

▪ **Basic Research**

Risk Perception and Preventive Practices of Covid-19 among Patients with Chronic Diseases

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Abstract

Introduction: Coronavirus disease (COVID-19) pandemic is speedily developing and is a serious public health threat worldwide. Timely and effective control of the pandemic is highly dependent on preventive measures. People with underlying chronic diseases are more probable to become severe cases. Evidence suggests that preventative measures would have a protective effect against the spread of the virus. **Aim:** The aim of this study was to assess risk perception and preventive practices of covid-19 among patients with chronic diseases.

Study design: A descriptive correlational study design was used to achieve the study's aim.

Setting: The study was conducted in outpatient clinics of Ain shams university hospital, affiliated with Ain Shames University, Cairo, Egypt. **Subject:** A purposive sample of 250 adult patients with chronic diseases. **Methods:** data were collected using three tools as follow: 1) Patients' interview questionnaire, 2) Self-reported COVID-19 preventive practices questionnaire & 3) COVID-19 seriousness and risk perception questionnaire. **Results:** This study revealed that 64% of the patients had adequate reported preventive practice level, 82.4% of them thought that COVID-19 is serious and 53% of them had moderate level of perception towards COVID-19, results also exposes a highly statistically significant relation between total COVID-19 Preventive practice level of the studied patients and their Risk Perception level at ($P \leq 0.01$). **Conclusion:** This study concluded that more than half of them had moderate perception of susceptibility to COVID-19. Moreover, less than two thirds had adequate COVID-19 self-reported preventive practices. Also, there was highly statistically significant relation between total COVID-19 preventive practice level of the studied patients and their risk perception level **Recommendation:** The current research findings highpoint the necessity to continue encouraging the maintenance of social distancing, hand hygiene, and wearing masks appropriately. Health education programs that aim to improve COVID-19 preventive health practices and perception are recommended to increase awareness of patients with chronic diseases with its prevention.

Key words: Risk perception, Preventive practices of Covid-19, Patients with chronic diseases

Introduction:

On December 31st, 2020, pneumonia of unknown cause in Wuhan China was first stated to the World Health Organization (WHO). On January 12th, 2020, the WHO declared the cause to be a novel coronavirus called “2019-nCoV”; the name was then changed to “SARS-CoV-2” by the International Committee on Taxonomy of Viruses on February 11th, 2020. The WHO formally named the disease caused by this novel virus “COVID-19” (*Alkhaldi, Aljuraiban & Alhurishi, 2021*).

Coronavirus is a communicable disease deriving from a large family of viruses that causes the illness. It is comparable to Middle East Respiratory Syndrome (MERS-CoV) and severe acute respiratory syndrome (SARS-CoV), with typical symptoms such as fever, shortness of breath, cough, and acute respiratory failure (*Rothan & Byrareddy, 2020*). On January 30, 2020, COVID-19 was publicized as a pandemic public health emergency by the World Health Organization 2020, and recently, cases of the virus surpassed more than 3 million worldwide with increasing mortality rate (*Johns Hopkins Coronavirus Resource Center, 2020*).

COVID 19 is transmitted from person-to-person by close contact with infected patients via respiratory (sneezes or coughs) or spread by touching an object that the virus on it. More than 80% of Coronavirus patients presented mild symptoms and improved without any medical intervention; about 20% of infected patients had a severe illness such as shortness of breath, septic shock, and multi-organ failure, and reported that 2% of cases are fatal. The risk of increased severity detected in people with chronic diseases and therefore the elderly (*Huynh et al., 2020*).

There is ample evidence that perceived susceptibility to severe disease outcomes is an important predictor of preventive behavior. In accordance with theories on health behavior decisions (*de Bruine and Bennett, 2020*), engagement on preventive behaviors are shaped by the awareness and risk perception, particularly among those who are more vulnerable to severe outcomes (*Wise, Zbozinek, Micheline, Hagan, and Mobbs, 2020*). Preventive behaviors, such as curfews, social distancing, hand washing, and mask wearing, are so far the most effective ways to fight the spread of COVID-19 and related consequences. Therefore, it is imperative to explore that risk perceptions of the community, given that such information may inform targeted interventions, including communication and health education strategies, aimed at minimizing the impact and spread of COVID-19 (*Wong, et al., 2020*).

Globally, there have been 326,379 confirmed cases of COVID-19 and 18,375 deaths in Egypt were acknowledged by the Ministry of Health and Population in October 2021 (*WHO, 2021*). In Egypt, changes every day of life have been rapid, with virus outbreaks, and an

increasing death rate. COVID-19 considered a pandemic in Egypt as part of an ongoing worldwide COVID-19 pandemic. The Ministry of Health and Population Egypt confirmed that the first case of COVID-19 in Egypt was on February 14, 2020. As of the evening of June 15, there were 46289 confirmed cases of Covid-19 and 1672 deaths in Egypt (*Ministry of Health and Population Egypt, 2020*).

The COVID-19 pandemic disproportionately affects patients with comorbidities, but communication and risk perception around particular patient groups remains understudied (*Zhou, Yu, and Du., 2020*). Peoples with chronic diseases and other comorbidities are knowingly fewer likely to refuse to be vaccinated and are additional probable to take individual health-protecting measures against COVID-19. Within the US, descriptive statistics show a broad spread of vaccine acceptance for those with underlying medical conditions. However, there is a gap in understanding about key chronic illness patient groups' risk perceptions of COVID-19, their beliefs about personal and community-level no pharmaceutical interventions (NPIs), and willingness to be vaccinated (*Shekhar, Sheikh, and Upadhyay, 2021*).

The behavior of the general public will undoubtedly have an important bearing on the course of the coronavirus disease 2019 (COVID-19) epidemic. Human behavior is influenced by people's knowledge and perceptions, so effective management of the spread of a novel infectious disease, such as the COVID-19 virus can be achieved through affecting people's behavior to adopt preventive measures (*Alkhaldi, Aljuraiban & Alhurishi, 2021*).

Severe acute respiratory distress develops in about 16% to 26% of patients hospitalized with COVID-19, thus requiring oxygen supplementation and/or intensive care. As the number of cases grows worldwide, to avoid a surge of request on the healthcare system and lacks equipment such as ventilators needed to care for critically ill patients, many countries have imposed quarantine and recommended physical distancing to reduce transmission to people likely to have a severe illness (i.e., elder patients and persons with chronic comorbidities). Those individuals with chronic comorbidities should also, in return, avoid contacts and/or use appropriate measures to prevent potential infection (*Sun et al., 2020*).

