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Covid-19 Pandemic-Related Stress and Coping Strategies among Adults with Chronic Diseases Attending Zagazig University Hospitals

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A B S T R A C T

Background: The pandemic of COVID-19 caused a major threat to the physical and mental health of all people especially those with chronic disease. To lessen the effects of the epidemic on mental health, it is crucial to study how people with chronic diseases perceive stress and their coping mechanisms. **Objective**: To determine COVID-19-related stress and coping strategies among adult patients with chronic disease attending Zagazig University Hospitals. **Method**: 317 adult patients with chronic diseases who were receiving care at Zagazig University Hospitals participated in a cross-sectional study. The study tool included a pre-constructed standardized questionnaire composed of socio demographic data, Perceived Stress Scale and Brief Coping Orientation to Problems Experienced (COPE) Inventory scale questionnaire. **Results**: 55.2% participants were moderately stressed, 36% were severely stressed, and 8.8% had low stress level. Infection of close one by COVID-19, concerns about own health and health of family and adapting acceptance coping strategies were statistically significant positive predictors of the COVID-19-related stress level with odds ratios (OR, 43.271, 11.0 and 18.287, respectively). While income, having chronic GIT diseases and death of close one by COVID-19 diseases were statistically significant negative predictors of the COVID-19-related stress levels (OR =0.019, 0.003, 0.392, respectively) among adults with chronic Diseases. **Conclusion**: Most of the participants had moderate to severe perceived stress. The most used coping strategy was religion. COVID-19 infection in close one, concerns about own and family health, adapting acceptance coping strategies, income, having chronic GIT diseases and COVID-19-related death in close one were significant predictors of the COVID-19-related stress levels.

INTRODUCTION

In the early months of 2020, the World Health Organization issued a worldwide public health emergency because of the nationwide outbreak of severe acute respiratory sickness brought on by coronavirus 2 (SARS-CoV-2).[1] Infectious disease outbreaks have a significant impact on the psychological health of general population.[2] Research on previous outbreaks of illnesses like Ebola, Swine Flu, or Middle East Respiratory Syndrome (MERS) have demonstrated that they have a range of detrimental psychosocial impacts.[3] Psychological problems, social anxiety, and fears of getting sick,

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dying, or losing a close friend or family member resulted from the extraordinary medical crisis brought on by COVID 19 and its containment strategies.[4-6] Because the COVID-19 pandemic caused disruptions in daily life, education, social interactions, employment, food security, safety, economic activity, and politics, it is likely to have a detrimental impact on all aspects of life, including mental health. Patients with chronic illnesses and people with disabilities are more likely to experience severe COVID-19-related issues, which could deteriorate their health and well-being and raise their chance of dying from COVID-19 infection.[7] Many research has demonstrated that those with chronic diseases or impairments who report higher levels of perceived stress have worse health outcomes, lower quality of life, and functioning limits.[8] The definition of coping, a multifaceted process, is behavioral and cognitive activities to lessen the impact of a stressful circumstance.[9] Individuals who have disabilities and chronic illnesses could find it more difficult to cope with stress related to the COVID-19 global epidemic in addition to managing their chronic health conditions, so it is crucial for these extremely vulnerable patients to have sufficient infection prevention and control techniques as well as efficient mental health and medical interventions.[8] In order to inform public health policy and mental health interventions aimed at offering sufficient treatment and assistance, psychological education, interventions, and resources to assist individuals who have chronic conditions during this emergency, our study examined COVID-19-related stress and coping mechanisms among adult patients with chronic diseases attending Zagazig University hospitals.

METHOD

A cross-sectional study was conducted on adult patients with chronic diseases who attended specialized outpatient clinics in Zagazig University Hospitals. Over a four-months period (from April 1st to July 30th, 2021).

The Sample size was estimated using the Epi Info 7 program, and the overall estimated sample size was 317 participants. The predicted incidence of experiencing COVID-19 pandemic-related perceived stress was calculated to be 68.4% [10] at a 95% confidence interval. Sampling technique: simple randomly selected, selection based on computer-generated randomized tables, upon sampling frame (Adult individuals with chronic conditions who visited specialist outpatient department in Zagazig University Hospitals).

