-19.

1. Introduction

The whole world currently face an emergency health crisis, as a result of the spread of the new Corona virus. Therefore, health systems in whole the world faced a direct challenge due to the risk of transmission between the workers in different fields of work, especially the workers on the front lines of the response i.e. health workers. In addition, the probability of the risk of transmission is more for the health workers who exposed during the Covid-pandemic 19, or dealing with infected people infection as a result of or suspected infected. Therefore, the significant roles of the occupational safety were by reducing and controlling the risk of transmission [1-2].

In December 15, 2020, after the recognition of COVID-19 as one of the occupational risks in selected countries, on the response of government and social partners to the crisis. Therefore, a specific regulation existed due to the different situation among countries. According to the database of national-level responses of COVID-19 Eurofound's (COVID-19 EU). Italy has made amendments to their legal system to recognize COVID-19 as an occupational disease or work accident, 85 measures has indentified in the context of the COVID-19 pandemic in July 2020, 30 cases (35%) were related to supporting businesses to stay afloat category[4].

While in Belgium has announced the recognition of COVID-19 upon certain defined criteria the identification measures in July were 47 with most cases 18 cases (38%) fall into supporting businesses to stay afloat. France, in Mach 2020 the COVID-19 EU has identified 64 measures, 22 cases (34%) fall into the category. protection of workplace. Germany the recognition as an occupational disease has announced, mostly for healthcare workers. 62 measures has identified in the context of COVID-19, 16 cases (26%) fall into supporting business to stay float category [5].

Announced have made in the Peoples' Republic of China, Singapore, and Taiwan, as possible recognition according to their system compensation for workers [9]. Australia has also announced a possible compensation after a case-based evaluation [10]. In Turkey, no legislative change specific to COVID-19 has been made yet, and current legislation [6] has been pointed out despite ongoing discussion for specific regulations. In Brazil, the situation got complicated when a regulation suggested COVID-19 would not be considered as an occupational disease, except proving the causal link, was published.

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However, the Federal Supreme Court suspended that regulation [11]. As the number of workers, particularly healthcare workers, contracting the infection due to occupational risks increases, the work-relatedness of COVID-19 seems undeniable. To date, COVID-19 has not been included in occupational disease lists provided by international organizations, namely the International Labour Organization, World Health Organization, and European Union, despite examples of country-level regulations. The organizations planning and conducting research on COVID-19 risks regarding occupations or work duties, proposing criteria to recognize work-related cases, and adding COVID-19 to their proposed occupational disease lists would provide a basis for local action. In countries awaiting regulations to recognize work-related COVID-19, stakeholders should act to promote changes in legislation [6].

2. Classifying Worker Exposure to SARS-CoV-2 according to OSHA:

Occupational safety and health act (OSHA) has alienated job tasks into four risk exposure levels, as shown below [12].

3. Occupational Risk Pyramid for COVID-19

3.1. VERY HIGH EXPOSURE RISK

careers with a high risk for contact to known or assumed sources of COVID-19 during definite medical lab procedures. workers include, healthcare employers and morgue employers making aerosol-generating measures by collect or handle samples from possibly contagious cases or bodies of individuals known of having or supposed to have, COVID-19 at death time [12 – 13 - 14].

3.2. HIGH EXPOSURE RISK

careers with a high risk for contact to known or assumed sources of COVID-19. Workers in this category include, healthcare delivery, healthcare support, medical transport, and mortuary workers exposed to known or assumed COVID-19 patients or bodies of people known to have, or assumed of having, COVID-19 at the time of death [12 – 13 - 14].

3.3. MEDIUM EXPOSURE RISK

careers that require frequent contact with people who may be infected, but who are not known or assumed patients. employees in this category include, those who may have contact with the general community (high-population-density work environments, some high-

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volume retail settings, schools), including individuals returning from locations with widespread COVID-19 transmission [12–13-14].