Quarantine limits the motion of people and decreases the infection rate for transmissible diseases; physical or social distancing involves staying at least two meters away from other persons; and isolation is the state of separating patients with COVID-19 from other- wise healthy people. Keeping hygiene practices, such as appropriate hand cleaning, wearing a mask in overcrowded places, and staying at home, all are recommended for controlling the spread of the disease and breaking the transmission chain (*Brooks et al., 2020*).

Consequently, several countries through the globe strained it by speaking different interventions containing nationwide lockdown, varying levels of contact tracing and self-isolation or quarantine, and promotion of public health measures including hand washing, respiratory etiquette, and social distancing. However, the range of COVID-19 is quiet frighteningly increasing from day to day and not controlled. Reduced understanding of the disease amongst the community, particularly the high-risk groups are concerned for this increase in the spread of the infection and death toll. Consequently, effectively control and reduction of morbidity and mortality because of COVID-19 need changing the behavior, which is predisposed by people's knowledge and perceptions, of the general public, especially the high-risk groups (*Geldsetzer, 2020*).

Individuals' risk perception is essential to understanding their response, behavior, and adoption of individual-level preventive measures (e.g. wearing masks, washing hands) in case of an infectious disease outbreak and its aftermath. Identifying risk perception will not only help mitigate the overwhelming mortality and morbidity burden, but also economic loss. With the relatively long period needed for the majority of the population to be vaccinated against COVID-19 and the emergence of new COVID-19 variants, understanding and addressing behavior to reduce transmission and spread of infection is imperative to avoid further spikes of new cases and unavoidable enforcement of lockdowns. Such insight will help identify population groups with relatively low risk perceptions or low adoption of preventive measures and enable the design of policies and interventions tailored to these populations. It will allow governments to strengthen key public health messages and design health awareness campaigns tailored to the different stages of an outbreak. Furthermore, gaining insights into risk perception and behaviors can help build community resilience and influence behavior to increase uptake of future vaccination and/or treatment (*Alkhalidi, Aljuraiban & Alhurishi, 2021*).

Aim of the Study:

The current study aimed to assess risk perception and preventive practices of covid-19 among patients with chronic diseases through the following:

Assess risk perception of patients with chronic diseases regarding Covid-19.

Assess reported preventive practices of patients with chronic diseases regarding Covid-19.

Assess the relation between risk perception of patients with chronic diseases regarding Covid-19 and their preventive practice.

Research question:

What is the risk perception of patients with chronic diseases regarding Covid-19?

What are the preventive practices of patients with chronic diseases regarding Covid-19?

Is there a relationship between the risk perception of patients with chronic diseases regarding Covid-19 and their preventive practices?

Subjects and Methods

Research design:

A descriptive, correlational study design was utilized to attain the study's aim. Descriptive research aims to describe a population, situation, or phenomenon accurately and systematically. It can answer what, where when and how questions, but not why questions. A correlational research design investigates relationships between variables without the researcher controlling or manipulating any of them. (*McKinley & Rose, 2020*).

Setting: The study was conducted in outpatient clinics (cardiac diseases, chest diseases, medicine clinics) of Ain Shams university hospital, affiliated to Ain Shams University, Cairo, Egypt. This setting is characterized by the increased flow rate of patients with chronic diseases from all over the regions in Egypt.

Subject: A purposive sample of 250 patients with chronic diseases was included in this study, the patients participated in the study were adult patients of both genders, able to comprehend and respond to questions and agree to participate in this study. Based on data from literature (*Akalu, et al., 2020*), to calculate the sample size with precision/absolute error of 5% and type 1 error of 5%, Sample size = $[(Z_{1-\alpha/2})^2 \cdot P(1-P)]/d^2$, where $Z_{1-\alpha/2}$ at 5% type 1 error ($p < 0.05$) is 1.96, P is the expected proportion in population based on previous studies and d is the absolute error or precision. Therefore, sample size = $[(1.96)^2 \cdot (0.527) \cdot (1-0.527)] / (0.062)^2 = 249.1$. Based on the formula, the sample size required for the study is 250.

D-Tools of data collection

I. Patients' interview questionnaire:

This tool was developed by the researcher; it was written in Arabic language; it included the following two parts:

Part 1: Patients' socio-demographic data: it was concerned with assessing socio-demographic data of patients with chronic diseases; it included questions about age, gender, level of education, marital status, occupation, and place of residence, family size, housing condition, income, and health insurance.

Part 2: Patients' clinical data: this part was concerned with patients' clinical data. It was consisted of nine questions about type and duration of chronic diseases, pattern of periodic medical check-up before and after covid-19 pandemic, presence of respiratory symptoms in the last 2 weeks, previous infection with covid-19, vaccination with Covid-19 vaccine, intention to be vaccinated if not vaccinated and availability of social support.

II. Self-reported COVID-19 Preventive practices questionnaire:

This tool was developed by the researchers in simple Arabic language based on the most recent and relevant literatures (*Lee et al., (2020); Taghrir et al., (2020); and Kim & Choi (2016)*) it was concerned with collecting data about the reported preventive practices regarding COVID-19 as reported by the patients. It was consisted of 28 items (with yes / no responses) deals with wearing face mask properly, personal hygiene, measures to avoid infection including self and environment and dietary considerations.

Scoring system: The tool included 28 items, one point was given to each response "yes" and score zero for each No response, with total score 28. Adequate total self-reported COVID-19 preventive practices score was equal or more than 75% and inadequate practice was less than 75%. The scoring was according to statistical results (*Taghrir et al., 2020*).

III. COVID-19 seriousness and risk perception questionnaire:

This tool was developed by the researchers in simple Arabic language based on the most recent and relevant literatures (*Abdelhafiz et al., (2020); Lee et al., (2020); Soltan et al., (2020); Taghrir et al., (2020); Kim & Choi (2016) and Brug et al., (2004)*) it was composed of two parts:

Part 1: Covid -19 seriousness: It was dealt with the patients' perception about the seriousness of covid-19: it was consisted of two questions: How serious do you think COVID-19 is? How would you feel if you infected with COVID-19? The responses were five ranged from not at all serious to very serious.

Scoring system: The responses were ranged from 1 for not at all serious to 5 for very serious, the total score was ranged from 2-10, it was calculated as follows:

If the total score was less than 7, the patients' seriousness perception was considered less serious.