Inclusion criteria: -Individuals with chronic conditions (diabetes, hypertension, bronchial asthma, chronic inflammatory bowel diseases, chronic liver disease, chronic renal disease) who are 18 years of age or older and attending specialist outpatient clinics at Zagazig University Hospitals.

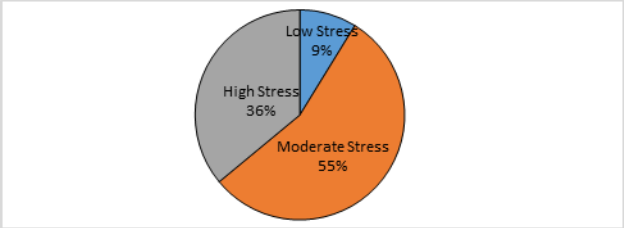

Figure 1: perceived Stress Levels distribution among studied adults with chronic Disease during COVID -19 pandemic (N= 317).

Data Collection tools and Procedures: Questionnaire: A pre-constructed standardized questionnaire was used.[10] Data was collected through interviewing the patients during their waiting for regular consultation. It took about 17 minutes to fill the questionnaire. The questionnaire was composed of 3 main parts; Part one: includes some demographic data such as; age, gender, residence, marital status, etc. and health-related characteristics such as types of chronic diseases, and its durations, etc. Part two: the scale of perceived stress. It was collected from a prior investigation.[10] It included 10 items about experiencing frequently upset, not being able to control life's essential topics, feeling anxious and stressed, feeling comfortable dealing with personality problems, feeling like things were going wrong, being capable of dealing with everything, being able to control life's aggravations, feeling in control of things, feeling angry about things that were out of your control, and being capable of conquering challenges. A five-point scale was used to assess the answers: 0 for never, 1 for almost never, 2 for occasionally, 3 for quite frequently, and 4 for very frequently. Scoring were determined by inverting answers to the four positively stated items (4, 5, 7, and 8), giving 0=4, 1=3, 2=2, 3=1, and 4=0. All score components were added to determine the final scores. Eventually, three groups of chronic patients were created: low felt stress (scores 0–13), moderately perceived stress (scores 14–26), and

Table 1: Association between Sociodemographic characteristics and Perceived Stress levels among Adults with Chronic diseases during COVID-19 pandemic (N= 317).

Sociodemographic characteristics	Perceived Stress Levels N (%)		χ2	P-value
	Low (N=28) N (%)	Moderate to severe (N=289) N (%)		
Age (years):				
<45 years (n=157)	17 (10.8)	140 (89.2)	1.538	0.215
≥45years(n=160)	11 (6.9)	149 (93.1)		
Sex				
Males (n=208)	21 (10.1)	187 (89.9)	1.199	0.274
Females (n=109)	7 (6.4)	102 (93.6)		
Residence				
Rural (n=195)	19 (9.7)	176 (90.3)	0.522	0.47
Urban (n=122)	9 (7.4)	113 (92.6)		
Marital status				
Single (n=23)	2 (8.7)	21 (91.3)	0.885	0.642
Married (n=268)	25 (9.3)	243 (90.7)		
Divorced(n=26)	1 (3.8)	25 (96.2)		
Educational status				
Illiterate (n=34)	4(11.8)	30 (88.2)	0.933	0.817
Read &write(n=26)	2 (7.7)	24 (92.3)		
School (n=124)	9 (7.3)	115 (92.7)		
University /more (n=133)	13 (9.8)	120 (90.2)		
Occupation				
Not working (n=77)	9 (11.7)	68 (88.3)	5.308	0.257
Worker (n=33)	2 (6.1)	31 (93.9)		
†Skilled worker (n=38)	0 (0)	38 (100)		
Clerk (n=68)	6 (8.8)	62 (91.2)		
Professional (n=101)	11 (10.9)	90 (89.1)		
Family size				
<4(n=35)	11 (31.4)	24(68.6)	24.946	<0.001**
≥4(n=282)	17 (6.0)	265(94.0)		
Income				
Low (n=220)	15 (6.8)	205 (93.2)	23.62	<0.001**
Moderate (n=84)	7 (8.3)	77 (91.7)		
High(n=13)	6 (46.2)	7 (53.8)		

