Knowledge and Practice toward Coronavirus Disease among Patients with Selected Chronic Disease

Aml Abd-Alla [(1)] Awatef Abd.El-Razek [(2)], Naglaa M. Amin, [(3)] Zeinab M. Hassan [(4)]

1. BSc. in Nursing, Faculty of Nursing, Minia University
2. Professor of Community Health Nursing, Faculty of Nursing – Minia University
3. Assistant Professor of Community Health Nursing, Faculty of Nursing – Minia University
4. Lecturer of Community Health Nursing, Faculty of Nursing – Minia University

Abstract

Background: Coronavirus disease (COVID-19) is an illness caused by a novel coronavirus, now called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). **Aim:** to assess knowledge and practice toward coronavirus disease among patients with selected chronic diseases. **Design:** A descriptive cross-sectional design was utilized. **Setting:** The current study was conducted at the medical, diabetic, chest, and cardiac out-patient clinics, at Minia University Hospital and Cardio-Thoracic Hospital. **Sample:** A purposeful sampling consisted of 331 patients with chronic diseases (hypertension, diabetes mellitus, heart disease, and chronic lung disease) **Collection of data:** Data were collected using two tools Second tool(1st tool)**:** It was included three parts: Part 1: Socio-demographic characteristics, part 2: Lifestyledata and Part 3: Knowledge of chronic disease patients toward coronavirus disease: 2nd tool**:** Practice of chronic disease patients toward coronavirus disease: **Results:** The main finding of the study 83.4.% of the studied sample had age ranged from $30 \leq 49$ years and $50 \leq 69$ years respectively with mean of (50.05 ± 9.90) and 63.1% of them were male. The main finding of the study 56.2% of the studied sample had poor knowledge and 73.1% of them had poor practice toward coronavirus disease. **Conclusion:** This study showed that poor knowledge and practice were found among the studied sample. There was a positive strong correlation between the total score of knowledge and the total score of practices of the studied sample toward Coronavirus disease. **Recommendations:** Educational workshops and periodical programs should be conducted for all people to increase their knowledge, attitude, and practice regarding the coronavirus disease.

Keywords*:* Chronic disease, Coronavirus disease, Patients knowledge, Patients practice

Introduction

Coronavirus is one of the major pathogens that mainly target the respiratory system of the human organ. Previous outbreaks of coronaviruses have been recorded in history as a severe acute respiratory syndrome (SARS)-CoV and the Middle East respiratory syndrome (MERS)-cov **(Shahzad & Najafzadeh, 2020).**

New coronavirus has been identified as the cause of acute respiratory disease since the end of December 2019. It was labeled as SARS-cov2 by the World Health Organization as a different strain of coronavirus from severe acute respiratory syndrome coronavirus (SARS) and Middle East respiratory syndrome coronavirus (MERS) coronaviruses. Here, the difference between them is the genetic make-up, clinical presentations, case fatality, and the rate of spread across the world. That is the SARS-cov2 is the virus that has caused coronavirus disease (COVID-19) became the newest virus causing global health fear **(Tang et al., 2021).**

Coronavirus symptoms can range from mild (or no symptoms) to severe illness and are mainly characterized by fever, dry cough, dyspnea, headache, sore throat, rhinorrhea, and sometimes hemoptysis. The main route of transmission is close contact (about 6 feet or two arm lengths) with a person who has COVID-19 respiratory droplets when an infected person coughs, sneezes, or talks and touches a surface or object that has the virus on it, and then touching his/her mouth, nose, or eyes **(Hui et al.,2020).**

The World Health Organization (WHO) defines non-communicable diseases (NCDs) is as chronic conditions that do not result from an acute infectious process and hence are not communicable with a longer duration, which a complete cure is rarely achieved and are the result of a combination of genetic, physiological, environmental and behavioral factors. These non-communicable diseases include cardiovascular disease, cancer, diabetes mellitus, chronic respiratory disease, chronic neurological disorders, musculoskeletal diseases, and other non-infectious conditions **(Boettler et al., 2020).**

Chronic conditions like diabetes, hypertension, obesity, heart, and lung disease have been associated with coronavirus disease (COVID-19) severity. The studies of patients with COVID-19 infection have shown that people with chronic diseases not only have a higher risk of developing the disease but also are more likely to die from the virus infection).

Another factor influencing the mortality rate of COVID-19 is old age, especially over 60 years. People with diabetes can help control their immune systems by controlling their blood sugar and preventing COVID-19 as much as possible **(Kendzerska et al., 2021).**

Individuals with chronic conditions have also faced significant lifestyle disruptions due to the COVID-19 pandemic, particularly regarding physical activity, sleep, stress, and mental health, which need to be better addressed by healthcare systems in the COVID-19-specific context. Conversely, mitigation of some lifestyle and environmental risk factors during quarantine, such as reduced exposure to traffic, air pollution, and other respiratory infections, may improve outcomes in individuals with chronic conditions**. (Chandrasekaran & Ganesan, 2021).** Meta-analysis of the data extracted suggested that diabetes and coronary artery disease were prevalent in 10.0% and 8.0% of the patients, respectively. The proportion of hypertension (20.0%) was

much higher than that of chronic pulmonary disease (3.0%) in COVID-19 patients. **(Liu et al, 2020).**

Complications of COVID-19 include impaired function of the heart, brain, lung, liver, kidney, and coagulation system. COVID-19 can lead to myocarditis, cardiomyopathy, ventricular arrhythmias, and hemodynamic instability. Acute cerebrovascular disease and encephalitis are observed with severe illness (in up to 8% of patients) **(Fournier et al., 2021).** Case isolation, identification, follow-up of contacts, environmental disinfection, and use of personal protective equipment. Apply appropriate symptomatic treatment and supportive care to prevent the spread of COVID 19 **(FMOH, 2020).**

Handwashing with soap and water should be encouraged since it kills the virus. The use of alcohol-based hand rubs is also useful. There is a need to practice proper respiratory hygiene by covering the mouth and nose with bent elbow or tissue when coughing or sneezing **(Hartmann et al., 2020).** Touching of mouth, nose, and eyes should be avoided. Contact with an affected person needs to be minimized. Use of recommended face masks is advised if there is contact with someone with respiratory symptoms. Non-essential travel to major affected areas should be avoided to restrict the spread of infection **(Selvin et al., 2020).** It is important to take influenza and pneumonia vaccinations. The latter may decrease the chances of secondary bacterial pneumonia after respiratory viral infection **(Macintyre, 2018).**