The score equal to or more than 7, the patients' seriousness perception was considered serious. The scoring was according to statistical results (*Soltan et al., 2020*).

Part 2: Covid -19 Risk perception:

This part was consisted of 11 items with 5 point likert scale; from strongly disagree to strongly agree. It dealt with the patients with chronic diseases perception about their risk of exposure to COVID-19. The items of this part explore their perception about COVID-19 risk for patients with chronic diseases and if they concerned about the possibility that they can get infected with this virus and its effects on their health and its managements.

Scoring system: The items for this part were given 1 point for strongly disagree to 5 points for strongly agree, the overall summation score was calculated for the entire scale to determine the perception domain with three levels:

A score less than 50% was considered low self-reported risk perception.

A score from 50%-75% was considered moderate self-reported risk perception.

A score more than 75% was considered high self-reported risk perception.

The scoring was according to statistical results (*Lee et al., 2020*).

Tools' validity and reliability

Validity: assessing face and content validity of the tools. It was tested by a jury of 5 experts (2 professors, and 3 assistant professors) from Medical Surgical Nursing department at faculty of Nursing, Ain Shams University for the content validity. The jury reviewed the tools for clarity, relevance, comprehensiveness, and simplicity; no radical modifications were done.

Reliability: Alpha Cronbach test was used to measure the internal consistency of the previously mentioned tools to indicate how well the items in the instrument fit together conceptually, the preventive practices was reliable at 0.914 of the Seriousness of COVID-19 was 0.933, and Risk Perception regarding COVID-19 was reliable at 0.879.

Preparatory phase:

Administrative design: An official approval was taken from the director of the clinics affiliated to Ain shams university hospitals at which the study was conducted, after explaining the purpose of the study and requesting the permission for data collection. Meetings and discussions were held by the researchers to explain the aim of the study to the patients and verbal approval was granted from them.

Ethical considerations: The ethical considerations in this study included the following:

The researchers clarified the aim of the study to the patients included in the study before starting and verbal consent was granted from them.

The researchers ensured maintaining anonymity and confidentiality of subjects' data of the patients included in the study to be used only for research.

Patients were informed that they were allowed to choose to participate or not in the study and they had the right to withdraw from the study at any time.

Ethics, values, culture, and beliefs were respected.

Pilot Study:

The pilot study was carried out on 10% of the subjects (25 patients) to test the applicability, understandability and time needed to fill the tools. Minimum modifications were done for more clarity, as some questions and items were rephrased. The subjects involved in the pilot study were excluded from the study subjects.

Implementation phase

Field work: The study was completed through the following steps:

The data collection tools preparation consumed about three months, starting from October 2020 to the end of December 2020. Data collection was started and completed within 3 months; started from the beginning of January 2021 till the end of March 2021.

The aim of the study was simply explained to the patients who agree to participate in the study prior to any data collection.

The data were collected by the researchers through 3 days /week during the morning and afternoon clinics in the previously mentioned setting.

Each patient was interviewed individually by the researcher for about 25-35 minutes.

Data collection was begun with the sociodemographic and clinical data, within about 10-15minutes for each patient.

Then the reported practices and risk perception tools were filled in within about 15-20 minutes.

Statistical Design:

All statistical analyses were performed using SPSS for windows version 26.0 (SPSS, Chicago, IL). All continuous data were normally distributed and were expressed in mean \pm standard deviation (SD). Categorical data were expressed in number and percentage. Chi-square test was used for comparison of variables with categorical data. The reliability (internal consistency) test for the questionnaires used in the study was calculate. Statistical significance was set at $p < 0.05$.

Results:

Table 1. Studied patients' distribution according to their sociodemographic characteristics (n=250)

Sociodemographic Characteristics	Number & Percentage	
	N	%
Age (Years)		
< 40	88	35.2
40 – 60	145	58.0
> 60	17	6.8
Mean \pm SD	43.9 \pm 12.6	
Gender		
Male	128	51.2
Female	122	48.8
Marital Status		
Un Married	37	14.8
Married	213	85.2
Residence		
Rural	47	18.8
Urban	203	81.2
Educational Level		
Illiterate	21	8.4
Primary School	39	15.6

Secondary School	71	28.4
University Education	119	47.6
Income LE/ month		
Adequate	131	52.4
Inadequate	119	47.6
Household Family Size		
< 3 persons	36	14.4
> 3 persons	214	85.6
Household Room Number		
< 3 rooms	65	26.0
> 3 rooms	185	74.0
Occupation		
Employee	156	62.4
Housewife	33	13.2
Not employed	5	2.0
On retirement	31	12.4
Others	4	1.6
Worker	21	8.4
Health Insurance		
No	64	25.6
Yes	186	74.4

Table 1 Presented that, 58% of the studied patients were aged between 40-60 years, the mean age of them 43.9 (SD 12.6) years. As regard to gender and marital status, 51.2% and 85.2% of the studied patients were males and married, respectively. Also, 81.2% of them from urban area. In relation to the educational level of patients under the study, 47.6 % of them had high education. Moreover, 52.4 % of the studied patients had adequate income. Also, 85.6% and 74.0 % of the studied patients had family size and household room number more than 3. Regarding occupation and health insurance, 62.4 % and 74.4 % of the studied patients were employee and had health insurance, respectively.

Table 2. Clinical data of patients understudy (n=250)

Patients' Clinical Data	Number & Percentage	
	N	%
Type of chronic diseases		
Diabetes mellitus	40	16.0
Heart diseases	59	23.6
Hypertension	58	23.2
Multiple illnesses	8	3.2
Respiratory diseases	42	16.8
Others	43	17.2
Duration of chronic disease (in year)		
< 5	50	20.0
5 - 10	156	62.4
> 10	44	17.6
Pattern of periodic medical check-up before covid-19 pandemic		
No	163	65.2
3 months	34	13.6
6 months	11	4.4
Year	6	2.4
Others	36	14.4
Pattern of periodic medical check-up after covid-19 pandemic		
No	108	43.2
3 months	28	11.2
6 months	41	16.4
Year	31	12.4
Others	42	16.8
Presence of respiratory symptoms in the last 2 weeks?		
No	127	50.8
Yes	123	49.2
Did you have covid-19 infection before?		
No	47	18.8
Yes	203	81.2
Are you vaccinated with Covid-19 Vaccine?		
No	112	44.8
Yes	138	55.2
if the answer is No, are you intended to be vaccinated? (n=112)		
No	45	40.2
Maybe	37	33.0
Yes	30	26.8
Did you have social support if you are exposed to Covid -19?		
No	33	13.2
Yes	217	86.8

Table 2 Showed that, 23.6% and 62.4% of the studied patients had history of heart diseases within duration ranged from 5 to 10 years, respectively. As regard to pattern of periodic medical check-up before and after covid-19 pandemic, 65.2 % and 43.2 % of the studied patients did not have periodic medical check-up before and after covid-19 pandemic, respectively. Moreover, 50.8% of the studied patients never had respiratory symptoms in the last 2 weeks. 81.2% of the studied patients have covid-19 infection previously. Also, 44.8% and 40.2% of the studied patients never vaccinated with Covid-19 vaccine and does not intend to be vaccinated, respectively. In relation to social support during Covid -19, 86.8% of them had social support when exposed to COVID-19.