3.4. LOWER EXPOSURE RISK (CAUTION)

careers that do not require exposure with people known to be, or suspected of being, infected. employees in this category have minimal occupational exposure with the community and other employees [12 – 13 - 14].



Fig.1. Occupational Risk Pyramid for COVID-19.

The WHO in March 2020 declared the outbreak to be a pandemic. The most common symptoms of COVID-19 are include fever, dry cough, and fatigue. Other less common symptoms, include loss of taste or smell, nasal congestion, headache, conjunctivitis, sore throat, body aches and pains, diarrhea, skin rash, and discoloration of fingers or toes [1-2].

A greater risk of COVID-19 infection for those who are in old age and suffering from chronic problems or diseases like high blood pressure, heart diseases, lung problems, diabetes, or cancer[1].

The most effective prevention method to control the spread of the pandemic infection (COVID-19) is avoiding, or at least limiting, exposure to the virus and that by staying away from crowded places, washing hands with soap and water, using face masks, and isolation of both infected or suspected cases [12-15].

In terms of the attitudes and knowledge, about COVID-19 a study carried out in Hubei, mentioned that the level of knowledge about Covid-19 are highly associated with attitudes towards government measures to control the epidemic [18].

Another study suggested that the increase of cases infected by the virus would be a mediating element due to the lack of knowledge about the COVID-19 disease, and also in similar case,

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the rates of case would be increased due to the poor understanding of the disease and its airborne infection process contributed [15].

Moreover, a study mentioned that in developed countries like Singapore the people necessitate little information to follow the measures required by the government [25]. However, that could be a bias, given that assesses citizens with a high level of education during the epidemic in this developed country [17].

Under these circumstances, Considering the lack of previous studies related to epidemics, knowledge, or risk perception in our country, we have shed light on this epidemic through an analytical study targeting COVID-19 and its prevalence methods, symptoms, and cycle of infection and how to deal with him.

4. Research Methodology and Design

The research design for this study was descriptive. We conducted this study from December 25, 2020 to March 16, 2021. The target population for the research was all workers who were aged 18 years and above. The sample size to achieve the study objectives 300 participants, a sample was selected randomly, data were collected through a questionnaire. The questionnaire consisted of two parts. The first contained the demographic characteristics of participants, while the second covered the KAP measures, and symptomatology. Demographic variables included age, gender, marital status, occupation, level of education, years of experience, and the sector of employment. KAP measurements included a total of eighty-nine questions, divided on four parts. The first 27 items focused on knowledge, the next 26 items centered on attitudes, 20 items on practices, 14 items on symptomatology, and 2 others source of information. Questions were answered on a Yes/No basis with an additional "I don't know" option. Some open-ended questions were asked. To calculate the total scores for KAP, correct answer was assigned 1 point and no/unknown was assigned 0 point.

5. Statistical analysis

Data collected from the pilot survey were analyzed using the Statistical Package for the Social Sciences (SPSS), version 25, to test the internal consistency of the questionnaire, based on the Cronbach's alpha coefficient. The Cronbach's alpha value for the closed questions of KAP scale was 0.869, which is a sufficient measure of reliability or internal

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consistency of an instrument [26]. The collected data were entered into a computer and analyzed using IBM SPSS version 25 for computer-assisted analysis.

The independent variables for this study were gender, age, marital status, level of education, occupation, years of experience, and sector of employment. Participants' KAP toward COVID-19 were the dependent variables. As a preliminary data analysis, descriptive statistical analysis was conducted, to assess the demographic characteristics of the respondents. Furthermore, frequencies were implemented to get the percentage of correct answers regarding the disease. Analysis of variance (T-TTEST and ANOVA) was then applied to examine the relationship between demographic factors and KAP of participants toward COVID-19.

6. Results

A total of 300 participants completed the study questionnaire. Within this population, 99 (33.0%) were between 30 and 39 years old, 181 (60.3%) were males, 167 (55.7%) have a university education, and 300 (100%) were Benghazi citizens. Other demographic features are including in Table 1.