*† Skilled worker e.g. tailors, carpenters, plumbers…. etc. X^2=Chi-square test. ** Highly Significant*

severe perceived stress (scores 27–40). Part 3 is the Brief COPE Inventory measure derived from the same research (10), which consists of 28 items on two scales and identifies 14 potential stress coping mechanisms. It includes (self-distraction, active coping, denial, substance use, and use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame coping strategies). The responses were arranged on a four-point scale (one being "I haven't done this at all" and four being "I have done it a lot"). Higher scores were assigned when participants received three or four for a given statement and were considered strong in using the specific coping strategy. Both PSS and Brief COPE Inventory scale were written in English language then we translated it to Arabic language and checked its validity by taking opinions of seven professors of Family and Community Medicine in Faculty of Medicine, Zagazig University. The reliability of PSS and Brief COPE Inventory scale were assessed by a Cronbach's alpha and its scores were respectively as follow (0.791), and (0.835).[10]

Data Analysis

Data was entered and analyzed by SPSS version 22.[11] Data were presented as frequencies and percentages and Chi Square test was used for comparisons between independent qualitative variables. A binary

Table 2: Association between Health-Related Characteristics and Perceived Stress Levels among Adults with Chronic disease during COVID-19 pandemic (N= 317).

Health-Related Characteristics	Perceived Stress Levels N (%)		χ2	P-value
	Low (N=28) N (%)	Moderate to severe(N=289) N (%)		
Type of chronic diseases				
Diabetes mellitus (n=98)	6 (6.1)	92 (93.9)	1.294	0.255
Hypertension (n=82)	7 (8.5)	75 (91.5)	0.012	0.912
Chronic renal diseases (n=11)	0 (0)	11 (100)	1.104	0.293
Chronic liver diseases(n=26)	3 (11.5)	23 (88.5)	0.257	0.611
Chronic neurological diseases (n=8)	3 (37.5)	5 (62.5)	8.375	0.003*
COPD (n=30) ††	3 (10)	27 (90)	0.056	0.812
Chronic heart diseases(n=8)	0 (0)	8 (100)	0.795	0.372
Chronic GIT diseases(n=18)	4 (22.2)	14 (77.8)	4.248	0.039*
Combined chronic diseases(n=43)	2 (4.7)	41 (95.4)	1.08	0.298
Duration of chronic diseases				
< 10 years (n=172)	10 (5.8)	162 (94.2)	4.256	0.039*
≥ 10 years (n=145)	18 (12.4)	127 (87.6)		
Smoking status				
Smoker (n=167)	19 (12.8)	148 (87.2)	2.837	0.092
Nonsmoker (n=150)	9 (6)	141 (94)		
Sources of information				
TV/radio (n=115)	4 (3.5)	111 (96.5)	9.693	0.046*
Health professional (n=52)	8 (15.4)	44 (84.6)		
Social media (n=99)	13 (13.1)	86 (86.9)		
Others (n=18) $	1 (5.6)	17 (94.4)		
Infection and death from COVID 19 virus				
Infected by COVID 19 virus (n=99)	18 (18.2)	81 (81.8)	15.625	<0.001**
Infected Household by COVID 19 virus (n=98)	15 (15.3)	83 (84.7)	7.382	0.007*
infected close one by COVID 19 virus(n=246)	24 (9.8)	222 (90.2)	1.163	0.281
Death of close one by COVID 19 virus(n=79)	2 (2.5)	78 (97.5)	5.329	0.021*
Concerns about own health &health of family				
Not at all concerned (n=38)	6 (15.8)	32 (84.2)	9.895	0.042*
Slightly concerned (n=49)	7 (14.3)	42 (85.7)		
Somewhat concerned (n=76)	8 (10.5)	68 (88.2)		
Moderately concerned (n=77)	6(7.8)	71 (92.2)		
Extremely concerned (n=77)	1(1.2)	76 (98.7)		

†† COPD: Chronic obstructive pulmonary diseases, $ Others: Books, brochures, and leaflets, X^2=Chi-square test **Significant ** Highly Significant.*

logistic regression analysis was used to determine the most important predictors of COVID-19-related stress level among the studied patients. P value (≤0.05) was considered statistically significant association and <0.001 was considered highly statistically significant association.