Table 3. Studied patients' distribution according to their self-reported preventive practices to prevent COVID-19 (n=250)

Patient' COVID-19 self-reported preventive practices	Number & Percentage			
	Yes		No	
	N	%	N	%
1. Wear face mask when outdoors	217	86.8	33	13.2
2. The face mask covers the nose and mouth strictly	214	85.6	36	14.4
3. Avoid mask reuse	168	67.2	82	32.8
4. Avoid touch the front of the mask when taking it off	176	70.4	74	29.6
5. Avoiding touching the eyes, nose, and mouth with unwashed hands	212	84.8	38	15.2
6. Cover the mouth when coughing or sneezing appropriately (with the elbow or a tissue, then throw the tissue in the trash)	230	92.0	20	8.0
7. Wash hands with soap and water, frequently	210	84.0	40	16.0
8. Use hand sanitizers frequently	185	74.0	65	26.0
9. Clean and disinfect frequently touched objects and surfaces	189	75.6	61	24.4
10. Avoid unprotected touch of frequently contacted surfaces.	178	71.2	72	28.8
11. limit contact (such as handshakes)	112	44.8	138	55.2
12. Keep proper home ventilation	230	92.0	20	8.0
13. Avoid close contact with person who had fever or cough (infected person)	232	92.8	18	7.2
14. Avoid eating or drinking in bars and restaurants	163	65.2	87	34.8
15. Taking herbal supplements	76	30.4	174	69.6
16. Taking food supplements	143	57.2	107	42.8
17. Eating a balanced diet	145	58.0	105	42.0

18. Exercising regularly	63	25.2	187	74.8
19. Avoid smoking and passive smoking	131	52.4	119	47.6
20. Apply physical distancing, away from others	155	62.0	95	38.0
21. Not traveling abroad if possible/ if not needed	103	41.2	147	58.8
22. Cancel or postpone meetings with friends, recreation, eating out and sport events	91	36.4	159	63.6
23. Staying home as much as possible	146	58.4	104	41.6
24. Reduce the use of public transportation	65	26.0	185	74.0
25. Reduce frequent shopping	97	38.8	153	61.2
26. Avoid crowded places	184	73.6	66	26.4
27. Avoid the presence in a closed area	187	74.8	63	25.2
28. Quarantine yourself if you are suspected to have covid-19 infection	184	73.6	66	26.4

According to distribution of preventive practices regarding COVID-19, table 3 indicated that 86.8%, 92.0%, 92.0% & 92.8% of the studied patients followed preventive practices to prevent COVID-19 regarding wear face mask when outdoors, cover mouth appropriately when coughing or sneezing, keep proper home ventilation and avoid close contact with infected person, respectively. While 69.6%, 74.8%, 63.6% & 74.0% of them did not follow preventive practices to prevent COVID-19 regarding taking herbal supplements, exercising regularly, cancel or postpone meetings with friends, recreation, eating out and sport events & reduce the use of public transportation, respectively.

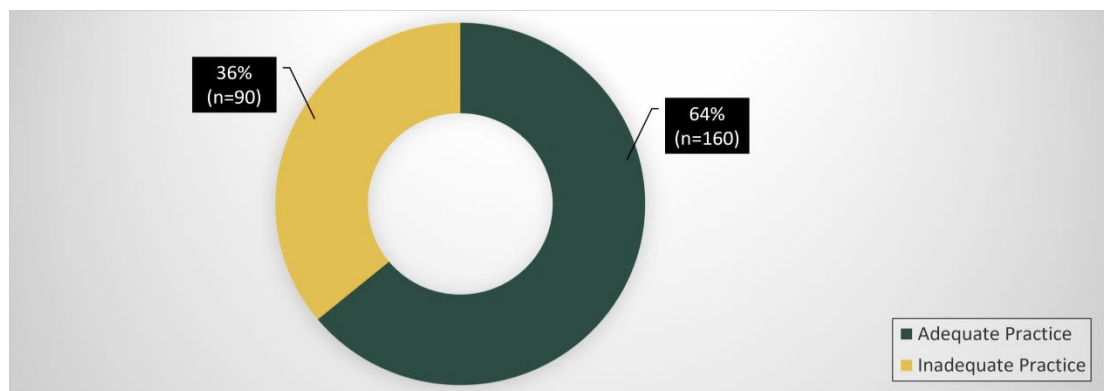


Figure (1): Studied patients' distribution in relation to COVID-19 preventive practices level (n = 250).

Figure 1 Indicated that (64 %) of studied patients had adequate preventive practices level to prevent COVID-19. while (36%) of them had inadequate practice level.

Table 4. The studied patients' distribution according to their perception about seriousness of COVID-19 (n=250)

Patients' perception about Seriousness of COVID-19	Number & Percentage									
	Not at all serious		Not serious		Slightly serious		Serious		Very serious	
	N	%	N	%	N	%	N	%	N	%
How serious do you think COVID-19 is?	4	1.6	3	1.2	28	11.2	97	38.8	118	47.2
How would you feel if you contracted COVID-19 in the near future?	7	2.8	1	0.4	45	18.0	107	42.8	90	36.0

Table 4 Revealed that 38.8% & 47.2% of the studied patients thought that COVID-19 is serious and very serious health condition, respectively. While 1.6%, 1.2% & 11.2% of them thought that COVID-19 is not serious at all, not serious and slightly serious, respectively. Also, 42.8% & 36.0% of the studied patients feel that if they get infected with COVID-19 in the near future it could be serious to very serious health condition, respectively. While 18.0% of them feel that this is slightly serious.