Characteristics	Number of participants (%)	
Gender		
Male	181	60.3
Female	119	39.7
Age group		
18-29	97	32.3
30-39	99	33.0
40-49	69	23.0
50-59	27	9.0
>59	8	2.7
Educational status		
Primary school	28	9.3
High school	62	20.7
University degree	167	55.7
Master	30	10.0
Dectorate	13	4.3
Occupation		
Health care worker	61	20.3
Private sector worker	54	18.0
Public service personal	64	21.3

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Student	56	18.7
Teacher/Lecturer	27	9.0
Retired	2	0.7
Others	36	12.0
Marital status		
Married	147	49.0
Unmarried	141	47.0
Divorced	6	2.0
Widowed	6	2.0
Monthly income		
1000 <	179	59.7
1000 – 2500 م	103	34.3
2500 -4000	12	4.0
> 4000	6	2.0
Do you suffer a chronic disease?		
Yes	58	19.3
No	242	80.7
Type of chronic disease		
Diabetes mellitus	11	19.0
Hypertension	21	36.2
Hypertension and DM	10	17.2
Cardiovascular diseases	6	10.3
Chronic lung and respiratory diseases	7	12.1
Autoimmune diseases	3	5.2
Working environment		
Hospital	61	20.3
Office	89	29.7
Face to face interaction with customers	33	11.0
At home	39	13.0
Outdoor environment	22	7.3
School/ University	56	18.7

6.1. Source/ period of information on COVID 19

For the source/period of information, 31.7% of the respondents knew when the disease began (December 2019) and 15.3% only knew in March 2020 when the first case was reported in Libya. (48.7%) of the respondents got the information on COVID 19 for the information primarily through social media followed by television and websites Table 2. Not hear about COVID-19 5 (1.7%).

Month/Source of information	Social media	TV	websites	Friends and relatives	Total
DEC-19	95 (32.2%)	0.0	0.0	0.0	95 (32.2%)
JAN-20	51 (17.3%)	33 (11.2%)	0.0	0.0	84 (28.5%)
FEB-20	0.0	70 (23.7%)	0.0	0.0	70 (23.7%)
MAR-20	0.0	2.0 (0.7%)	37 (12.5%)	7.0 (2.4%)	46 (15.6%)
Total	146 (49.5%)	105 (35.6%)	37 (12.5%)	7.0 (2.4%)	295 (100%)

6.2. Knowledge related to COVID 19

For the mode of transmission, 91.0% knew that the disease could be transmitted by droplets when an infected person coughs, sneezes or speaks, 87.7% said through kissing infected person and a handshake, 82.7% through touching a contaminated surface and then touching your eyes, nose or mouth (Table 3). The results show that 78.3% of the respondents indicated that the disease is increasing in Libya.

Table 3. Frequency of Responses by the Study Participants for Knowledge Questions, Benghazi, Libya, 2020. (N=300)

S. No.	Knowledge Questions	Frequency (%)		
		Yes (N, %)	No (N, %)	I Do Not Know (N, %)
1	COVID-19 is a virus infection.	273 (91.0)	17 (5.7)	10 (3.3)
2	Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	185 (61.7)	83 (27.7)	32 (10.7)
3	COVID-19 is transmitted by close contact with the infected person.	273 (91.0)	17 (5.7)	10 (3.3)
4	The disease can be transmitted directly through contact with infected individuals (handshaking, hugging, kissing).	263 (87.7)	28 (9.3)	9 (3.0)
5	Persons with COVID-19 cannot infect the virus to others when a fever is not present.	103 (34.3)	134 (44.7)	63 (21.0)
6	Touching an object or surface with the virus on it, then touching your mouth, nose, or eyes with the unwashed hand would result in the infection by the COVID-19 virus.	248 (82.7)	34 (11.3)	18 (6.0)
7	By blood transfusion.	113 (37.7)	126 (42.0)	61 (20.3)
8	By sexual intercourse.	123 (41.0)	124 (41.3)	53 (17.7)
9	By Contaminated foodstuffs	164 (54.7)	87 (29.0)	49 (16.3)
10	Eating or handling wild animals would lead to infection by the COVID-19 virus.	155 (51.7)	83 (27.7)	62 (20.7)
11	Incubation period of the disease 2-14 days.	118 (39.3)	131 (43.7)	51 (17.0)
12	In suspecting infection with COVID-19, I will avoid unnecessary daily activities.	236 (78.7)	37 (12.3)	27 (9.0)
13	To avoid contracting COVID-19, I avoid	277 (92.3)	11 (3.7)	12 (4.0)