The affected person needs to be isolated for fourteen(14 days)or till the symptoms resolve (whichever is longer). Country-specific guidelines need to be followed. The majorities of patients have mild diseases and can be managed at home. Hydration should be maintained and symptomatic treatment with acetaminophen and steam inhalation can be given **(Gupta et al., 2020).**

Community nurses' role focus on the promotion of health and wellness, prevention of illness, and the care of people with differing abilities, the ill, and those needing palliative care. Community nurses collaborate with other home care nursing agencies outside of acute hospitals in the community care settings for patients requiring long-term support for nursing procedures, for example, wound care and medication management **(Burmeister et al., 2019)**. Support immediate cash injections at the household level and the creation of neighborhood plans to protect the most vulnerable. Eliminate point-of-care user fees for COVID-19 testing, treatment, and care where these exist. Work with governments and funding partners to ensure that community health worker (CHW) budgets incorporate holistic support, including food supplementation, access to clean water, and mental health and psychosocial support. **(Intinarelli et al.,2021)**

Significance of the study

The spread of COVD-19, however still increases alarmingly from day to day and is not controlled. Poor understanding of the disease among the community, especially the high-risk groups is implicated in this increase in the spread of the infection and death. Therefore, successfully controlling and minimization of morbidity and mortality due to COVID-19 requires changing the behavior, which is influenced by people's knowledge and perceptions, of the general public, especially the high-risk groups **(Akalu et al., 2020).**

According to the World Health Organization(WHO) report, there were almost 70 million reported cases of COVID 19 in January 2022, to date more than 326,884,814 cases and 5,553,975 confirmed deaths, and 266,490,965 cured cases in were recorded in the world **(WHO, 2020).** There were 401,308 confirmed COVID-19 cases in Egypt from January 2020 to January2022, including 22,179 deaths **(Ministry of Health and Population Egypt (MOHP), 2020).**

The proportions of hypertension, cardia-cerebrovascular disease, and diabetes in patients with COVID-19 were 17.1%, 16.4%, and 9.7%, respectively. The incidences of hypertension, cardia-cerebrovascular diseases, and diabetes were about two folds, threefold, and two folds, respectively **(Ziegler, 2020)**. Consequently, it is mandatory to consider the Knowledge, Attitude, and Practice(KAP) and potential risk factors of high-risk groups in particular those chronic disease patients and helps to predict the effects of expected actions on COVID-19 **(Zheng et al., 2020)**.

Aim of the study

This study aims to assess knowledge and practice toward coronavirus disease among patients with selected chronic diseases.

Research questions

1) What are the levels of knowledge and practice toward coronavirus disease among patients with selected chronic diseases?

2) Is there a correlation between knowledge and practice toward coronavirus disease and socio-demographic data among patients with selected chronic diseases?

Subjects and Methods

Research Design:
A descriptive cross-sectional research design was used in this study.

Setting:

The current study was conducted at the medical, diabetic, chest, and cardiac out-patient clinics, at Minia University Hospital and Cardio-Thoracic Hospital. Minia University Hospital is located in El-Cornish St.Minia, Egypt. The main university hospital includes about 13 different specialties (general surgery, neurology, heart, orthopedics, tumors, nose, and ears(E.N.T), dermatology, internal medicine). The hospital consists of five floors, other than the ground floor. It consists of nineteen(19) clinics. and Cardio-Thoracic Hospital. which is located in new minia, city includes three departments, the cardiac department, chest department, and cardiothoracic surgery, consists of four clinics (Chest Clinic, Open Heart Clinic, Heart Clinic, and Respiratory Function Clinic).

Subject:

Purposeful sampling was utilized in this study. A selected number of patients with chronic diseases (hypertension, diabetes mellitus, heart disease, and chronic lung disease) attend the outpatient clinics and who met the inclusion criteria. The total numbers of patients attending the medical, diabetic, chest, and heart clinics during the year are 350, 300, 900, and 800 respectively. The sample size was calculated according to the equation for the sample size of the descriptive study design (Smith& Scott,2020)

$$n = \frac{\dfrac{z_\alpha^2 \; p \, (1-p)}{m^2}}{1 + \dfrac{z_\alpha^2 \; p \, (1-p)}{m^2 \, N}} = \frac{\dfrac{(1.96)^2 \; (0.5) \, (0.5)}{(0.05)^2}}{1 + \dfrac{(1.96)^2 \; (0.5) \, (0.5)}{(0.05)^2 \; 2350}} = 331$$

n = required sample size.

z_α = is the Z score at 0.05 ($z_{0.05} = 1.96$).

p = Prevalence of Chronic Disease Patients in the medical, diabetic, chest, and cardiac out-patient clinics in 2019/2020(0.5).

m = Margin of error at 5 % (standard value of 0.050).

N= population size.

The result is 331 patients and the total sample was distributed among four outpatient clinics to the number of patients in each clinic as follows:

Chronic diseases name	Total No	Sample No	%
Diabetes mellitus	300	43	13
Hypertension disease	350	50	15
Chronic Lung disease	900	126	38
Heart disease	800	112	34
Total No.	**2350**	**331**	**100**

Inclusion Criteria:
- Patients over 18 years of age(male and females).
- patients who have a regular follow-up at medical, diabetic, chest, and heart out-patient clinics.

Exclusion Criteria
- Patients with chronic diseases that have been critically ill
- Chronic patients from health professionals staff.

Data Collection Tools:
Data was collected through a structured interviewing questionnaire that was designed by the investigator after an extensive review of the related literature. **It consisted of two tools:**
Tool I: It was included three parts:
Part 1: socio-demographic characteristics:
It consisted of (7) seven items related to the patient such as age, gender, residence, educational level, occupation, marital status, and type of family.
Part 2:Life style data:
It was included (6) six items as smoking habits, duration of smoking, daily hours of sleep, source of information, use of mask, type of mask
Part 3: Knowledge of chronic disease patients toward coronavirus disease:
This tool was adapted by (**Gharpure et al., 2020**) and modified by the investigator. It is used to assess the knowledge of chronic disease patients, it consists of (22) twenty-two including definition, causes, signs, and symptoms, high-risk group, ways of prevention….etc.