RESULTS

Figure 1 shows COVID-19 pandemic-related perceived stress among adults with chronic diseases. The majority of the participants (55.2 %) reported moderate stress levels, (36%) reported severe stress levels, and (8.8 %) reported low stress levels. Table 1 shows the association between COVID-19 perceived stress levels and socio-demographic among adults with chronic diseases. There were high statistically significant association between perceived stress level, the family size and income of participants in which (94%) and (93.2%) of who developed moderate to severe perceived stress level were of family size having four or more than four and of low income respectively. However, there were no statistically significant associations between perceived stress level and age, sex, residence, marital status, educational status, and occupation during COVID -19 pandemic.

Table 3: Association between adapted Coping Strategy and Perceived Stress Levels among Adults with Chronic disease during COVID-19 pandemic (N= 317).

Adapted coping strategy	Perceived Stress Levels N (%)		χ2	P-value
	Low (N=28) N (%)	Moderate to severe(N=289) N (%)		
1-Self-distraction (n=142)	8 (5.6)	134 (94.4)	3.269	0.071
2-Active coping (n=172)	15 (8.7)	157 (91.3)	0.013	0.909
3-Denial coping (n=124)	7(5.6)	117 (94.4)	2.57	0.109
4-Substance use (n=5)	0 (0)	5 (100)	0.492	0.483
5-Use of emotional support (n=137)	13 (9.5)	124 (90.5)	0.129	0.719
6-Behavioral disengagement (n=110)	2 (1.8)	108 (98.2)	10.293	0.001*
7-Venting (n=83)	10 (12.0)	73(88)	1.444	0.23
8-Use of instrumental support (n=0)	0 (0)	0 (0)	------	-------
9-Positive reframing (n=112)	13 (11.6)	99 (88.4)	1.655	0.198
10-Self-blame (n=102)	0 (0)	102 (100)	14.571	<0.001**
11-Planning (n=179)	16 (8.9)	163 (91.1)	0.006	0.940
12-Humoring (n=119)	9 (7.6)	110 (92.4)	0.381	0.573
13-Acceptance (n=195)	10 (5.1)	185 (94.9)	8.635	0.003*
14-Religion (n=217)	22 (10.1)	195 (89.9)	1.456	0.228