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	contact with individuals suspected to be infected with COVID-19.			
14	The disease is more dangerous is old individuals (above 50 y).	255 (85.0)	25 (8.3)	20 (6.7)
15	The disease is more dangerous in pregnant and obese women.	211 (70.3)	44 (14.7)	45 (15.0)
16	The disease is more dangerous is people with cancer, diabetes, and chronic respiratory diseases.	269 (89.7)	16 (5.3)	15 (5.0)
17	The disease is more dangerous in people with weakened immune systems.	264 (88.0)	17 (5.7)	19 (6.3)
18	Chronic disease patients are more likely to die.	259 (86.3)	25 (8.3)	16 (5.3)
19	Only old persons, those who have chronic diseases, and obese are highly susceptible to severe stages.	257 (85.7)	25 (8.3)	18 (6.0)
20	Healthcare workers are at a higher risk of infection.	269 (89.7)	19 (6.3)	12 (4.0)
21	People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days.	276 (92.0)	20 (6.7)	4 (1.3)
22	Washing hands with water and soap can eliminate virus the disease cause.	233 (77.7)	51 (17.0)	16 (5.3)
23	Antibiotics are the first-line treatment.	179 (59.7)	83 (27.7)	38 (12.7)
24	Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.	252 (84.0)	29 (9.7)	19 (6.3)
25	Children and young adults need to take measures to prevent the infection by the	82 (27.3)	199 (66.3)	19 (6.3)

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COVID-19 virus				
26	COVID-19 vaccine is available in markets.	54 (18.0)	226 (75.3)	20 (6.7)
27	The prevalence of COVID-19 disease is increasing in Libya.	235 (78.3)	37 (12.3)	28 (9.3)

6.3. Attitudes towards COVID 19 pandemic

Attitude towards COVID 19 health-seeking behaviors was assessed. Of all respondents, 74.7% think they can be contaminated by health care workers, 57.7% refuse to go to the hospital even if they are suffering from another disease other than COVID 19. Out of the those who do not want to go to the hospital, 21.3% are afraid of being contaminated in the hospital with nosocomial infections like COVID19, 59.0% think the health personnel can misdiagnose their illness given that many other diseases have similar symptoms (Table 4).

Regarding people's willingness to do a COVID 19 test, 69.3% were willing to do a voluntary test. People's preference for house medical care is because they are afraid of being contaminated in the hospital (35.5%), their families can take good care of them and they feel comfortable at home (51.0%) (Table 4).

Table 4. Frequency of Response for Attitude Questions Towards COVID-19, Benghazi, Libya, 2020. (N=300)

S. No.	Attitude Questions	Frequency (%)		
		Yes (N, %)	No (N, %)	I Do Not Know (N, %)
1	You think you will probably get illness.	235 (78.3)	17 (5.7)	10 (3.3)
2	Maintaining a distance of at least 2 mt. between you and others.	219 (73.0)	75 (25.0)	6 (2.0)
3	Covering mouth or nose during a cough or sneeze with tissue.	258 (91.0)	41 (13.7)	1 (0.3)
4	Avoiding close contact with sick people.	267 (89.0)	24 (8.0)	9 (3.0)
5	Using a mask when leaving home.	214 (71.3)	78 (26.0)	8 (2.7)