Scoring system:
The response of ″yes″, ″no″, or ″ don't know″ was scored 1 for ″yes″, and "zero" for both ″no″ or ″ don't know″ respectively. These scores were summed and converted into a percent score.

It will be classified into 3 categories:
- Good knowledge if score > 70%(> 16).
- Average knowledge if score from 50 - 70%(11-16).
- Poor knowledge if score <50%(<11).

Tool II: Practice of chronic disease patients toward coronavirus disease:
It was adopted by McIntosh **et al., (2020**.) to assess the practices of chronic disease patients towards COVID 19. It consists of (twelve) 12 practices wash hands frequently, avoid touching the face, avoid close contact with sick people, wear a mask, cover nose and mouth during coughing, avoid public transportation, safe distance, stay at home, and self-isolation………… etc.

Scoring system:
The response of yes″, ″no″, would be scored 1, 0 respectively These scores would be summed and converted into a percent score.

It will be classified into 2 categories:
- Good practice if score > or equal 70%(> 9).
- Poor practice if score <70%(<9).

Validity :
The content validity of the tools was determined to see how well they measured what was supposed to be measured. A panel of five experts in the fields of community health nursing and medical-surgical nursing evaluated the developed tools.

Reliability:
The extent to which the items measure the same definition and the extent to which the items are associated with one another was determined by measuring internal consistency. It was prepared in final shape and then tested for reliability by using, Cronbach's alpha coefficient test (0.96, and 0.71) respectively.

Pilot study:
A pilot study was carried out on 10% (33 patients) of the expected sample size to test the content, the effectiveness, and the time consumed to fill in study tools. no modification was done in the basic sample, The pilot study was included on the study.

Data Collection Procedure:
- Permission to conduct the study was obtained from the Director of Minia University Hospital and Cardio-Thoracic Hospital. Approval of an ethical committee at the Faculty of Nursing at Minia University was obtained.
- The current study was conducted by preparing different data collection tools; It was done through the schedules of each outpatient clinic. The selected sample was informed by the investigator individually about the purpose and nature of the study, then the investigator obtained oral consent from those who accepted to participate in this study.
- The investigator collected patients from Minia University Hospital first, then Cardio-Thoracic Hospital, and it took around 10-15 minutes to fill the tools with an average of 10-15 patients per day, The investigator visited each hospital(diabetes and medical outpatient clinics) and (chronic lung disease and heart disease clinic) for Three days a week from

9:30 a.m. to 12:30 p.m. until the pre-determined sample size was achieved between the beginning of June 2021 and the end of November 2021 (over six months).

- The investigator completed the questionnaires for the illiterate patients, whereas the educated patients completed the questionnaires By themselves.

Ethical consideration:

The preliminary written approval was approved by the Research Ethics Committee of the Faculty of Nursing, Minia University. Oral informed consent was obtained from participants after explaining the nature and benefits of the study. Each assessment sheet was coded, and participants' names did not appear on the sheets for privacy and confidentiality. Participants were assured that they could withdraw at any time from the current study.

Statistical Analysis:

Statistical tests were used to computerize, tabulate, evaluate, and summarize the acquired data as Chi-square for quantitative variables and percentages for qualitative variables by using SPSS version 25. The level of significance was accepted at $P < 0.05$

Results

Table (1): Distribution of the studied sample according to their socio-demographic characteristics (n= 331), Minia University Hospital and Cardio-Thoracic Hospital, 2022

Socio-demographic characteristic	No.	%
Age		
18-29 yrs.	23	6.9
$30 \leq 49$ yrs.	138	41.7
$50 \leq 69$ yrs.	138	41.7
> 70 yrs.	32	9.7
Mean ± SD 50.05 ± 9.90		
Sex		
Male	209	63.1
Female	122	36.9
Residence		
Rural	130	39.3
Urban	201	60.7
Education		
Illiterate	178	53.8
Read and write	105	31.7
Secondary	41	12.4
University and high	7	2.1
Occupation		
Employee	88	26.6
Not employee	243	73.4
Marital status		12.4
Single	41	79.8
Married	264	3.3
Widow	11	4.5
Divorce	15	
Type of family		
Nuclear	58	17.5
Extended	273	82.5

Table 1: shows that 83.4.% of the studied sample had ages ranging from $30 \leq 49$ years and $50 \leq 69$ years respectively with a mean of (**50.05 ± 9.90**). Regarding sex, 63.1% of them were male. Related to the residence 60.7% of them lived in an urban area, .also, more than half (53.8%) of the studied sample was illiterate. On the other hand, the result showed that 73.4% of the studied sample was not an employee and 79.8% of them were married. Finally, the majority of the studied samples 82.5% lived with their extended family

Table (2): Distribution of the studied sample according to their lifestyle data (n=331), Minia University Hospital and Cardio-Th Hospital, 202

Lifestyle data	No.	%
Smoking habits		
- Nonsmoker	139	42.0
- Previous smoker	97	29.3
- Current smoker	90	27.2
- Passive smoker	5	1.5
Duration of smoking (= 192)		
- < 5 yrs	٦٤	33.3
- 5 to 10 yrs	١٠٧	55.8

Lifestyle data	No.	%
- > 10 yrs	٢١	10.9
Daily Hours of sleep		
- less than 6 hrs.	97	29.3
- 6-10 hrs.	214	64.7
- more than 10 hrs.	20	6.0
Source of information		
- Don't hear	3	0.9
- Media such as TV and the Internet	137	41.4
- Family members	149	45.0
- Magazines and newspapers	3	9.0
- Friends	35	10.6
- More than answer	4	1.1
Use mask		
- Yes	294	88.8
Type of mask (No=294)		
- Medical mask	184	62.6
- Cloth face mask	99	33.7
- Disposable respirator (nk95)	11	3.7

Table 2: reveals the distribution of the studied sample according to their lifestyle;

It was observed nonsmokers constituted 42% of the studied sample. Regarding the duration of smoking more than half (55.8%) of the studied sample had a duration of smoking from five to ten years. On the other hand, this table showed that 64.7% of the studied sample had their daily hours of sleep ranging from 6 to 10 hours. As regards the source of information about COVID-19, 45% of the studied sample obtained their information from family members followed by 41.4% through media such as TV and the Internet. While 0.9% is unheard it. Regarding the use of the mask, it was noted that the majority of the studied sample 88.8% used the mask. Regarding the type of mask used 62.6% of them were using the medical mask While 33.7% of them used cloth masks and only 3.7% used the nk95 mask