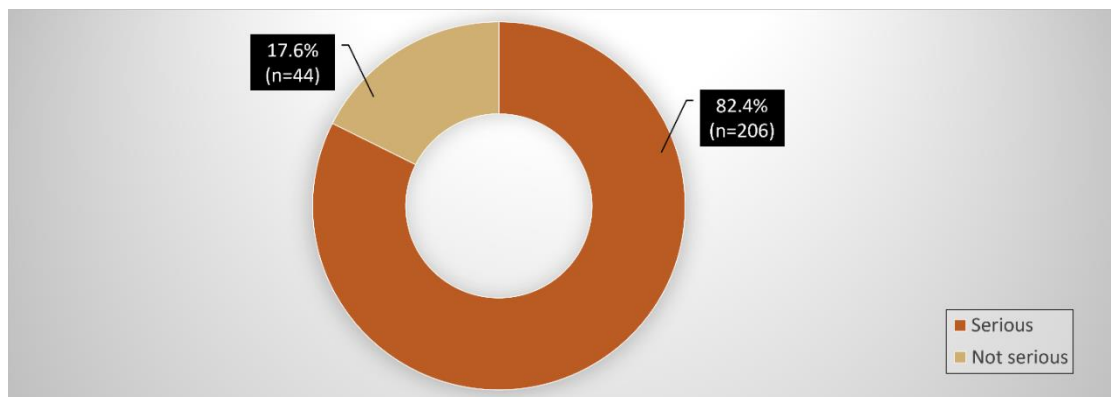


Figure (2): Studied patients' distribution in relation to perception about COVID-19 Seriousness Score (n = 250).

Figure 2 Illustrated that 82.4 % of studied patients thought that COVID-19 is serious health condition. While 17.6% of them thought that COVID-19 is not serious health condition.

Table 5. The studied patients' distribution according to their Risk Perception regarding COVID-19 (n=250)

Patients' risk Perception regarding COVID-19	Number & Percentage									
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
1. Getting infected with the coronavirus can be serious	15	6.0	15	6.0	36	14.4	168	67.2	16	6.4
2. I am concerned about the possibility that I can get infected with this virus	16	6.4	16	6.4	38	15.2	164	65.6	16	6.4
3. People may stigmatize me if I had got sick due to coronavirus	15	6.0	14	5.6	32	12.8	158	63.2	31	12.4
4. I think that the media exaggerated the coverage of this disease	17	6.8	13	5.2	28	11.2	162	64.8	30	12.0
5. Patients with chronic illnesses such as heart diseases and diabetes most susceptible to severe COVID-19 infection	17	6.8	9	3.6	27	10.8	161	64.4	36	14.4
6. Not all persons with COVID-19 will develop severe cases.	17	6.8	16	6.4	29	11.6	156	62.4	32	12.8
7. My health will be severely affected if I contract coronavirus	17	6.8	17	6.8	31	12.4	153	61.2	32	12.8
8. It is not possible to recover from coronavirus disease	18	7.2	16	6.4	29	11.6	155	62.0	32	12.8
9. Coronavirus causes more deaths for patients with chronic diseases	15	6.0	15	6.0	32	12.8	156	62.4	32	12.8
10. If I infected with coronavirus, I cannot manage my daily activities	18	7.2	17	6.8	27	10.8	154	61.6	34	13.6
11. I think that persons infected with Coronavirus can be managed at home	20	8.0	16	6.4	26	10.4	156	62.4	32	12.8

Table 5 Demonstrated that 67.2%, 65.6% & 64.8% of the studied patients agree with COVID-19 concerning with getting infected with the coronavirus can be serious, possibility that they can be infected with this virus and thinking that media exaggerated the coverage of this disease, respectively. Meanwhile, 5.6%, 5.2% & 3.6% of them disagree with people may stigmatize them if they had coronavirus infection, thinking that the media exaggerated the coverage of this disease and patients with chronic illnesses such as heart diseases and diabetes most susceptible to severe COVID-19 infection, respectively.

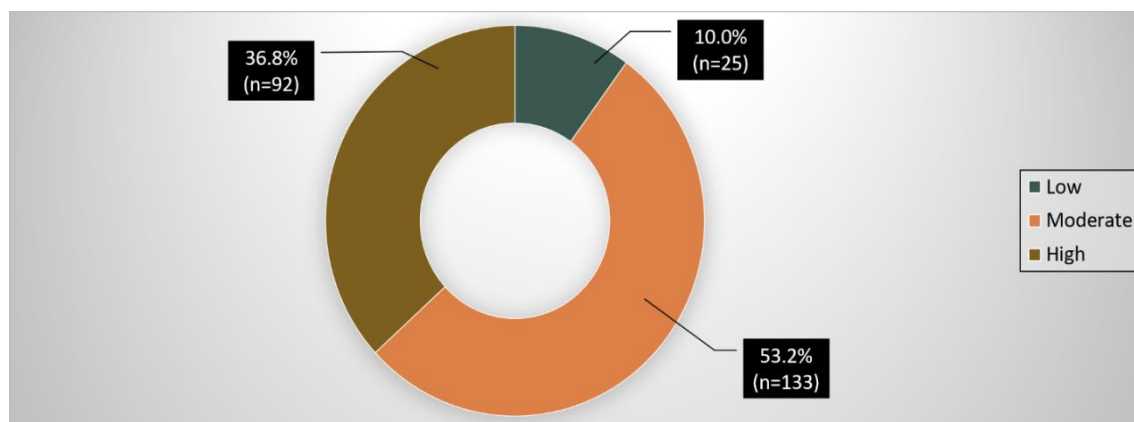


Figure (3): Studied patients' distribution of Risk Perception Score regarding COVID-19 (n = 250).

Figure 3 Shown that 53.2% of studied patients had moderate level of total risk perception score regarding COVID-19. Also, 36.8% of them had high level, while 10.0% of them had low level.

Table 6. Relation between patients' sociodemographic characteristics and risk perception level (n = 250).