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6	Listening and following the direction of state and local authorities.	237 (79.0)	55 (18.3)	8 (2.7)
7	Staying at home to minimize the risk of infection.	266 (75.3)	68 (22.7)	6 (2.0)
8	It is my opinion that early detection of COVID-19 can improve treatment and outcome.	262 (87.3)	22 (7.3)	16 (5.3)
9	It is my opinion that COVID-19 can be treated at home.	215 (71.7)	54 (18.0)	31 (10.3)
10	It is my opinion that health education can help prevent COVID-19.	221(73.7)	73 (12.3)	42 (14.0)
11	It is my opinion that if there is an available vaccine for the disease, it should be used.	239 (79.7)	30 (10.0)	31 (10.3)
12	It is my opinion that COVID-19 is a curable disease.	254 (84.7)	20(6.7)	26(8.7)
13	Avoiding attending in a crowded population.	254 (84.7)	33 (11.0)	13 (4.3)
14	It is my opinion that COVID-19 disease results in death in all cases.	114 (38.0)	154 (51.3)	32 (10.7)
15	Prevalence of COVID-19 can be reduced by the active participant of HCWs in hospital infection control programs.	239 (79.7)	36 (12.0)	25 (8.3)
16	Medical staffs are ready to participate in anti-epidemic in the community.	188(62.7)	65(21.7)	47(15.7)
17	Are you ready to commit (adhere) to the decision of staying at home?	213 (71.0)	71 (23.7)	16 (5.3)
18	If you are living with someone working in a hospital environment, do you think they can contaminate you?	224 (74.7)	60 (20.0)	16 (5.3)
19	Are you willing to do a voluntary test for	208 (69.3)	73 (24.3)	19 (6.3)

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COVID 19?						
20	Do you prefer to be confined in the house or hospital for your medical care when you are tested positive for COVID 19?	167 (55.7)	82 (27.3)	51 (17.0)		
• Please explain the choice of staying at home.						
• Afraid of contamination		107 (35.7)				
• Better home care with family		153 (51.0)				
• Less costly		29 (9.7)				
• Stigmatization		11 (3.7)				
21	If you have another disease other than COVID 19, will you go to the hospital?	126 (42.0)	173 (57.7)	1 (0.3)		
• If No, why won't you go to the hospital?						
• Afraid of contamination		64 (21.3)				
• Misdiagnosis		177 (59.0)				
• Self-treatment		24 (8.0)				
• To avoid stigmatization		35 (11.7)				
22	Do you think that COVID-19 will be successfully controlled?	161(53.7)	60 (20.0)	79 (26.3)		
23	Do you believe that Libya can win against the COVID-19 virus?	128 (42.7)	77 (25.7)	95 (31.7)		
24	Your level of risk of infection with COVID-19.	V. High	High	Moderate	Low	V. Low
		96 (32.0)	92 (30.7)	89 (29.7)	14 (4.7)	9 (3.0)
25	How much you protect yourself from the	V. Highly threatening	Highly threatening	Moderately Threatening	Low	Not annoying at all
		110 (36.7)	66 (22.0)	74 (24.7)	29 (9.7)	21(7.0)

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disease/care to yourself.					
26	Being infected with COVID 19 to you is	Very easy	Easy	Difficult	Very Difficult
		20 (6.7)	240 (80.0)	22 (7.3)	18 (6.0)

6.4. Practices towards COVID 19 pandemic

The respondents use masks (67.7%), 72.3% wash hands and use sanitizers, 57.7% practice social distancing, or don't go to crowded places.

Looking at what people take as preventive measures, 68.7% eat citrus fruits and take vitamin C tablets. We also observed that 54.3% resort to traditional concoctions, auto medications like chloroquine (26.0%), (38.0%) paracetamol, and Ibuprofen (19.3%) (Table 5).