Table (3): Relation between total score of knowledge toward Coronavirus disease of the studied sample and their socio-demographic characteristics (n= 331), Minia University Hospital and Cardio-Thoracic Hospital, 2022

Socio-demographic characteristic	Total knowledge level						X^2	(p-value)
	Good(n=87)		Average(n=58)		Poor(n=186)			
	No.	%	No.	%	No.	%		
Age								
- 18-29 yrs	14	60.8	3	13.0	6	26.2	37.٤٩	0.001**
- 30 ≤ 49 yrs	45	32.6	24	17.4	69	50.0		
- 50 ≤ 69 yrs	20	14.5	20	14.5	98	71.0		
- > 70 yrs	8	25	11	34.4	13	40.6		
Sex								
- Male	62	29.7	40	19.3	107	51.0	5.831	0.054
- Female	25	20.5	18	14.8	79	64.7		
Residence								
- Rural	60	46.2	21	16.1	49	37.7	45.426	0.001**
- Urban	27	13.4	37	18.4	137	68.2		
Education								
- Illiterate	16	9.0	35	19.7	127	71.3	85.011	0.001**
- Read and write	40	38.1	11	10.5	54	51.4		
- Secondary	27	65.9	9	22.0	5	12.1		
- University and high	4	57.1	3	42.9	0	0.0		
Occupation								
- Employee	31	35.2	7	8.0	50	56.8	9.919	0.007**
- Not employee	56	23.0	51	21.0	136	56		
Marital status								
- Single	12	29.3	5	12.2	٢٤	٥٨,٥	٥,٠٦٩	0.535
- Married	71	26.9	47	17.8	١٤٦	55.3		
- Widow	1	9.1	4	36.4	٦	54.5		
- Divorce	3	20.0	2	13.3	١٠	٦٦,٧		
Type of family								
- Nuclear	10	17.3	2	3.4	46	79.3	16.825	0.001**
- Extended	77	28.2	56	20.5	140	51.3		

Table (3) reveals the relation between the total score of knowledge toward Coronavirus Disease of the studied sample and their sociodemographic characteristics; statistically significant differences were found in the study sample's regarding age, residence, education level, occupation, family type, where the p-values were (0.001, 0.001, 0.007 & 0.001) respectively

Table (4): Relation between total levels of knowledge toward coronavirus disease of the studied sample and their lifestyle data (n= 331), Minia University Hospital and Cardio-Thoracic Hospital, 2022.

Lifestyle data	Total knowledge level						X^2	(p-value)
	Good(n=87)		Average(n=58)		Poor(n=186)			
	NO	%	NO	%	NO	%		
Smoking habits							8.798	0.185
- Nonsmoker	36	25.9	22	15.8	81	58.3		
- Previous smoker	30	30.9	15	15.5	52	53.6		
- Current smoker	20	22.2	18	20.0	52	57.8		
- Passive smoker	1	20.0	3	60.0	1	20		
Duration of smoking (= 192)							٣.٠٨٣	0.798
- < 5 yrs	21	32.8	10	15.6	33	51.6		
- 5 to 10 yrs	26	24.3	21	19.6	60	56.1		
- > 10 yrs	٤	19.1	٥	23.8	١٢	57.1		
Daily Hours of sleep							8.197	0.085
- less than 6 hrs.	٣٣	34.0	٢١	21.6	43	44.4		
- 6-10 hrs.	٥٠	32.4	٣٣	15.4	131	60.2		
- more than 10 hrs.	٤	20.0	٤	20.0	12	60.0		
Source of information							11.86	0.001**
- Don't hear	0	0.0	1	33.3	2	66.7		
- Media such as TV and the Internet	73	53.3	29	21.2	35	25.5		
- Family members	10	6.7	24	16.1	115	77.2		
- Magazines and newspapers	1	33.3	1	33.3	1	33.4		
- Friends	3	7.7	3	7.7	33	84.6		
- More than answer	0.0	0.0	0.0	0.0	4	100		
Use mask							7.941	0.02*
- Yes	84	28.6	48	16.3	162	55.1		
Types of mask (No=294)							38.852	0.001**
- Medical mask	50	27.2	29	15.8	105	57 57.6 0		
- Cloth face mask	23	23.2	19	19.2	57	0		
- Disposable respirator nk95	11	100.0	0	0.0	0			

Table (4) reveals the relation between the total score of knowledge toward Coronavirus Disease of the studied sample and their lifestyle data; statistically, significant differences are found in the study sample's source of information, which included media such as TV and the Internet, using the mask and the type of mask where the p-values are (0.001, 0.02 & 0.001) respectively

Table (5): Relation between total score of practice toward coronavirus disease of the studied sample and their socio-demographic characteristics (n= 331), Minia University Hospital and Cardio-Thoracic Hospital, 2022.

Socio-demographic characteristic	Total practice level				X^2	(p-value)
	Good(n=89)		Poor(n=242)			
	NO	%	NO	%		
Age					19.964	0.001**
- 18-29 yrs	11	47.8	12	52.2		
- 30 ≤ 49 yrs	49	35.5	89	64.5		
- 50 ≤ 69 yrs	21	15.2	117	84.8		
- > 70 yrs	8	25.0	24	75.0		
Sex					5.118	0.02*
- Male	65	31.1	144	68.9		
- Female	24	19.7	98	80.3		
Residence					58.169	0.001**
- Rural	65	50.0	65	50.0		
- Urban	24	11.9	177	88.1		
Education					85.327	0.001**
- Illiterate	16	9.0	162	91.0		
- Read and write	39	37.1	66	62.9		
- Secondary	27	65.9	14	34.1		
- University and high	7	100.0	0	0.0		

Socio-demographic characteristic	Total practice level				X²	(p-value)
	Good(n=89)		Poor(n=242)			
	NO	%	NO	%		
Occupation						
- Employee	31	35.2	57	64.8	4.240	0.04*
- Not employee	58	23.9	185	76.1		
Marital status						
- Single	11	26.8	30	73.2	.444٠	0.931
- Married	72	27.3	192	72.7		
- Widow	2	18.2	9	81.8		
- Divorce	4	26.7	11	73.3		
Type of family						
- Nuclear	8	13.8	50	86.2	6.134	0.01*
- Extended	81	29.7	192	70.3		