X^2=Chi-square test **Significant* *** Highly Significant* *------- invalid*

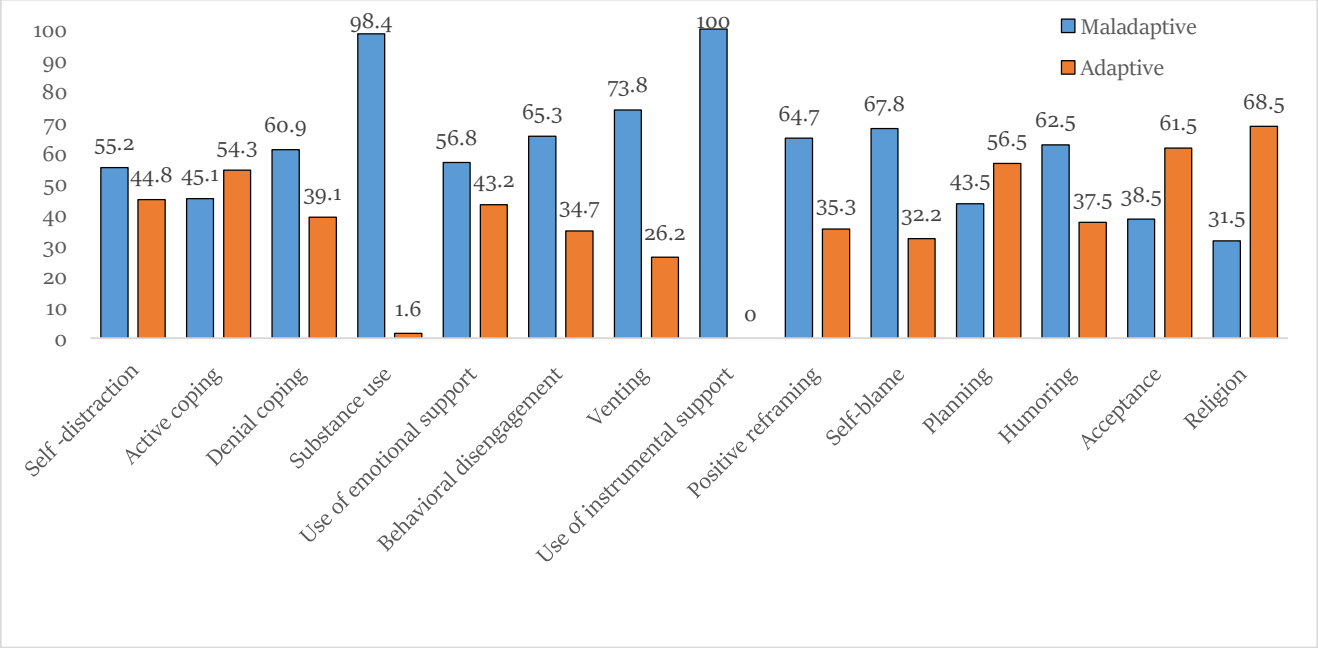

Figure (2): Types of coping strategy adapted by adult patients with chronic diseases during COVID-19 pandemic (N= 317).

Table 2 shows the association between health-related characteristics and perceived stress levels among adults with chronic disease. There were statistically significant association between chronic GIT diseases, chronic neurological diseases and the perceived stress level in which (62.5%) and (77.8 %) of studied patients who developed moderate to severe perceived stress were having chronic neurological diseases and chronic GIT diseases respectively, but there were no statistically significant difference between stress level and other chronic diseases as diabetes mellitus, hypertension, chronic heart diseases; COPD, chronic renal and chronic liver disease and chronic disease combination.

Table 4: binary logistic Regression analysis to assess predictors for Perceived Stress level among Adults with Chronic Diseases during COVID-19 pandemic (N= 317).

Adapted coping strategy	B	Wald	P-value	EXP(β)	95%Confidence Interval for EXP(β)	
					Lower Bound	Upper Bound
Family size	0.888	1.595	0.207	2.431	0.613	9.646
Income	-3.954	15.495	<0.001**	0.019	0.003	0.137
Chronic neurological disease	-23.799	0.00	0.993	0.00	0.00	
Chronic GIT diseases	-5.943	12.846	<0.001**	0.003	0.00	0.068
Duration of chronic diseases	-1.006	1.713	0.191	0.366	0.081	1.65
Sources of information	-0.412	1.825	0.177	0.663	0.365	1.204
Infection by COVID 19 virus	-1.265	2.522	0.112	0.282	0.059	1.345
Infected Household by COVID 19 virus	-1.005	1.276	0.259	0.366	0.064	2.094
infected close one by COVID 19 virus	3.767	5.837	0.016*	43.271	12.036	69.638
Death of close one by COVID 19 virus	-0.936	7.346	0.007*	0.392	0.199	0.772
Concerns about own health &health of family	2.398	5.966	0.015*	11.0	1.606	25.336
6-Behavioral disengagement	34.432	0.00	0.993	8.98	0.00	14.879
13-Acceptance	2.906	9.444	0.002*	18.287	2.865	22.705

Dependent variable: -perceived stress level **Significant ** Highly Significant*

There were statistically significant association between perceived stress levels and the duration of chronic diseases in which (94.2%) of participants who developed moderate to severe stress had less than 10 years' duration. There were statistically significant differences between perceived stress level and the sources of information that (96.5%) of patients who depending on TV/Radio as source of information suffered from moderate to severe stress but who depend on health professional had relatively less moderate to severe stress (84.6%). There were statistically significant association between perceived stress level, infection by COVID-19 virus, Infected household and death of close one by COVID 19 virus in which (81.8%), (84.7%) and (97.5%) of them suffered from moderate to severe stress respectively. Also, there were statistically significant association between perceived stress levels and concerns about own health and health of family that (98.7%) of extremely concerned patients suffered from moderate to severe perceived stress. On the other hand, there was no significant association between smoking status and perceived stress levels.

Figure 2 shows the types of coping strategies used by studied patients. The most used coping strategy among them was religion (68.5%) followed by acceptance (61.5%) while, no one used instrumental support and (1.6%) adapted substance use.