Socio demographic Characteristics and Risk Perception level	Low (n=25)		Moderate (n=133)		High (n=92)		Chi-Square	
	N	%	N	%	N	%	X ²	P
Age (Years)								
< 40	13	52.0	51	38.3	24	26.1	10.244	0.037*
40 - 60	11	44.0	70	52.6	64	69.6		
> 60	1	4.0	12	9.0	4	4.3		
Gender								
Male	23	92.0	60	45.1	45	48.9	18.821	<0.001**

Female	2	8.0	73	54.9	47	51.1		
Marital Status								
Not Married	8	32.0	14	10.5	15	16.3	7.957	0.019*
Married	17	68.0	119	89.5	77	83.7		
Residence								
Rural	8	32.0	22	16.5	17	18.5	3.304	0.192
Urban	17	68.0	111	83.5	75	81.5		
Educational Level								
Illiterate	0	0.0	14	10.5	7	7.6	32.995	<0.001**
Primary School	13	52.0	13	9.8	13	14.1		
Secondary School	5	20.0	34	25.6	32	34.8		
High Education	7	28.0	72	54.1	40	43.5		
Income								
Adequate	8	32.0	70	52.6	53	57.6	5.175	0.075
Inadequate	17	68.0	63	47.4	39	42.4		
Household Family Size								
< 3 persons	0	0.0	18	13.5	18	19.6	6.278	0.043*
> 3 persons	25	100.0	115	86.5	74	80.4		
Household Room Number								
< 3 rooms	24	96.0	22	16.5	19	20.7	71.221	<0.001**
> 3 rooms	1	4.0	111	83.5	73	79.3		
Occupation								
Employee	11	44.0	90	67.7	55	59.8	68.215	<0.001**
Housewife	0	0.0	21	15.8	12	13.0		
Not employed	0	0.0	4	3.0	1	1.1		
On retirement	14	56.0	9	6.8	8	8.7		
Others	0	0.0	4	3.0	0	0.0		
Worker	0	0.0	5	3.8	16	17.4		
Health Insurance								
No	1	4.0	35	26.3	28	30.4	7.289	0.026*
Yes	24	96.0	98	73.7	64	69.6		

*Significant at $P < .05$. **Highly significant at $P < .01$. Not significant at $P > .05$.

Table 6 Shown that there was a highly statistically significant relation between total risk perception level of the studied patients and their gender, educational level, household room number and occupation at ($P \leq 0.01$). Also, there was a statistically significant relation with age, marital status, household family size and health insurance at ($P \leq 0.05$), while there was no statistically significant relation with residence and income at ($P \geq 0.05$).

Table 7. Relation between patients' total COVID-19 preventive practice level, risk perception level and COVID-19 seriousness level (n= 250).

Risk Perception level and COVID-19 seriousness level	Preventive practice level					
	Inadequate Practice (n=90)		Adequate Practice (n=160)		Chi-Square	
	N	%	N	%	X ²	P
Risk Perception level						
Low	15	16.7	10	6.3	44.411	<0.001**
Moderate	66	73.3	67	41.9		
High	9	10.0	83	51.9		
Seriousness level						
Not Serious	32	35.6	12	7.5	31.262	<0.001**
Serious	58	64.4	148	92.5		

**Highly significant at $P < 0.01$.

Table 7 Showed that there was a highly statistically significant relation between total COVID-19 preventive practice level of the studied patients and their risk perception level and COVID-19 seriousness level at ($P \leq 0.01$).

Discussion

COVID-19 is a viral respiratory disease first reported in December 2019, quickly became a threat to global public health. Further understanding of the epidemiology of the SARS-CoV-2 virus and the risk perception of the community may better inform targeted interventions to reduce the impact and spread of COVID-19. People infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have been increasing dramatically. COVID-19 precaution methods are vital for extremely vulnerable clusters. However, it was not recognized formerly to what degree chronic disease patients were supposed to recognize about the effectiveness of prevention practices (*Gupta et al., 2019*).

Regarding sociodemographic, more than half of the studied patients were males, age ranged between 40-60 years, the mean age 43.9 ± 12.6 years with the majority are married. This is consistent with *Kirchberger et al., (2021)* who found that more than half of the studied patients were males, on the other hand he found that nearly two thirds were married. Also, our results in disagreement with *Birhanu et al., (2021)* who found that, the majority of the respondents were males, while more than half of them were in the age sort of 30–

39 years tracked by 18–29 years of age groups. According to the WHO, older people are at higher risk of contracting COVID-19, because of immune system decline.

In relation to the educational level of patients under the study nearly half of them had high education. This is consistent with *Birhanu et al., (2021)* who found that more than half of the respondents were holders of master's degrees. Also, this finding disagreed with (*'Shahin & Hussien, (2020)* who fund the half of participants have diploma degree. In relation to household, more than three quarters of the studied patients had family size and Household Room number more than 3. This is inconsistent with *Kirchberger et al., (2021)* who found that nearly half of the subjects have 2 persons in household

Regarding Occupation nearly three quarters of the patients were employees. This is in disagreement with *Saqib et al., (2020)* who found that only nearly half of the subjects were employees. Regarding residence, it revealed that majority of the participants from urban area. This is agreed with the results of *Tesfaw et al., (2021) & Jahangiry et al., (2020)* who found the overall health threat was significantly highest among respondents living in urban settings. This evidence suggests that risk perceptions and perceptions of threat may be influenced by contexts, settings, individuals' daily experience, and other several factors. This might be due to the lifestyle, pollution & overcrowding

Regarding comorbidities, nearly two thirds of the studied patients had history of heart diseases within duration from 5 to 10 years. This is congruent with *Wise, et al., (2020)* who indicated that, most public health conditions involved respiratory diseases, cardiac diseases, renal diseases, diabetes, hypertension and cancer. This might be due to that, chronic diseases share several standards features with infectious disorders, such as the pro inflammatory state, and the attenuation of the innate immune response, which may make individuals more susceptible to disease complications such as respiratory & cardiovascular diseases

Regarding COVID-19 infection, majority of the studied patients of our study had COVID-19 infection previously, these findings disagreed with *Kirchberger et al., (2021)* who found that the majority of subjects have no confirmed COVID-19 infection previously. As regard to Pattern of periodic medical check-up before and after COVID-19 pandemic, about two thirds of the studied patients did not have periodic medical check-up before and less than half of them did not have periodic medical check-up after COVID-19 pandemic, which is indicator that the patients who seek medical check-up was slightly increased after the pandemic, this could reflect their increased risk perception. Regarding the other patients who didn't give attention to periodic checkup, this might be due to lack of public awareness about importance of routine medical checkup. This is inconsistent with *Saqib et al., (2020)* who stated that more than half of the subjects follow routine medical checkup.

Moreover, half of the studied patients had no respiratory symptoms in the last 2 weeks. This is consistent with *Birhanu et al., (2021)* who found the most frequently reported symptoms included fever, dry cough, and difficult breathing. Less than half of the studied subject does not intend to be vaccinated, that could be due to their fear from unknown consequences of COVID-19 vaccine, added to that some unscientific information published by social media about its danger on the long run; this in the same line with *Al-Hanawi, et al., (2021)* who found the overall proportion of willingness to receive a COVID-19 vaccine among people with chronic illness in his study represents half of them. While according to the study of *Bekele et al., (2021)* nearly two thirds of the respondents were willing to accept the COVID-19 vaccine.