Table (5) shows a relation between the total score of practice toward Coronavirus disease of the studied sample and their socio-demographic characteristics; statistically, significant differences are found in the study sample's age, sex, residence, education, occupation, and the type of family where the p- values are (0.001, 0.02, 0.001, 0.001, 0.04 & 0.01) respectively

Table (6): Relation between total score of practice toward coronavirus disease of the studied sample and their *lifestyle data* (n= 331), Minia University Hospital and Cardio-Thoracic Hospital, 2022

Lifestyle data	Total practice level				X²	(p-value)
	Poor practice N=(89)		Good practice N=(242)			
	NO	%	NO	%		
Smoking habits						
- Nonsmoker	35	25.2	104	74.8	3.477	
- Previous smoker	32	33.0	65	67.0		0.324
- Current smoker	20	22.2	70	77.8		
- Passive smoker	2	40.0	3	60.0		
Duration of smoking (= 192)						
- < 5 yrs	46	71.9	18	28.1	١,٤٠٩	0.703
- 5 to 10 yrs	75	70.1	32	29.9		
- > 10 yrs	١٧	81.0	٤	19.0		
Daily Hours of sleep						
- < 6 hrs.	٣٣	34.0	٦٤	66.0	4.43	0.109
- 6-10 hrs.	٥٣	24.8	١٦١	75.2		
- more than 10 hrs.	٣	15.0	١٧	85.0		
Source of information						
- Don't hear	0	0.0	3	100.0	84.18	0.001**
- Media such as TV and the Internet	73	53.3	64	46.7		
- Family members	13	8.7	136	91.3		
- Magazines and newspapers	1	14.3	6	85.7		
- Friends	2	5.7	33	94.3		
- More than answer	0	0	4	100		
Use mask						
- Yes	85	28.9	209	71.1	5.47	0.019
Type of mask (No=294)						0.001**
- Medical mask	56	30.4	128	69.6	39.7	
- Cloth face mask	18	18.2	81	81.8		
- Disposable respirator (nk95)	11	100.0	0	0.0		

Table (6) shows the studied sample relation between the total score of practice toward Coronavirus disease of the studied sample and their lifestyle data; it is observed that there are statistically significant differences between the studied sample (0,001) regarding the source of their information from media such as TV and the Internet, and P-V (0,001) regarding the type of mask from cloth mask
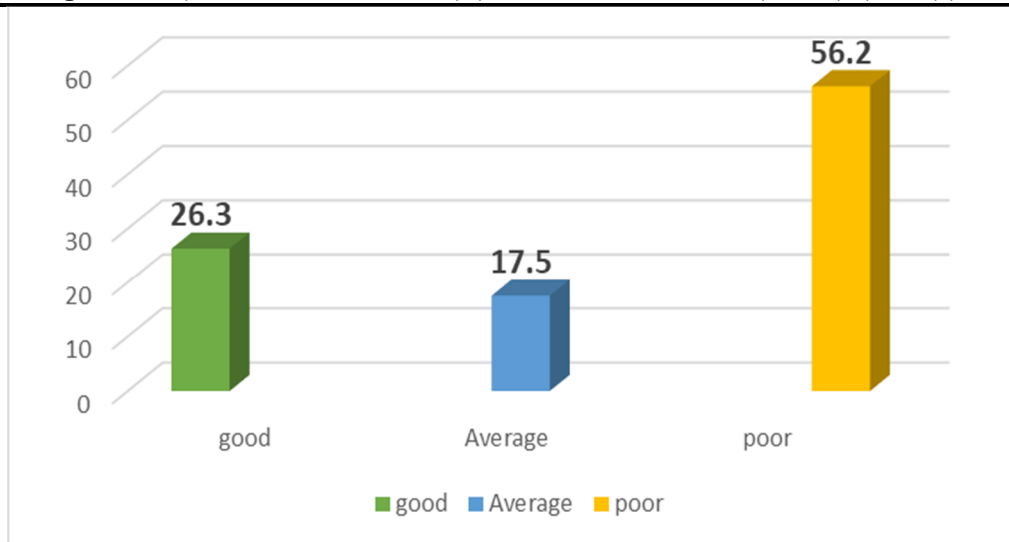
Figure (1): Distribution of the studied sample according to their total knowledge level of Coronavirus Disease (n= 331), Minia University Hospital and Cardio-Thoracic Hospital, 2022.

Figure (1) illustrates that more than half (56.2%) of the studied sample had poor knowledge of coronavirus disease, while only (26.3%) of them had good score knowledge of coronavirus disease

Figure (2): distribution of the studied sample according to their total practice level toward Coronavirus Disease (n= 331), Minia University Hospital and Cardio-Thoracic Hospital, 2022.

Figure (2): shows that nearly three-quarters 73.1% of the studied sample had poor practice toward coronavirus disease. Whereas only more than one quarter of 26.9% of them had good practice toward coronavirus disease.

Table (7) Correlations between total score of knowledge and total score of practices of the studied sample toward Coronavirus disease (n=331), Minia University Hospital and Cardio-Thoracic Hospital, 2022.

	A total score of knowledge	
A total score of practices	r.	.752
	P.Value	0.001

Table (7) reveals that there is a positive strong correlation between the total score of knowledge and the total score of practices of the studied sample toward Coronavirus disease, which has the highest strong positive statistically significant correlation

Discussion

Coronavirus disease (COVID-19) is defined as an illness caused by a novel coronavirus, now called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-cov-2; formerly called 2019-ncov). According to the WHO, the outbreak of COVID-19 is a pandemic that has infected more than 3 million people at the time of writing this research paper and caused more than 200 000 deaths 38 million cases and deaths are currently 1 million worldwide **(WHO, 2020).**

The current study revealed that the mean average age was calculated as **50.05 ± 9.90** years among the participants. This is related to an increase in the risk of chronic disease with age. This agreement with **Al-Hanawi et al., (2020)** showed that more than half of the studied sample ranged from thirty to fifty years, in their study in the Kingdom of Saudi Arabia.

The study findings denoted that; more than two-thirds of the study sample were male. This agreement with **Tomar et al., (2021)**. Who mentioned that more than two-quarters of the studied sample were male and **Al-Hanawi et al., (2020)** in the same line showed that in their study in the Kingdom of Saudi Arabia found that, more than two-thirds were male.