Table 5. Frequency of Response for Practice Questions Towards COVID-19, Benghazi, Libya, 2020. (N=300)

S. No.	Practice Questions	Yes		No		I Do Not Know	
		N	%	N	%	N	%
1	In the last few days, have you gone to any crowded area?	189	63.0	109	36.3	2	0.7
2	In the last few days, have you worn a mask when leaving home?	203	67.7	96	32.0	1	0.3
3	If yes, do you touch the front of the mask when taking it off?	94	31.3	190	63.3	16	5.3
4	Do you reuse a mask?	95	31.7	200	66.7	5	1.7
5	Do you cover your nose and mouth during coughing or sneezing with the elbow or a tissue, then throw the tissue in	232	77.3	66	22.0	2	0.7

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	the trash?						
6	Do you wash your hands with soap and water frequently for at least 20seconds or use sanitizer 60 - 70% alcohol before touching the face?	217	72.3	77	25.7	6	2.0
7	Do you participate in meetings, religious activities, events, and other social gatherings or any crowded place in areas with ongoing community transmission?	116	38.7	180	60.0	4	1.3
8	Do you clean and disinfect frequently touched objects and surfaces?	212	70.7	84	28.0	4	1.3
9	Do you practice "physical distancing" by remaining 6 feet/2 meters away from others at all times?	173	57.7	116	38.7	11	3.7
10	Do you use other workers' phones, desks, offices, or other work tools and equipment?	143	47.7	152	50.7	5	1.7
11	Do you limit contact (such as handshakes, hugging, kissing)?	203	67.7	95	31.7	2	0.7
12	Do you eat or drink in coffee shops and restaurants?	168	56.0	129	43.0	3	1.0
13	I pay more attention to my personal hygiene than usual.	243	81.0	54	18.0	3	1.0
14	Use of Traditional concoctions.	163	54.3	132	44.0	5	1.7

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15	In order to prevent contracting COVID-19, I take vitamin supplements.	171	57.0	127	42.3	2	0.7
16	In order to prevent contracting and spreading COVID-19, when do you use facial masks?	191	63.7	105	35.0	4	1.3
17	Taking chloroquine	78	26.0	204	68.0	18	6.0
18	Eating citrus fruits such as lemon and taking Vitamin C tablets	206	68.7	83	27.7	11	3.7
19	Taking paracetamol	114	38.0	178	59.3	8	2.7
20	Taking Ibuprofen	58	19.3	229	76.3	13	4.3

Statistical no significant differences in KAP of disease were observed with gender (Table 6).

Table 6. Predictors of Libyan knowledge, attitude, and practices related to COVID-19.

Variables	Gender	N	Mean	S.D	df	t-test	P value
Knowledge related to COVID 19	Male	181	1.399	0.23786	298	.155	.887
	Female	119	1.394	0.35527			
Attitudes related to COVID 19	Male	181	1.4978	0.22225	298	-1.470	.143
	Female	119	1.5408	0.28234			
Practices related to COVID 19	Male	181	1.4669	0.16776	298	-.966	.335
	Female	119	1.4899	0.24569			

Age 18 -29 years was associated with high knowledge and practice on COVID 19 (Table 7).

Table 7. Analysis of variance showing the impact of the COVID-19 pandemic on (knowledge, attitudes, and practices) by age.

Variables	Age	N	Mean	S.D	ANOVA
Knowledge related to COVID 19	18-29	97	1.4792	.37481	F=3.420 P=.009**
	30-39	99	1.3341	.21342	
	40-49	69	1.3897	.22552	
	50-59	27	1.3813	.27290	
	>59	8	1.3148	.29827	

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Attitudes related to COVID 19	18-29	97	3.29	.23267	$F=1.495$ $P=.204$
	30-39	99	3.20	.17954	
	40-49	69	3.12	.18756	
	50-59	27	3.07	.17513	
	>59	8	3.19	.25036	
Practices related to COVID 19	18-29	97	3.84	.27006	$F=4.237$ $P=.002^{**}$
	30-39	99	3.6480	.22768	
	40-49	69	3.58	.23691	
	50-59	27	3.43	.22172	
	>59	8	3.35	.18994	

6.5. Symptomatology and associated co-morbidities of COVID 19

Out of all the respondents, 76.3% reported that fever is one of the main clinical symptoms, while 29% reported no symptoms of the disease (Table 8).