Concerning distribution of protective practices regarding COVID-19, majority of the studied patients followed preventive practices to prevent COVID-19 regarding, wear face mask when outdoors, cover mouth appropriately when coughing or sneezing, keep proper home ventilation and avoid close contact with infected person. This in agreement with *Kirchberger et al., (2021) and Shahin & Hussien, (2020)* who stated that, a number of preventive behaviors were performed by majority of the patients always or often in the week such as: Avoidance of public places, washing hands 20 s, avoiding handshakes and keeping a distance of 1.5 m to other persons in the public. On the other hand, some behaviors seemed to be less frequently performed by patients who did not assign themselves to a high risk group compared with the high risk group and those who were unsure such as exercising regularly, cancel or postpone meetings with friends, recreation. etc.

The current study indicated that more than two thirds of studied patients had adequate level of preventive practices. This result achieved the first aim of the study. This result could be due to the fear of infection and death caused by COVID-19 which appeared everywhere nowadays. This in the same line with *Shahin & Hussien, (2020)* who showed that, the majority of the study sample answered “most certainly” in response to their intention to implement advised preventive measures against the new coronavirus. *Kumbeni et al., (2021)*. Also revealed that the majority in his study have good COVID-19 preventive practices. Added to that *Shahin & Hussien, (2020)* demonstrates that slightly more than two-thirds of the study sample were most certain that frequent hand hygiene helps to prevent COVID-19 infections and that they will wear masks and practice social distancing, if advised, also the majority of the study sample also responded that maintaining social distancing and implementing quarantine most certainly helps to prevent COVID-19 infection. This result could be due to the fear of infection and death caused by COVID-19 which appeared everywhere nowadays.

On the other hand, it was revealed that less than half of the studied patients thought that COVID-19 is serious/ very serious health condition. While less than half of the studied

patients feel that being infected with COVID-19 in the near future is serious/very serious health condition, and nearly one fifth of them feel it is slightly serious. This is incongruent with *Shahin & Hussien, (2020)* who concluded that most of the study subjects perceived the COVID-19 pandemic to be either a serious or most serious event. Furthermore, less than half of participants perceived the possibility of contracting COVID-19 in the near future to represent a serious event, whereas one third viewed this possibility as very serious.

Findings of the current study revealed that two thirds of the studied patients agree with getting infected with the coronavirus can be serious, possibility that they can be infected with this virus and thinking that media exaggerated the coverage of this disease. This result was congruent with the study of this result was congruent with the results of *Shahin & Hussien, (2020) and Bish & Michie, (2020)* who reported that higher perceived personal risk predicts an individual's engagement with disease-preventive behaviors, such as hand washing and social distancing, as reflected by studies of prior pandemics.

In the lights of the present findings, it was revealed that a highly statistically significant relation between total risk perception level of the studied patients and their gender. This agrees with previous study, *Azlan et al., (2020); Zheng et al., (2020)*, which reported that, men are fewer risk adverse when raising to their health than women. Overall, these conclusions are vital, given the inconsistent level of COVID-19 effect on rural, underserved parts (*Tan et al.,2020*).

This study results were supported with other surveys and available data, which consistently showed that education is linked to health literacy, awareness, and preventive behaviors *Feinstein, et al (2006)* and *Abdelhafiz, et al (2020)*. On the other hand, the literature shows that lower education is associated with a greater risk of morbidity *Nagel (2008) and Laires, Perelman (2019)*. Therefore, patient education regarding COVID-19 is important, especially that targeting disadvantaged societies with a lower level of education, provoked by lower income and decreased access to care, thereby mitigating the health inequities that are reportedly emphasized by COVID-19 (*Dorn, et al., 2020*).

In our study, those below 40 and above 60 years had a statistically significant relation between total risk perception level of the studied patients and their gender that is consistent with other studies also reported a strong association between age and risk perception. For example, *Jacob et al. (2010)* found that younger age (16–24) predicted higher disease concern. In contrast, *Ibuka et al., (2010)* in a study of 1290 US adults showed no association between age and engagement in protective measures during the H1N1 influenza pandemic.

Distinction between city and rural areas can also be reasonable by the difference in case numbers between dissimilar geographic areas. Consequently, we suppose higher distress

about viral range in the more congested cities. Based on finding of the current study, there was a statistically significant relation between total risk perception level of the studied patients and household family size. While *Jacob et al. (2010)* also found no association between having elderly and children in the household and disease concerns. This is however inconsistent with results from *Ibuka et al., (2010)* in a similar study, where more household members predicted increased precautionary activities.

These results revealed that, there was no statistically significant relation between risk perception and residence, this could be due to that the highest percent of the sample were urban residents. This finding is incongruent with a study in China by *Zhan, Yang, and Fu (2020)*. Who stated that there is a relation between residence in rural areas and perception about COVID-19.

Findings of the current study revealed that a small portion of the studied patients disagree with people who may stigmatized patient if he had got sick due to coronavirus. This was somehow comparable to the findings of *Abdelhafiz et al. (2020)*. Where about 23% of general population respondents reported stigma associated with the disease. *Abdelhafiz et al. (2020)*, Explicated this shame by fright of its fatalness and high transmissibility. The shame related to COVID-19 infection could also be clarified by exclusion of the funeral prayer in mosques and churches and preventing funeral ceremonies. Although it might sound not vital, it has implication, since it may lead to the unwillingness of the public to pursue medical care and underreporting of cases, which may cause the rapid spread of the disease. Shame can be struggled through appropriate education, clear announcing of healthcare policies, and launching stigma reduction programs in Egyptian hospitals as mentioned by *Kabbash et al., (2018)*.

This study results found that more than half of studied patients had moderate level of total risk perception score regarding COVID-19. This result achieves the second aim of this study. This result could be due to the worldwide agreement to the danger of covid 19 and actual situation around them that revealed its risk. Similarly, *Abdelhafiz et al., (2020)* reported that most of their study participants believed that COVID-19 represents a life-threatening hazard and have been worried about the possible risk of COVID-19 infections among members of their families.