Regarding the residence, two-thirds of the studied sample lived in urban. This agreement with **Semenzato et al., (2021)** who showed that most of the studied sample lived in an urban area. Our findings showed that more than half of the studied sample was illiterate. This may be rationalized as in the past there was no interest in education. This agreement with **Addis et al., (2021)** showed that more than two-thirds of the studied sample was illiterate.

On the other hand, the result showed that three quarter was not working among the studied sample and more than three-quarter of them were married. This agreement with **Mahapatra et al., (2021)** found more than half of the studied sample were married. As regards, the current study sample's family type the majority of the studied sample was lived with extended family. This may be rationalized as the nature of Egyptian people like to live together and have social interaction. this disagreement with **Lee et al., (2021)** in South Korea who found most of the studied sample lived in a nuclear family.

The findings of the current study observed that less than half of the studied sample obtained their information from family members followed through media such as TV and the Internet. This result is due to COVID-19 being a new disease and we obtained our information from family members and media such as TV and the Internet. The study was constant with the study of **Akalu et al., (2020)** who conducted a study entitled "Knowledge, Attitude and Practice towards COVID-19 among Chronic Disease Patients at Addis Zemen Hospital, Northwest Ethiopia" and found that the main source of information in this study was TV. Also, this study was in agreement with the study of **Bhagavathula et al., (2020)** who conducted a study about "Novel Coronavirus (COVID-19) Knowledge and Perceptions: A Survey of Healthcare Workers" and discovered that the study sample's main source of knowledge was social media, such as television and the Internet. While these findings are consistent with, the study of **Alzoubi, (2020)** who conducted a study about "COVID-19 - knowledge, attitude, and practice among medical and non-medical university students in Jordan". which stated that the study sample sources of knowledge about COVID-19 are social media and the internet.

Regarding the use of the mask, the majority of the studied sample used the mask, and two-thirds of them were using the medical mask. The researcher's opinion that this result may be related to the majority of us being afraid of getting infected with COVID-19 so they used the mask, especially the medical mask because it is more protective rather than any other mask type.

This result was in the same line with **Alzoubi1, (2020)** who conducted a study about"COVID-19 - knowledge, attitude, and practice among medical and non-medical university students in Jordan" who found approximately more than two-thirds of the study sample considered mask-wearing as an effective way to avoid COVID-19. Also, **Reuben et al., (2021)** conducted a study about "Knowledge, attitudes and practices towards COVID-19" **and** found that more than two-thirds considered mask wearing as effective. **Bekele et al., (2021)** conducted a study about "The knowledge and practice towards COVID19 pandemic prevention among residents of Ethiopia" and found in their study that, more than two-thirds of the respondents thought that wearing the mask. This result was in disagreement with the study of **Erfani., (2020)** who conducted a study on "Knowledge, attitude and practice toward the novel coronavirus (COVID-19) outbreak" showed that less than a third of the study sample did not wear masks in public places.

Outcomes of the current study showed that more than half of the studied sample had poor knowledge of coronavirus disease while only one-quarter of them had good knowledge of coronavirus disease. The researcher suggests that may be related to coronavirus is a new disease and the information about it is little and not clear until now.

This result was consistent with the study **by Srichan et al., (2020)** in Thailand, who reported that three-quarters of the study sample had poor knowledge of coronavirus prevention and control. Also, this result was in the same line with **Bhagavathula, (2020)** who reported that the study sample had a poor level of knowledge among Italian people concerning the transmission of the disease.

This result disagreed with **Zhang et al., (2020)** who found that the majority of the studied sample had sufficient knowledge about COVID-19 among Iranian adult. And this was in contrast with the study of **Gupta et al. 2020)** and **Akalu and Birhan (2020)**, who stated that the study sample had a high level of knowledge about COVID-19 in Ethiopia.

The study findings showed that there were statistically significant differences between the total score of practice toward Coronavirus disease of the studied sample and their lifestyle data regarding the source of their information from media such as TV and the Internet. This may be rationalized as TV and the Internet increase the awareness of the people about protective measures about Coronavirus disease, easy way to get the information and most of the studied samples from urban which availability of services and technology.

This result was supported by **Kasemy et al., (2020)** who conducted a study about campaign to raise awareness against COVID-19" among Egyptians and reported that the media plays an important protective role in raising public awareness about protective measures. Also, the study was in the same line with the study of **Akalu et al., (2020)** who found that the main source of information in this study was TV and/or radio among health care worker in North Ethiopia. Moreover, this study was in agreement with the study of **Bhagavathula et al., (2020)**. who conducted a study about

"Knowledge and perceptions of COVID-19 among health care workers" in Italy who found that the main source of information in his study was social media.

This result showed that more than half of the studied sample had poor knowledge of coronavirus disease while only one-quarter of them had good knowledge of coronavirus disease. The researcher suggest that may be related to coronavirus is a new disease and the people was having low information.

This result was consistent with the study by **Srichan, (2020)** who conducted a study about "Knowledge, attitude and preparedness to respond to the 2019 Novel Coronavirus (COVID-19) among the bordered population of Northern Thailand" who reported that three-quarters of the study sample had poor knowledge toward coronavirus prevention and control. Also, this result was in the same line with **Bhagavathula, (2020)** who reported that the majority of the study sample had a poor level of knowledge among people concerning the transmission of the disease.

This result disagreed with **Zhang, (2020**) who conducted a study on "Knowledge, attitude and practice regarding COVID-19 among health care workers in Henan" and found that the majority of the studied sample had sufficient knowledge about COVID-19. And this was in contrast with the study of **Akalu et al., (2020)** who conducted a study about "Knowledge, attitude and practice towards COVID-19 among chronic disease Patients at Addis Zemen Hospital" who stated that the study sample had a high level of knowledge about COVID-19.

The current study noticed that more than three-quarters of the studied sample had poor practice toward coronavirus disease. Whereas only one-quarter of them had good practice toward coronavirus disease. This may be due to the study sample having poor knowledge about coronavirus disease and this will lead to poor in their practice toward it.

This was in the same line **as Akalu et al., (2020**) who conducted a study about "Knowledge, attitude and practice towards COVID-19 among chronic disease patients at Addis Zemen Hospital" and found that less than half of the studied sample was a poor practice only quarter of study participants had a good practice. **Kasemy, (2020**) conducted a study about "Knowledge, attitude and practice toward COVID-19 among Egyptians" they found in his study that the study sample was a satisfactory level of knowledge, positive attitude, and poor practice among the participants. **Abou-Abbas, (2020)** conducted a study about "Knowledge and practice of physicians during COVID-19 pandemic" in Lebanon and found that the majority of the study sample had poor practice.