S. No.	Main clinical symptoms of COVID-19 are	Yes		No	
		N	%	N	%
1	Fever.	229	76.3	71	23.7
2	Dry Cough/ catarrh.	245	81.7	55	18.3
3	Throat irritation.	217	72.3	83	27.7
4	Headache.	227	75.7	73	24.3
5	Diarrhea and constipation.	188	62.7	11	73.3
6	Muscle pain.	224	74.7	76	25.3
7	Do not smell odor or taste.	238	79.3	62	20.7
8	Difficulty breathing.	235	78.3	65	21.7
9	Eye congestion.	119	39.7	181	60.3
10	None of the above.	87	29.0	213	71.0
11	Do you usually have the above symptoms frequently?	51	7.0	249	83.0
12	When you have these symptoms, do you call 195?	144	48.0	155	51.7

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Also suffered individuals in the study, 3.0% hypertension, 6.3% Diabetes mellitus, 1.3% Heart Disease (Table 9).

S. No.	Variables	N	%
1	High blood pressure (Hypertension).	9	3.0
2	Cancer	16	5.3
3	Diabetes	19	6.3
4	Cardiovascular diseases	4	1.3
5	Asthma	6	2.0
6	Other's disease	9	3.0
7	None of the above	237	79.0

7. Discussion

COVID 19 is spreading rapidly across the whole world and increasing exponentially in Libya unless strict preventive measures are taken. This is one of the first studies to identify the symptoms and the protective, behavioral, and cognitive aspects of COVID 19. Our study, males and females had equal knowledge, and female attitudes and practices were generally higher than males, which means females avoid leaving the house unless necessary, and crowded places, and practice washing hands with soap and water regularly, and using disinfectants and sterilizers frequently.

Akwa et al. [27] reported in his study that > 80% of respondents knew the disease is transmitted by a handshake, person to person, and contact with infectious. Our findings show that there is an increase in the knowledge perception of disease transmission since respondents now know it is transmitted by touching contaminated surfaces and then touching eyes, nose, or mouth.

We found that 70.3% of the respondents took necessary precautions such as wearing masks and approximately 85.0% like avoiding crowded areas, wore masks, washing hands regularly as stipulated by the WHO and CDC guidelines [28].

The factors: gender, age which correlated positively with knowledge, practice for COVID 19 will be useful for public health policy-makers and health workers to recognize the target groups for COVID-19 prevention and sensitization. The level of awareness on COVID-19 among respondents was expected because 31.7% of the respondents knew that the disease outbreak was in December 2019 and 48.7% of the respondents got the information through social media before the first imported case in the country was recorded in March 2020 [29].

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With respect to identifying knowledge questions related to COVID-19 prevention, nearly 67.7 % of the participants identified using the face mask, frequent hand washing rate of 77.7%, and staying at home as the most important means of preventing the pandemic rate of 71.0%.

The finding was as close to a study conducted a study from Northwest Ethiopia which showed that hand washing was the most common preventive practice in response to COVID-19, adopted by 78.5% of respondents [31]. The present study found participants were optimistic and showed a positive attitude (60.7%) toward COVID-19. While 53.7% believed that COVID-19 will finally be successfully controlled, and 42.7 % had confidence that Libya's government was handling the health crisis very well. This finding is consistent with the level of positive attitude among participants regarding COVID-19 was also found in studies conducted among people in Malaysia and Saudi Arabia [-31