The current findings showed that there was highly statistically significant relation between total COVID-19 preventive practice level of the studied patients and their risk perception level and COVID-19 seriousness level. This result clarifies the third aim of the study. Agreeing with *Shahin and Hussien, (2020)* presented that the people sample from Egypt scored suggestively lower compared with the people from the other countries ($P < .01$) for the intention to comply with precautionary measures and implement preventive strategies against the COVID-19 outbreak.

Regarding the current study there was statistically significant relation between preventive practice of the studied patients and their Age, Marital Status, Household Family Size and Health Insurance. This result in agreement with a multivariable analysis of *Dires, Gedamu & Getachew, (2021)* who was found that, young adults, male gender, low literacy and face mask nonusers were significantly associated with low perception of patients towards COVID-19 prevention methods.

Regarding results of *El-Zoghby, Soltan, & Salama, (2020)* there was significant statistical relation to comply with precautionary measures and implement preventive strategies against the COVID-19 outbreak. On the other hand, in our study there was statistically significant relation between total COVID-19 seriousness level of the studied patients and their risk perception level, this result in the same scope (*Shahin and Hussien, 2020*) who confirmed that participants from Saudi Arabia stated a significantly higher mean awareness of seriousness than those from Egypt and Jordan.

Conclusion

This study results demonstrated further understanding on patients' preventive practices and risk perceptions of seriousness of COVID-19 disease. The perception of COVID-19 seriousness was significantly higher among patients and more than half of them had moderate perception of susceptibility to COVID-19. Moreover, results reported that less than two thirds comply with the recommended precautionary measures against COVID-19. Also there was highly statistically significant relation between total COVID-19 preventive practice level of the studied patients and their risk perception level.

Recommendations

Based on the findings of the present study, the researchers recommended the following:

-Highpoint the necessity to continue encouraging and emphasizing the maintenance of social distancing, hand hygiene, and wearing masks appropriately to prevent the spread of the virus.

-Implementation of health education programs that aim to improve COVID-19 preventive health practices and perception are recommended to increase awareness of patients with chronic diseases with preventive measures associated with the COVID-19 pandemic.

Apply the research to a larger sample to generalize the results of the study and study the factors affecting the patients with chronic illness perception regarding COVID-19.

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المخلص العربي

إدراك المخاطر والممارسات الوقائية لـ Covid-19 بين مرضى الأمراض المزمنة

المقدمة:

يتطور جائحة فيروس كورونا (COVID-19) بسرعة ويشكل تهديدًا خطيرًا للصحة العامة في جميع أنحاء العالم. تعتمد مكافحة العدوى في الوقت المناسب للوباء بشكل كبير على التدابير الوقائية. يعتبر إدراك المخاطر عاملاً رئيسياً يساهم في زيادة المشاركة العامة في تدابير الوقاية من الأمراض. من المرجح أن يصبح الأشخاص المصابون بأمراض مزمنة أساسية حالات حادة. تشير الدلائل إلى أن الإجراءات الوقائية سيكون لها تأثير وقائي ضد انتشار الفيروس. ومع ذلك، يعتمد نجاح هذه التدابير على ما إذا كان الجمهور يتلقى الرسائل المناسبة ويستوعبها ويتصرف بناءً عليها.

الهدف: هدفت الدراسة الحالية الى تقييم إدراك المخاطر والممارسات الوقائية لـ covid-19 بين المرضى الذين يعانون من أمراض مزمنة. **سؤال البحث:** سألت الدراسة الحالية على: سؤال 1: ما هو تصور المخاطر للمرضى الذين يعانون من أمراض مزمنة فيما يتعلق بـ Covid-19؟ سؤال 2: ما هي الممارسات الوقائية لمرضى الأمراض المزمنة فيما يتعلق بـ Covid-19؟ سؤال 3: هل هناك علاقة بين إدراك المخاطر للمرضى الذين يعانون من أمراض مزمنة فيما يتعلق بـ Covid-19 وممارساتهم الوقائية؟

تصميم الدراسة: تم استخدام التصميم الوصفي للدراسة المقطعية لتحقيق هدف الدراسة **مكان البحث:** أجريت هذه الدراسة في العيادات الخارجية التابعة لمستشفى جامعة عين شمس بالقاهرة. **عينة البحث:** عينة من 250 من المرضى المصابين بأمراض مزمنة مكونة من مريض ومريضة. **الأدوات:** تم جمع البيانات باستخدام ثلاث أدوات: 1. استبيان مقابلة شخصية مع المريض. 2. استبيان مقابلات المرضى. 3. أداة تقييم الممارسات الوقائية المبلغه من المرضى الذين يعانون من امراض مزمنة فيما يتعلق بـ Covid-19. مقياس ليكرت لتقييم إدراك المرضى الذين يعانون من مخاطر الأمراض المزمنة فيما يتعلق بـ Covid-19. **النتائج:** أسفرت هذه الدراسة عن ان 64% من المرضى مستوي مرضي من بالنسبة للممارسات الصحية لمنع التعرض للاصابة بمرض كورونا و 80.4% منهم يعتقد بخطر الاصابة بكورونا, كما ان 53% منهم مستوي ادراكهم لخطر كورونا متوسط. كما اشارت نتائج الدراسة الحاليه الى انه يوجد علاقة ذات دلالة إحصائية عالية بين مستوى الممارسة الوقائية الكلي لـ COVID-19 للمرضى الخاضعين للدراسة ومستوى إدراك المخاطر لديهم ومستوى خطورة COVID-19. كما توجد علاقة ذات دلالة إحصائية بين مستوى خطورة كورونا الكلي للمرضى الخاضعين للدراسة ومستوى إدراكهم للمخاطر. **الخلاصة:** اوضحت الدراسة فهم اعمق عن الممارسات الصحية للمرضى المصابين بالامراض المزمنة ومدى ادراكهم لخطورة التعرض لهذا المرض. حيث ان الغالبية العظمي منهم يعتقد في جدية خطورة المرض وان اكثر من النصف منهم لديهم مستوي ادراك عال بخطورة الاصابة بكورونا و اقل من ثلثي المرضى يذكرون انهم يتبعون الممارسات الصحية لمنع انتشار العدوي بمرض كورونا.

التوصيات: اوصت الدراسة باهمية تشجيع استمرارية الممارسات الصحية مثل التباعد الاجتماعي وغسل الايدي وارتداء الكمامة بشكل صحيح لمنع انتشار العدوي, بالاضافة الي توفير برامج تثقيفية للمرضى بالامراض المزمنة لزيادة وعيهم وادراكهم لخطورة المرض.