The current study revealed that there was a positive statistically significant correlation between the total score of knowledge and the total score of practices of the studied sample toward Coronavirus disease. This may be rationalized by the knowledge level of the people about any disease leading to good practice with it this means increasing the information and knowledge make the person dealing and practicing with it in a good manner.

This was consistent with **Zhang, (2020)** who conducted a study about "Knowledge, attitude and practice regarding COVID-19 among health care workers in Henan''which is located in china, and who found that knowledge directly affected attitudes and practice and he found that there was a positive statistically significant correlation between the total score of knowledge and the total score of practices of the

studied sample toward Coronavirus disease. **Erfani, (2020)** conducted a study on "Knowledge, attitude and practice toward the novel coronavirus (COVID-19) in Iran and found that a higher knowledge score regarding COVID-19 was significantly associated with a higher likelihood of having a positive attitude and good practice at the time of COVID-19 pandemic. **Zhong, (2020)** conducted a study about "Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak" and stated that knowledge directly influenced attitudes and practice. Also, this was consistent with **Tomar, et al., (2020)** who conducted a study about the "Indian community's knowledge, attitude and practice toward COVID-19" and found in their study that there was a positive significant correlation between knowledge, attitude, and practice.

Conclusion

The current study concluded that poor knowledge and practice were found among the studied sample. There was a positive statistically significant correlation between total score of knowledge and total score of practices of the studied sample toward Coronavirus disease, have a highest strong positive statistically significant correlation.

Recommendation:

- A study to determine the effect of educational program about Coronavirus disease on the patient of chronic disease.
- Educational programs should be planned and implemented in different care settings regarding COVID-19 and providing the public with educational materials as; books, pamphlets, and videos to increase their awareness about COVID-19 and promoting their COVID-19 preventive practices to stop its spread.
- Educational workshops and periodical programs conducted to all people to increase their knowledge and practice regarding the Coronavirus disease
- Future researches are needed to assess factors that affecting COVID-19 knowledge and preventive practices

References

1. Abou-Abbas, L., Nasser, Z., Fares, Y., Chahrour, M., El Haidari, R., & Atoui, R. (2020). Knowledge and practice of physicians during COVID-19 pandemic: a cross-sectional study in Lebanon. BMC public health, 20(1), 1-9.
2. Addis, S. G., Nega, A. D., & Miretu, D. G. (2021). Knowledge, attitude, and practice of patients with chronic diseases towards COVID-19 pandemic in Dessie town hospitals, Northeast Ethiopia. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 15(3), 847-856.
3. Akalu, Y., & Birhan, A. (2020). Peripheral arterial disease and its associated factors among type 2 diabetes mellitus patients at Debre Tabor general hospital, Northwest Ethiopia. Journal of diabetes research, Volume 2020, Article ID 9419413, 9 pages. https://doi.org/10.1155/2020/9419413
4. Akalu, Y., Ayelign, B., & Molla, M. D. (2020). Knowledge, attitude, and practice towards COVID-19 among chronic disease patients at Addis Zemen Hospital, Northwest Ethiopia. Infection and drug resistance, 13, 1949.
5. Al-Hanawi, M. K., Angawi, K., Alshareef, N., Qattan, A., Helmy, H. Z., Abudawood, Y., ... & Alsharqi, O. (2020). Knowledge, attitude and practice toward COVID-19 among the public in the Kingdom of Saudi Arabia: a cross-sectional study. Frontiers in public health, 8, 217.
6. Alzoubi, H., Alnawaiseh, N., Al-Mnayyis, A., Abu-Lubad, M., Aqel, A., & Al-Shagahin, H. (2020). COVID-19-knowledge,

Aml A., et al

attitude, and practice among medical and non-medical university students in Jordan. J Pure Appl Microbiol, 14(1), 17-24.

7. Bekele, D., Tolossa, T., Tsegaye, R., & Teshome, W. (2021). The knowledge and practice towards COVID-19 pandemic prevention among residents of Ethiopia. An online cross-sectional study. PLoS One, 16(1), e0234585.

8. Bhagavathula, A. S., Aldhaleei, W. A., Rahmani, J., Mahabadi, M. A., & Bandari, D. K. (2020). Novel coronavirus (COVID-19) knowledge and perceptions: a survey on healthcare workers. doi: https://doi.org/10.1101/2020.03.09.20033381.

9. Boettler, T., Newsome, P. N., Mondelli, M. U., Maticic, M., Cordero, E., Cornberg, M., & Berg, T. (2020). Care of patients with the liver disease during the COVID-19 pandemic: EASL-ESCMID position paper. JHEP reports, 2(3), 100113.

10. Burmeister, A., Hilgers, F., Langner, A., Westerwalbesloh, C., Kerkhoff, Y., Tenhaef, N., ... & Grünberger, A. (2019). A microfluidic co-cultivation platform to investigate microbial interactions at defined microenvironments. Lab on a Chip, 19(1), 98-110.

11. Chandrasekaran, B., & Ganesan, T. B. (2021). Sedentarism and chronic disease risk in COVID 19 lockdown–a scoping review. Scottish Medical Journal, 66(1), 3-10.

12. Erfani, A., Shahriarirad, R., Ranjbar, K., Mirahmadizadeh, A., & Moghadami, M. (2020). Knowledge, attitude and practice toward the novel coronavirus (COVID-19) outbreak: a population-based survey in Iran. Bull World Health organ, 30(10.2471).

13. FMOH, E. (2020). National comprehensive covid19 management handbook. Ethiopian Federal Ministry of Health.

14. Fournier, P. E., Colson, P., Levasseur, A., Devaux, C. A., Gautret, P., Bedotto, M., ... & Raoult, D. (2021). Emergence and outcomes of the SARS-CoV-2 'Marseille-4'variant. International Journal of Infectious Diseases, 106, 228-236.

15. Gharpure, R., Hunter, C. M., Schnall, A. H., Barrett, C. E., Kirby, A. E., Kunz, J., ... & Garcia Williams, A. G. (2020). Knowledge and practices regarding safe household cleaning and disinfection for COVID 19 prevention—United States, May 2020. American Journal of Transplantation, 20(10), 2946-2950.