In this study, 32% of the study participants perceived that they have a very high risk of infection. This finding consistent with that of the studies in Iran²⁴ and China [19]. and not consistent with that of the study in Ethiopia. The possible justification of this disparity might be a difference in sources of information, information-seeking behavior, frequency of media exposure, knowledge, a phase of the outbreak in the study area, and worry related to the outbreak of study participants which lead to the variation in the application of recommended actions and behaviors to prevent COVID-19. Our study, an increase in age was found to be associated with poor knowledge. This is supported by another study, which reported that older respondents showed poor knowledge of COVID-19 [33]. Similarly, a study by Zhong et.al, revealed that older adults were shown to have poor knowledge [19]. This decrease in knowledge might be due to the reason that as age increases hearing ability and visual performance get decreased due to aging and make it challenging to read or understand medical instructions. Besides, aging-associated loss of cognition might cause similar challenges. These conditions are considered as a barrier to information about COVID-19 and result in poor knowledge.

Study participants with the educational status of Ph.D. and above” were more likely to have high practice than those with the educational status of lower educational level. Similar to this finding, a study in Iran showed that a higher level of education was associated with high

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practice score [34]. This may be due to the fact that education is an influential determining factor of healthy behavior [35].

As one gets more educated, there will be multiple ways of acquiring information to know about the prevention of COVID-19 and will practice accordingly. Also, when someone gets more educated he/she will have a better understanding of control measures and preventive strategies related to COVID-19, and the ability to practice recommendations to protect COVID-19 will increase.[36].

Our finding, differences were found in the practices of infection with the emerging corona virus according to marital status, the married people are higher with an average of (1.56) and at a significance level of 0.01. The differences of poor practice among unmarried participants higher than the married ones. The possible reason might be the absence of enforcement from the partner to practice accordingly in unmarried participants, while the married one gets motivated by their partner to practice appropriately. Moreover, when someone is in relation, he/she will worry about infecting his/her partner due to his/her poor practice. Therefore, he/she prefer to practice appropriately. But the unmarried ones have no one to take care of and might practice poorly. In this study, there are differences in attitudes to infection with the emerging coronavirus related to monthly income. Higher income is associated with good attitudes towards the coronavirus and therefore good practices. A decrease in monthly income was found to be associated with poor knowledge and poor practice. This is supported by other studies in Malaysia [31], and United States [33], which reported that participants with low income showed poor knowledge of COVID-19. Moreover, the study in China reported that high income was associated with good knowledge and appropriate practice of COVID-19 [19]. This is due to the fact that economic status is the main determinant of behavior and actions for maintaining one's health [37]. It is shown that low monthly income leads to a feeling of inability to change one's behavior or condition, and finally, the inability of executing recommended protective behaviors of COVID-19[35]. In addition, an increase in income leads to the possibility of satisfying needs for protecting COVID-19. For example, buying a facemask and hand sanitizer is possible when there is adequate income. Moreover, Individuals with low income will fail to stay at home, rather prefer to continue their daily activities to satisfy their basic needs during the transmission period. Paracetamol, citrus fruits

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like lemon, and vitamin C tablets were common among the study population. This result is consistent with a study conducted in Iran. This finding is not consistent with another study conducted in Cameroon, where the study showed that patients infected with the Coronavirus do not take paracetamol because it reduces the temperature, which is an indicator of the body's resistance to the virus.

8. Recommendations

1. Compliance with existing national and/or local guidance from National Center for Disease Control - Libya, and recommendations on social distancing, Handshaking, hugging, Kissing, Handwashing with water and soaps; and work shifts, downsizing operations, telework, and other exposure-reducing measures.
2. Training for workers, improving and developing preventive awareness, creating a sense of the importance of safety among workers, and obligating them to implement safety programs by promoting educational programs in the work environment.
3. Issuing the necessary legislation for occupational safety and health so that the infection with the Coronavirus in the field of health care is classified as an occupational disease, or a work injury according to the type and nature of work, similar to the countries that started to include HIV infection in the list of occupational diseases and the keenness of the authorities responsible for implementing the laws to educate workers about safety laws and procedures.

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