Table 3 shows the association between adapted coping strategy and perceived stress levels. There were statistically significant association between perceived stress level, adapted self-blame, behavioral disengagement and acceptance coping strategies in which (100%), (98.2%) and (94.9%) of patients adapted self-blame, Behavioral disengagement and Acceptance respectively developed moderate to severe perceived stress during COVID 19 pandemic.

Table 4 shows predictors for perceived stress level among adults with chronic diseases during COVID-19 pandemic. Binary logistic regression analysis revealed that infection of close one by COVID-19 virus, concerns about own health and health of family and adapting acceptance coping strategy were statistically significant positive predictors of perceived stress level with OR (43.271, 11.0 and 18.287) respectively while, income, having chronic GIT diseases and death of close one by COVID-19 virus were statistically significant negative predictors of perceived stress level with OR (0.019,0.003, 0.392 respectively) among adults with chronic Diseases.

DISCUSSION

The current study revealed that COVID-19 related perceived stresses among participants were moderate in 55.2%, severe in 36% and mild in 8.8% (figure 1). This finding were consistent with the studies done in Southwest Ethiopia[10] where they found that 68.4% of participants were moderately stressed and 13.9% were severely stressed, study in Turkey where moderate stress was 60.1%[12] and study in Spain where chronic disease patients had higher levels of stress, anxiety, and depression compared with healthy individuals.[13] The existing chronic illnesses may lead to higher risk for severe complications from COVID-19

and increase perceived stress. However, other studies found that prevalence of COVID related perceived stress among chronic patients were (22.8%) in Northeast Ethiopia [14] and (17.3%) in Saudi Arabia.[15] This study discovered statistical differences between perceived stress level and family size (table 1), increasing family size ≥4 reporting greater levels of moderate to severe COVID-19-related perceived stress (94%). This finding was consistent with the study conducted in Southwest Ethiopia, revealing that participants with family member's ≥ 5 experienced more COVID-19-related stress.[10] Our study demonstrated that there were statistically significant differences between perceived stress level and income (table 1), 93.2% experienced moderate to severe COVID-19 perceived stress levels were having low incomes. This was similar to studies conducted in Italy, Spain and United Kingdom that found an association between higher incomes and lower levels of perceived stress and people with a lower income and less available space per person in their homes suffered higher levels of stress.[16-18] One explanation for this is that financial security among those of the high-income status mostly will reduce the effect of any economic impact of the self-isolation and with more comfortable housing solutions. The current study revealed that there were statistically significant association between having chronic GIT diseases and chronic neurological diseases and perceived stress level (table 2). This was in consistent with study in Saudi Arabia that showed health anxiety scores were significantly higher among those with Crohn's disease. In contrast to our study, it showed that hypertension, and cardiovascular diseases were significant associated with fear and health anxiety. This difference may be due to economic development and changes in lifestyle pattern.[19] Our study found that there were statistically significant association between COVID-19 perceived stress levels and duration of chronic disease (table 2) that participants with duration < 10 years had high moderate to severe COVID-19-related stress levels (94.2%). This was similar to the study in Southwest Ethiopia[10] but different from the study in Northeast Ethiopia where patients with long duration of chronic disease were more likely to had psychological problems.[20] Current study demonstrated that there were statistically significant differences between perceived stress level and the source of information (table 2), about 96.5% of participants who developed moderate to severe stress were relying on TV/Radio as source of information for COVID-19 but who depend on health professional had relatively less moderate to severe stress (84.6%). It is like the studies done in Saudi Arabia and in Taiwan where patients receiving information about COVID-19 from TV/Radio had poor psychological well-being while, depending on medical staff was associated with better psychological well-being.[19,21] This can be explained by the fact that these populations have a greater need for accurate health information from health professionals. In our study there were high statistically significant differences between perceived stress level and infection by COVID-19 virus (table 2). Our findings are similar to a study conducted in Spain, where participants with high-risk for COVID-19 infection had significantly higher levels of stress, anxiety, psychological impact, and depression symptoms than others.[3] Furthermore, having a loved one infected with coronavirus were significantly associated with psychological impact, stress, anxiety, and depression and the concerns of contracting the disease or death is a major source of stress to many people during the pandemic.[22-23] Our study found that there were statistically significant differences between COVID-19-related perceived stress levels and concerns about one's own and one's family's health (table 2). These findings are consistent with an Italian study where high concern for loved ones might contribute to increased perceived stress [15] and Ghanaians study, where the majority of respondents were concerned about their own and their family members' health during the pandemic.[24] In Figure (2) our study explained that the most used coping strategy among them was religion (68.5%) followed by acceptance (61.5%) while, no one used instrumental support and 1.6% adapted Substance use. This was in line with study in Southwest Ethiopia which showed that 76.3% of participants used religious coping strategies. In contrast it demonstrated that the second most used type of coping was the use of instrumental support by 51.4% and showed that substance use was the least frequently used type of coping strategy among chronic disease patients.[10] Also a study performed in El Paso, Texas, USA and demonstrated that acceptance and self-distraction were found to be the most frequent coping strategies