16. Gupta, R., Ghosh, A., Singh, A. K., & Misra, A. (2020). Clinical considerations for patients with diabetes in times of COVID-19 epidemic. Diabetes & metabolic syndrome, 14(3), 211.

17. Hartmann, T., & Jüpner, R. (2020). Implementing resilience in flood risk management. Wiley Interdisciplinary Reviews: Water, 7(6), e1465.

18. Hui, D. S., Azhar, E. I., Memish, Z. A., & Zumla, A. (2022). Human coronavirus infections—severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and SARS-CoV-2. Reference Module in Biomedical Sciences. Encyclopedia of Respiratory Medicine, 2nd edition, Volume 4, 146–161. https://doi.org/10.1016/B978-0-12-801238-3.11634-4

19. Intinarelli, G., Wagner, L. M., Burgel, B., Andersen, R., & Gilliss, C. L. (2021). Nurse practitioner students as an essential workforce: The lessons of coronavirus disease 2019. Nursing Outlook, 69(3), 333-339.

20. Kasemy, Z. A., Bahbah, W. A., Zewain, S. K., Haggag, M. G., Alkalash, S. H., Zahran, E., & Desouky, D. E. (2020). Knowledge, attitude, and practice toward COVID-19 among Egyptians. Journal of Epidemiology and Global Health, 10(4), 378.

21. Kendzerska, T., Zhu, D. T., Gershon, A. S., Edwards, J. D., Peixoto, C., Robillard, R., & Kendall, C. E. (2021). The effects of the health system response to the COVID-19 pandemic on chronic disease management: a narrative review. Risk Management and Healthcare Policy, 14, 575.

22. Lee, M., Kang, B. A., & You, M. (2021). Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea. BMC Public Health, 21(1), 1-10.

23. Liu, W., Zhang, Q. I., Chen, J., Xiang, R., Song, H., Shu, S., ... & Liu, Y. (2020). Detection of Covid-19 in children in early January 2020 in Wuhan, China. New England Journal of Medicine, 382(14), 1370-1371.

24. MacIntyre, A. (2018). The power of institutions. Cornell University Press.

25. Mahapatra, S. D., Mohapatra, P. C., Aria, A. I., Christie, G., Mishra, Y. K., Hofmann, S., & Thakur, V. K. (2021). Piezoelectric materials for energy harvesting and sensing applications: Roadmap for future smart materials. Advanced Science, 8(17), 2100864.

26. McIntosh, K., Hirsch, M. S., & Bloom, A. (2020). Coronavirus disease 2019 (COVID-19). UpToDate Hirsch MS Bloom, 5(1), 873.

27. Ministry of health and population Egypt —MOHP (2020). COVID 19 in Egypt. Available at: https://www.care.gov.eg/EgyptCare/index.asp.

28. Reuben, R. C., Danladi, M. M., Saleh, D. A., & Ejembi, P. E. (2021). Knowledge, attitudes, and practices towards COVID-19: an epidemiological survey in North-Central Nigeria. Journal of community health, 46(3), 457-470.

29. Selvin, E., & Juraschek, S. P. (2020). Diabetes epidemiology in the COVID-19 pandemic. Diabetes Care, 43(8), 1690-1694.

30. Semenzato, L., Botton, J., Drouin, J., Cuenot, F., Dray-Spira, R., Weill, A., & Zureik, M. (2021). Chronic diseases, health conditions and risk of COVID-19-related hospitalization and in-hospital mortality during the first wave of the epidemic in France: a cohort study of 66 million people. The Lancet Regional Health-Europe, 8, 100158.

31. Shahzad, F., Anderson, D., & Najafzadeh, M. (2020). The Antiviral, Anti-Inflammatory Effects of Natural Medicinal Herbs and Mushrooms and SARS-CoV-2 Infection. Nutrients, 12(9), 2573.

32. Smith,Scott(8 April 2020)"Determining Sample:How to Ensure You Get the Correct Sample Size".Qualtrics.Retrieved 19 September 2018.

33. Srichan, P., Apidechkul, T., Tamornpark, R., Yeemard, F., Khunthason, S., Kitchanapaiboon, S., ... & Upala, P. (2020). Knowledge, attitude, and preparedness to respond to the 2019 novel coronavirus (COVID-19) among the bordered population of northern Thailand in the early period of the outbreak: a cross-sectional study. Available at SSRN 3546046.

34. Staff, E. T. (2020). Egypt announces the first Coronavirus infection. Egypt Today, 14.

35. Taghrir, M. H.,(2020). Efficacy of Mass Quarantine as Leverage of Health System Governance During COVID-19 Outbreak: A Mini Policy Review. Archives of Iranian Medicine (AIM), 23(4).

36. Tang, J. W., Bahnfleth, W. P., Bluyssen, P. M., Buonanno, G., Jimenez, J. L., Kurnitski, J., ... & Dancer, S. J. (2021). Dismantling myths on the airborne transmission of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). Journal of Hospital Infection, 110, 89-96.

37. Tomar, B. S., Singh, P., Nathiya, D., Suman, S., Raj, P., Tripathi, S., & Chauhan, D. S. (2021). Indian community's knowledge, attitude, and practice toward COVID-19. Indian Journal of Social Psychiatry, 37(1), 48.

38. World health organization (2020). Coronavirus disease (COVID 2019) situation reports Available at:https://www.who.int/emergencies/diseases/novel coronavirus 2019/situation report s/

39. Zhang, Y., Xiao, M., Zhang, S., Xia, P., Cao, W., Jiang, W., ... & Zhang, S. (2020). Coagulopathy and antiphospholipid antibodies in patients with Covid-19. New England Journal of Medicine, 382(17), e38.

40. Zheng, S., Fan, J., Yu, F., Feng, B., Lou, B., Zou, Q., ... & Liang, T. (2020). Viral load dynamics and disease severity in patients infected with SARS-CoV-2 in Zhejiang province, China, January-March 2020: retrospective cohort study. BMJ, 369.

41. Ziegler, C. G., Allon, S. J., Nyquist, S. K., Mbano, I. M., Miao, V. N., Tzouanas, C. N., ... & Zhang, K. (2020). SARS-CoV-2 receptor ACE2 is an interferon-stimulated gene in human airway epithelial cells and is detected in specific cell subsets across tissues. Cell, 181(5), 1016-1035

Aml A., et al