among participants. In contrast it revealed that denial was found to be the least commonly used coping strategy among participants.[9] In our study it was found that the highest percentages of moderate to severe stress were among adult patients with chronic diseases adapted behavioral disengagement, Self-blame and acceptance coping strategy with statistically significant association (table 3). This was in line with a study conducted in El Paso, Texas, USA and found that maladaptive behaviors like denial, behavioral disengagement, self-distraction, and self-blame and adaptive as planning and religion coping strategies were linked to perceived stress measured by the COVID-19 scale, but in contrast it showed that COVID-19-related stress was not associated with adaptive behavior including acceptance.[9] Additionally, these findings were in line with a study conducted in Southwest Ethiopia, which discovered that the perceived stress score related to the COVID-19 was linked to maladaptive behaviors such self-blame, behavioral disengagement, and denial. On the other hand, our finding was inconsistent with that study in Southwest Ethiopia as there COVID-19-related stress was associated with adaptive coping strategy types as (active coping and religion) and only the acceptance coping strategy negatively predicted the COVID- 19-related stress score. [10] These differences are explained Coping may take many forms for people with disabilities and chronic illnesses. Binary logistic Regression analysis predicted several factors for Perceived Stress level among adults with chronic diseases during COVID-19 pandemic (table 4) which were income, chronic GIT diseases, & infected close one by COVID 19 virus, death of close one by COVID 19 virus, concerns about own health and health of family and adapting acceptance coping strategy were the most significant predictors of perceived stress level among the studied patients. This was in consistent with studies conducted in Italy, Spain and United Kingdom where income was negative predictor that having higher incomes was associated with lower levels of perceived stress.[15- 17] Also, our study was on line with the study conducted in Saudi Arabia where patients having chronic GIT diseases like Crohn's disease were negatively predictors of health anxiety and stress in comparison to other diseases like hypertension and cardiovascular diseases were positively predictors of stress, fear and health anxiety. This difference may be due to economic development and changes in lifestyle pattern.[19] Our study was also consistent with the studies [20,21] which revealed that having a loved one infected or died from coronavirus were significantly predictors of psychological impact, stress, anxiety, and depression and the concerns of contracting the disease or death is a major source of stress to many people during the pandemic. Also, our study was in line with a study conducted in Italy where high concerns for loved ones were predictors to increased perceived stress [15] and the study done in El Paso, Texas, USA which found that using acceptance coping strategy positively predict perceived stress level during COVID 19 pandemic [9] although it was inconsistent with the study done in Southwest Ethiopia where adapting acceptance coping strategy negatively predicted the COVID- 19-related stress level.[10] These differences are explained Coping may take many forms for people with disabilities and chronic illnesses.

CONCLUSION

Most of the participants had moderate to severe perceived stress about (55%). The most used coping strategy was religion (68.5%). Infection of close one by COVID-19, Concerns about own health and health of family and adapting acceptance coping strategies positively predicted the COVID-19-related stress level. While income and having chronic GIT diseases and death of close one by COVID-19 diseases negatively predicted the COVID-19-related stress levels.

Ethical Approval

The Institutional Review Board (IRB) of the Faculty of Medicine at Zagazig University (ZU.IRB#9516/7-2-2021) gave its approval to the proposal. The Declaration of Helsinki, the code of ethics of the World Medical Association, was followed when conducting this research on humans. All participants supplied informed consent after being informed of the study's goals, and the confidentiality of the data was guaranteed.

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Conflict of interest

All authors have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

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